



**NGH**



# REVIEW OF ENVIRONMENTAL FACTORS

## Magenta Shared Pathway

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Project Number: 19-589



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## ACRONYMS AND ABBREVIATIONS

AHIMS	Aboriginal heritage information management system
AHIP	Aboriginal Heritage Impact Permit
ASL	Above sea level
AWS	Automatic weather station
BC Act	<i>Biodiversity Conservation Act 2016 (NSW)</i>
Biosecurity Act	<i>Biosecurity Act 2015 (NSW)</i>
BOM	Australian Bureau of Meteorology
Council	Central Coast Council
CEMP	Construction environmental management plan
Cwth	Commonwealth
DECCW	Refer to OEH
DAWE	(Cwth) Department of Agriculture, Water and the Environment
DP&I	(NSW) Department of Planning and Infrastructure (now DPIE)
DPIE	(NSW) Department of Planning, Industry and Environment
EEC	Endangered ecological community – as defined under relevant law applying to the proposal
EIA	Environmental impact assessment
EPBC Act	(Cwth) <i>Environment Protection and Biodiversity Conservation Act 1999</i>
EP&A Act	(NSW) <i>Environmental Planning and Assessment Act 1979</i>
ESD	Ecologically Sustainable Development
FM Act	(NSW) <i>Fisheries Management Act 1994</i>
ha	hectares
HBT	Hollow Bearing Trees
Heritage Act	(NSW) <i>Heritage Act 1977</i>
ISEPP	(NSW) <i>State Environmental Planning Policy (Infrastructure) 2007</i>

KFH	Key Fish Habitat
km	kilometres
LALC	Local Aboriginal Land Council
LEP	Local Environment Plan
m	metres
mm	millimetres
NES	Matters of National environmental significance under the EPBC Act ( <i>c.f.</i> )
NPW Act	<i>National Parks and Wildlife Act 1974</i> (NSW)
NPWS	(NSW) National Parks and Wildlife Service
NSW	New South Wales
OEH	(NSW) Office of Environment and Heritage, (now DPIE)
PAD	Potential Archaeological Deposit
PCT	Plant Community Type
PMST	Protected Matters Search Tool
REF	Review of Environmental Factors
ROL	Road Occupancy Licence
SEPP	(NSW) State Environmental Planning Policy
SIS	Species Impact Statement
sp/spp	Species/multiple species
VMP	Vegetation Management Plan



# 1. INTRODUCTION

## 1.1. BACKGROUND

Central Coast Council (Council) propose to construct a 3.8 km section of shared pathway adjacent to Wilfred Barrett Drive, at Magenta, NSW (the proposal). The proposed section of shared pathway would provide the last link to an existing off-road shared pathway network. The completion of this section of shared pathway would provide a continuous 26 km off-road shared pathway route from Canton Beach to Tuggerah, which is safe and user friendly. The shared pathway network in the Central Coast Local Government Area serves a variety of different user types including cyclists, pedestrians, scooters, skaters and motorised mobility scooters. Emphasis has been given to providing a slower speed design to accommodate all users of the pathway.

This shared pathway will form part of the NSW Coastline Cycleway route, which is identified in the NSW Bike Plan (NSW Government, 2010) as a continuous cycling and walking route along the entire NSW coastline from Queensland to Victoria. The location of the proposal is shown in Figure 1-1.

## 1.2. PURPOSE OF THE REF

This Review of Environmental Factors (REF) has been prepared by NGH Pty Ltd (NGH) on behalf of Council. For the purposes of the proposal, Council is the proponent and the determining authority under Part 5, Division 5.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

The purpose of this REF is to describe the proposal, to document the likely impacts of the proposal on the environment and to detail mitigation measures to minimise these impacts.

The description of the proposed work and associated environmental impacts have been undertaken in the context of Clause 228 of the NSW Environmental Planning and Assessment Regulation 2000, the NSW *Biodiversity Conservation Act 2016* (BC Act), and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In doing so, the REF helps to fulfil the requirements of Section 5.5 of the EP&A Act that Council examines and takes into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF would be considered when assessing:

- a) Whether a significant impact on the environment is likely and therefore the necessity for an environmental impact statement (EIS) to be prepared and approval sought from the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act, or whether the activity may be considered State Significant Infrastructure pursuant to the State Environmental Planning Policy (State and Regional Development) 2011.
- b) The significance of any impact on threatened species and ecological communities as defined by the BC Act and/or NSW *Fisheries Management Act 1994* (FM Act), in Section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or Biodiversity Development Assessment Report (BDAR) to be prepared.
- c) 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 Australian Government Department of Agriculture, Water and the Environment (DAWE) for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the EPBC Act.

This REF has assessed impacts to the environment on three spatial scales outlined below:

**Proposal area:** Area directly impacted by the works.

**Study area:** Area within 50 m of the proposal area.

**Locality:** Area within a 10 km radius of the proposal area.

The following specialist reports, documents and assessments are included in the REF:

- Appendix A: Detailed Design Report
- Appendix B: Construction Drawings
- Appendix C: Clause 228 Checklist
- Appendix D: Database Searches
- Appendix E: Biodiversity Assessment Report
- Appendix F: Geotechnical Investigation
- Appendix G: Aboriginal Heritage Due Diligence Assessment
- Appendix H: Vegetation Management Plan (VMP)
- Appendix I: Consultation letters.



Figure 1-1 Proposal locality map



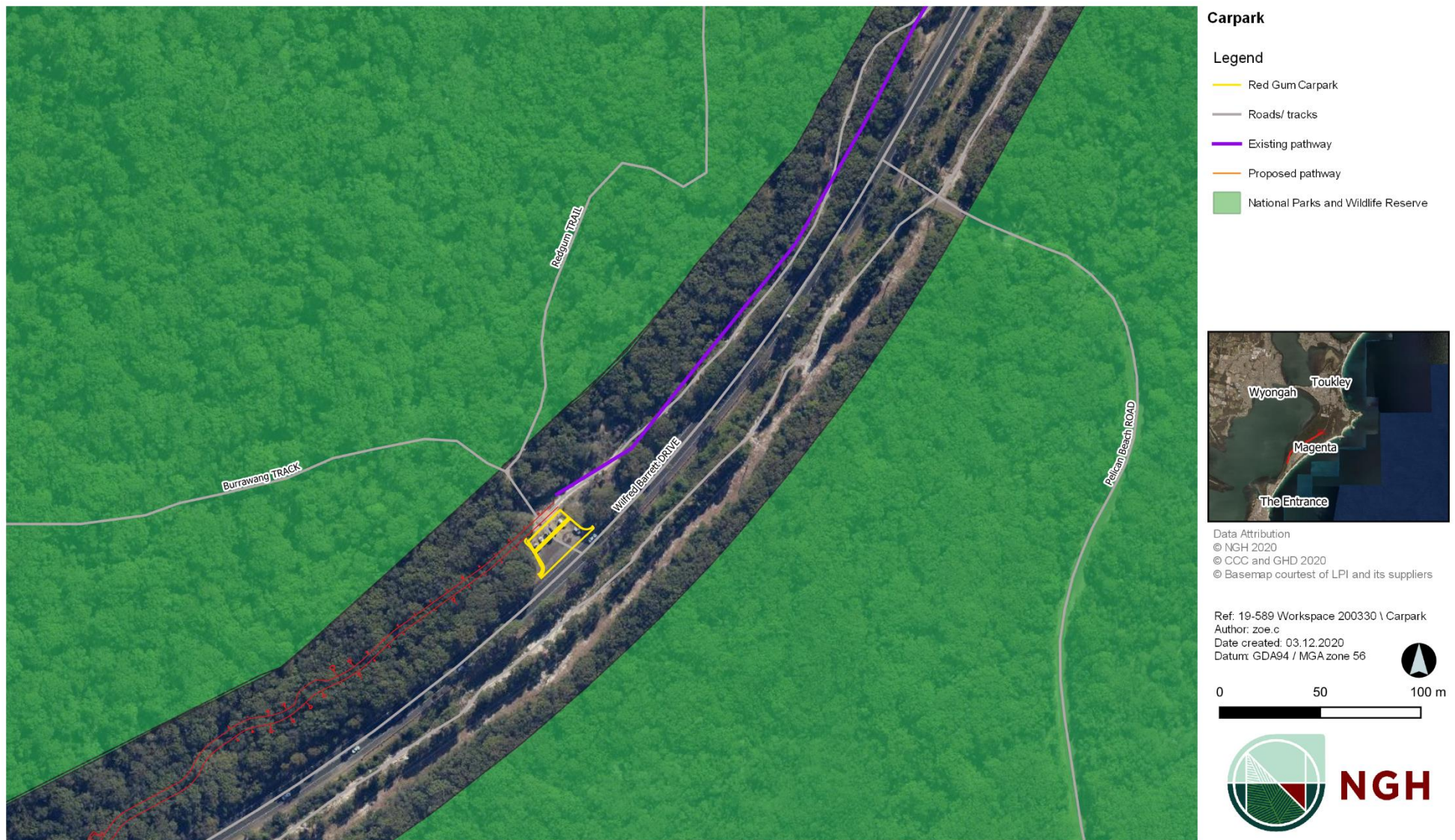


Figure 1-2 Zoomed in extent of proposal area showcasing location of carpark and proposed alignment in relation to NPWS estate.

## **2. PROPOSAL NEED AND CONSIDERATIONS**

### **2.1. PROPOSAL NEED**

The NSW Bike Plan (NSW Government, 2010) identified the need for a continuous cycling and walking route along the entire NSW coastline from Queensland to Victoria, with a route for this outlined in the NSW Coastline Cycleway program. To fulfill this plan and complete Council's cycle network, Council have been developing the Magenta Shared Pathway, providing safe pathways for cyclists and pedestrians between Canton Beach to Tuggerah. To date most sections of this pathway have been completed including Stage 1 to the north, finishing at the Red Gum Forest car park, Magenta, and to the south, from the southern boundary of Wyrabalong National Park across from Pebble Beach Avenue.

Cyclist Crash Data reported in the Central Coast Bike Plan (Central Coast Council, 2019) showed there were 140 cyclist crashes in the Central Coast LGA between 2012 and 2016. The data indicated that the majority of injuries occurred in the Woy Woy, The Entrance and Toukley areas along main roads and intersections. This data reinforces that separation between cyclists and vehicular traffic along main roads would be appropriate to enhance cyclist safety.

The missing link of pathway between these two completed sections of pathway now needs to be completed. The shared pathway project is funded by Central Coast Council as a priority project under the Central Coast Bike Plan (Central Coast Council, 2019). The Shared Pathway network in the Central Coast Local Government Area serves a variety of different user types including cyclists, pedestrians, scooters, skaters and motorised mobility scooters.

The Wilfred Barrett Drive is the only road connecting Magenta with Norah Head and is therefore heavily utilised by drivers and cyclists and less so by pedestrians. Given its high scenic and environmental significance and proximity to recreation areas, cyclists and pedestrians are drawn to this area. While Wilfred Barrett Drive has some sections of dedicated cycle lanes, such as between Magenta and Norville cemetery, they are not continuous and cyclists typically share lanes with general traffic, which results in traffic delays and safety issues. By providing an alternative pathway for cyclists, the safety of motorists and cyclists would be increased and greater access would encourage further patronage of Wyrabalong National Park, including people with mobility issues through the provision of disability access.

The objectives of the proposal are to:

- Provide safe passage for cyclists and pedestrians by completing the missing link of the Magenta Shared Path, connecting to the existing pathways to the north and south.
- Increase safety for all road users - provide a separated shared pathway avoiding major roads and highways.
- Link communities along the coastline.
- Minimise impacts on the environment, particularly biodiversity.
- Accommodate user needs including meeting Australian Standards and Austroads publications such as shared user width of around 3 m – 4 m disabled parking and access requirements.

### **2.2. CONSIDERATION OF OPTIONS**

In developing the options for the preferred alignment, the following considerations were undertaken:

- Start and end point is fixed due to the existing pathways to connect with.
- No encroachment on Wyrabalong National Park, while maintaining NSW National Parks and Wildlife Service (NPWS) fire trail access points.
- Minimise impacts on utilities.
- Design considerations.



- Minimise impacts on the environment, particularly biodiversity
- Constructability, in terms of disruption to road users, and existing ground conditions.

In developing the preferred alignment detailed desktop and site surveys were undertaken by the archaeologist and ecologists, along with the project team. Extensive walkovers were undertaken by the ecologists through environmentally sensitive areas to determine the location of threatened species and communities. The design of the shared pathway through these sensitive areas has been undertaken to reduce the footprint of the pathway with the aim of avoiding and minimising impacts on the environment. This process has taken a number of years, beginning in 2016, and culminating in the preferred option in 2020.

### **Option 1: Do nothing**

The 'do nothing' option would not allow for the completion of the missing link of the shared pathway along this section of the Central Coast and would not build infrastructure to work towards completion of the NSW Coastal Cycleway. By not building the proposal, the road safety along Wilfred Barrett Drive will not be improved, with cyclists and pedestrians continuing to use the road shoulder along this section of the route and the aim of improving cycling facilities along the NSW coast would not be achieved. The aim to improve safety of cyclists and pedestrians currently forced to use busy roads to continue their journey from one pathway to the next would not be realised and healthy lifestyle and natural area enjoyment benefits would not be fulfilled.

### **Option 2: Eastern pathway**

The option to move the pathway across to the eastern side of the highway was investigated at a high level, however, was determined not feasible for the following reasons:

- Necessitates users to cross the Highway twice to connect to the existing pathways.
- High cost of providing bridge crossings, which would also have visual impacts.
- High number of constraints (mainly utilities) on the eastern side limiting options for the shared pathway.

Construction of a shared pathway in this location does not comply with the strategic planning for the NSW Coastline Cycleway and does not enable linkage with other existing pathways north and south of Magenta. It would not provide a continuous off-road route from Canton Beach to Tuggerah.

### **Option 3: Western pathway**

The design team have worked collaboratively with the environmental and engineering specialists over several years to develop the preferred alignment of the shared pathway, ensuring minimal environmental impacts and improving safety while meeting the objectives/need of the proposal. These objectives and needs include:

- The pathway connects best on the western side, joining with the existing sections of pathway on the west, continuing adjacent to Wyrabalong National Park, providing scenic vistas along the pathway and safe passage on a separated dedicated shared path with separation from Wilfred Barrett Drive.
- The concept design for Magenta Shared Path Stage 2 does not encroach on the shared pathway into the Wyrabalong National Park boundary.
- Significant trees and areas of habitat have been reduced or maintained.
- Tree Protection Zones have been clearly shown on the design drawings to ensure no confusion during construction as to trees impacted by the construction.
- Each stage of Magenta Shared Path Stage 2 shall have termination points to allow connectivity to Wilfred Barrett Drive, and allow for temporary access for shared path users to continue their journey using the road shoulder on Wilfred Barrett Drive.

- Where grades extend greater than 3% rest area has been used to allow users to rest and then continue along the pathway.
- The horizontal alignment has been designed with a minimum curve radius of 10 m, in accordance with a design speed of 20 km/h.
- No utilities would be impacted.

The design and construction methods have been determined by the constraints posed including geotechnical characteristics, ecological features, safety concerns, disruption of vehicle traffic on Wilfred Barrett Drive and aesthetics, informed by previous experience on Stage 1 and other works in the area, as well as in depth biodiversity surveys.

The design team relied heavily on the extensive ecological survey results to avoid individuals, communities and habitats of threatened species and endangered ecological communities. The team have also used engineering methods to minimise impacts. In doing this, the final alignment has minimised the amount of vegetation clearing overall. The design criteria is outlined in the Detail Design Report (GHD, 2020) in Appendix A. The team has also engaged in consultation with stakeholders including Transport for NSW (Roads and Maritime) (TfNSW) and NSW National Parks and Wildlife Service NPWS to ensure the design meets their requirements.

By undertaking this work, this section of the Cycleway would complete the missing link of cycling infrastructure along the Central Coast. The proposal would build infrastructure that would work towards completing the NSW Coastal Cycleway. Construction of the proposal would assist in diverting cyclists and pedestrians from Wilfred Barrett Drive, enhancing road safety along this section of road.

### **Selection of the preferred option**

Option 3 is the preferred option for the proposal as it best meets the needs of the proposal. This option is the only option that would meet Council's objectives to provide safe passage for cyclists and pedestrians and increase road safety for vehicles, while minimising environmental impacts.

The key benefits of Option 3 include improved and more sustainable transport choices for people of all abilities, increased tourism opportunities, better coastal recreation access and the potential for growth of bicycle-tourism industries. The Coastline Cycleway also helps to achieve NSW State Plan goal 7 'Reduce travel times and goal 9 'Improve customer experience with transport services', which may ease transport congestion and promote healthy lifestyles through a more active community (NSW Government, 2011).

The improved safety of pedestrians and cyclists provides great opportunities for healthier lifestyles for both residents and tourists of the Central Coast and allows greater access to the scenic beauty of the Wyrabalong National Park and surrounds.

## **3. DESCRIPTION OF THE PROPOSAL**

### **3.1. THE PROPOSAL**

The proposal involves the construction of a 3.8 km dual-use off-road shared pathway adjacent to the western side of Wilfred Barrett Drive; the northern end of the proposal would tie into the existing Stage 1 shared path termination at the northern end of the Red Gum carpark; at the southern end of the proposal the shared pathway would tie into the existing shared pathway opposite the Magenta Shores Resort. The interface of Stage 1 and Stage 2 would also incorporate a carpark which serves Red Gum Trail into Wyrrabalong National Park as shown in Figure 1-2.

The alignment of the pathway and the layout of the proposal is shown in the Detail Design Report (GHD, 2020) in Appendix A.

The finished pathway would be approximately three metres wide with additional width allowances for handrails along boardwalk sections, around tight bends at downhill sections and includes rest areas at strategic locations.

In general, the pathway works would comprise the following:

- a) At-grade pathway – This would include concrete pavement classified as a B2 category to AS3600 due to its proximity to the coast with a concrete strength of N40. This was chosen as its construction has the least environmental impact and is the most economical option. It would consist of a reinforced concrete course over a granular sub-base. The finished width of the pathway would be 3 m, with approximately 2 m either side to be disturbed during construction. This disturbed curtilage would be rehabilitated following completion of construction. Cut and fill would be required to achieve desired grades in some sections.
- b) Boardwalk structure – Sections along the path would be constructed as boardwalks. The boardwalk would be a cast in-situ concrete deck supported by ultra-floor. Boardwalk footings would be high-level footings to provide a higher level of durability and low level of maintenance.
- c) Retaining walls – Sandstone block gravity walls are the preferred option to retain cut faces where battering cannot be used, with a maximum height of 4 m and temporary sheet steel piling behind the retaining to avoid significant excavation and removal of vegetation. Sandstone retaining walls are to be used at a number of locations to avoid construction of small boardwalks where existing ground has steep cross falls. Under boardwalks, construction of segmental retaining walls using fill sourced from cuts to then enable the boardwalk pad footings to be constructed on a level building pad would be utilised.
- d) Rest areas – where grades extend greater than 6%, rest areas have been used to allow users to rest and continue along the pathway. Such areas are typically 10 x 3 m, and located to avoid or minimise environmental impacts, particularly in regard to biodiversity.
- e) Construction tracks - some construction tracks would be required during the construction phase for the purpose of vehicle tracking. These areas would need to be cleared of vegetation during the construction phase and then rehabilitated. Construction tracks are mostly associated with suspended parts of the pathway and would be approximately 4 m wide.
- f) Rehabilitation of 1.82 ha of native vegetation (including 1.05 ha of cleared Littoral Rainforest Threatened Ecological Community (TEC)).

The shared path would interface with existing walking tracks in the National Park including:

- Chainage 2200 (Lilly Pilly Walking Track)
- Chainage 2950 (Lilly Pilly Walking Track)
- Chainage 3720 (Red Gum Trail).



Directional signage and line marking would be provided, tying in with existing or replacing existing signage and line marking.

Shared path handrails and safety barriers would be provided as necessary along the proposal.

The design criteria and features are provided in the construction drawings in Appendix B.

## **3.2. CONSTRUCTION ACTIVITIES**

### **3.2.1. Construction Methodology**

The proposal would be divided into stages for project delivery. The exact extent of the stages are yet to be confirmed and would be based on capital cost (per stage), connectivity to the existing network (i.e. Wilfred Barrett Drive) and earthworks balancing (within stages). Each stage would be required to be terminated to allow connectivity to Wilfred Barrett Drive allowing for temporary access for shared path users to continue their journey using the road shoulder on Wilfred Barrett Drive. The proposal would be constructed using pavement on ground. The pavement would consist of reinforced concrete. Concrete provides a durable surface which is also resistant to minor flooding and bushfire. The concrete pavement would be constructed in a staged linear fashion to minimise the area disturbed. The subgrade would be prepared with 8 – 12 tonne rollers prior to pavement installation. This would remove any soft spots and compact the surface.

Construction activities would be guided by a project specific construction environmental management plan (CEMP) to ensure work is carried out to Council specifications.

The proposal construction program would involve:

- a. Installation of temporary fencing around site compound (Red Gum car park) and works area to prevent unauthorised access. Closure of access to walking tracks and Red Gum car park (as required) would occur at this time.
- b. Establishment of site compound including installing facilities for workers at Red Gum car park.
- c. Establishment of stockpile/storage areas and site access points, as detailed in Section 3.2.7.
  - Vegetation clearing
    - It is anticipated that up to 4.99 hectares of vegetation would be cleared as part of the proposal.
    - Clearing would likely be carried out across the entire site in one activity prior to the commencement of construction works, however, clearing may be undertaken progressively during the construction program.
    - Installation of environmental controls, including sediment and erosion controls and delineation of no-go areas where existing vegetation would be retained, would be progressively implemented as the clearing was undertaken.
    - Clearing along the proposed pathway route, and for access tracks (approximately every 100 m) would be undertaken using chainsaws, brush cutters and small tracked machinery. Site access would be limited to vehicles/plant able to travel in sand.
    - Weeds along the proposal alignment would be treated prior to other clearing to ensure the spread of weeds is minimised and to ensure vegetation won from clearing is suitable for reuse (as mulch, etc).
    - Vegetation would be mulched and temporarily stockpiled for reuse onsite for rehabilitation and erosion controls.
  - Preparing pathway route
    - Bobcats and small excavators would be used to prepare the path alignment route. To achieve the required grades for the construction of the pathway the proposal would be staged to ensure cut and fill balanced, so minimal stockpiling of spoil/fill would occur.

- Construction of boardwalk structure
  - Footings would be constructed, by undertaking earth works, constructing formwork and pouring concrete.
  - Prefabricated components of the path would be brought to the required locations and assembled in situ.
  - Any waste from construction would be removed from the work area to the site compound each day.
- Construction of on ground path
  - Construction of adequate path base would be undertaken using machinery.
  - Formwork would be constructed where the path is to be built, and concrete would be poured in situ.
  - Line marking and furniture would be added following the construction of the path base.
  - Any waste from construction would be removed from the work area to the site compound each day.
- Project finalisation
  - Landscaping works adjacent to the edges of the pathway would be completed once each stage of the pathway was constructed.
  - Rehabilitation of Littoral Rainforest of about 1.05 ha of EEC and CEEC in accordance with the Vegetation Management Plan.
  - Tie-ins with other pathways would be consolidated to ensure existing access was not disturbed by the proposal.
  - Upgrade of Red Gum car park including provision of 1 disabled parking space.
- Decommissioning site
  - Fencing and other construction items would be removed from the proposal area.

### **3.2.2. Earthworks**

Excavation works would be undertaken for the proposal to provide the new shared pathway. Calculations undertaken for design work estimate that 13,680 m<sup>3</sup> of cut and 18,155 m<sup>3</sup> of fill is required to complete the project works. Therefore, a volume of 4,475 m<sup>3</sup> of imported fill is required, thus not resulting in excess spoil to be generated by the proposal. The maximum depth of excavation is anticipated to be 1.2 m for footings with 30 millimetres (mm) of stripping and 4 m for retaining walls. Excavated spoil would be utilised as fill for retaining walls and to rehabilitate the site including access paths. Surplus or unsuitable material that cannot be used on-site would be classified in accordance with the Waste Classification Guidelines (DECCW, 2009) and disposed of at an approved materials recycling or waste disposal facility.

### **3.2.3. Proposed Construction Materials**

Construction materials would include but not be limited to:

- Concrete
- Fabricated steel posts
- Sandstone
- Fabricated steel
- Timber hardwood
- Sand/imported granular materials (including road base and drainage aggregated)
- Geotextile fabrics
- Bitumen

- Aluminium signage
- Linemarking paints.

### **3.2.4. Proposed Construction Equipment**

General equipment used during the works will include but not be limited to:

- Light vehicles
- Heavy vehicles (for haulage of materials to and from site)
- Excavator.
- Roller
- Bobcat
- Mobile crane
- Machinery for transport of materials along pathway
- Chainsaws
- Brush cutter
- General hand tools.

### **3.2.5. Infrastructure maintenance**

The pathway has been designed to minimise the ongoing maintenance required to ensure it is operating correctly. Periodically, maintenance activities such as collecting litter, clearing fallen vegetation and maintaining landscaping, handrails and furniture would be undertaken to ensure the safety and functionality of the proposal.

### **3.2.6. Traffic Management and Access**

Construction of the proposal would generate heavy vehicle movements. These heavy vehicle movements would mainly be associated with:

- Delivery of construction materials
- Spoil and waste removal
- Delivery and removal of construction equipment and machinery.

Light vehicle movements would be required for the movement of construction personnel, including contractors, site labour force and specialist supervisory personnel.

Deliveries to and from site would be via Wilfred Barrett Drive to the compound site and storage areas (detailed in Section 3.2.7). Traffic on Wilfred Barrett Drive within the vicinity of the proposal may be interrupted at times during the construction period, particularly during deliveries and at the beginning and end of each work day. Traffic affected would include local traffic, including bicycles, and public transport services. These impacts would be minor and short term and not likely to be significant. Construction traffic would access the site using a 'left turn in, left turn out' procedure on Wilfred Barrett Drive. The number of vehicle movements required would be calculated closer to construction, and would be addressed in the traffic management plan and appropriately mitigated. It is assumed that material deliveries would be up to 30 m<sup>3</sup> per truck.

A detailed traffic management plan would be prepared for the works. The traffic management plan would provide details of the traffic management to be implemented during construction to ensure traffic flow on the surrounding network is maintained where possible. Consultation with TfNSW would occur before Council approval of the plan to ensure their endorsement.

### **3.2.7. Ancillary Facilities**

A site compound including a site office and site parking for workers would be located at Red Gum car park at the northern end of the limit of works. The Red Gum carpark would be temporarily closed to public access during the construction period for safety reasons. No clearing is required for the site compound. Access to the Red Gum Trail would be retained for NPWS personnel and as required for fire management.

There are 14 site access points proposed along the alignment (refer to the construction diagrams in Appendix B). Storage areas are proposed at access points 13, 12, 8, 6 and 1 for construction materials and machinery.

Both the construction compound and stockpiling areas would operate only for the duration of construction, as required. At the end of construction, all disturbed areas would be stabilised and revegetated.

### **3.3. TIMING AND HOURS OF WORK**

The proposal is planned to be constructed in stages, with staging dependent on funding availability.

Construction is anticipated to be started in the 2021/2022 financial year. Standard construction working hours as per the *Interim Construction Noise Guideline* (DECC, 2009) are as follows:

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 1pm
- Sundays and public holidays: no work.

The proposed hours of work for the proposal would be in accordance with the CCC Civil Works Specific / Construction Specification (CCC, 2018):

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 4pm (noting 1pm to 4pm is day out of hours work)
- Sundays and public holidays: no work.

### **3.4. PROPERTY ACQUISITION**

Property acquisition is not required for the proposal.

## **4. LEGAL AND POLICY REQUIREMENTS**

The Planning Approval process is summarised here and the legal permissibility of the project and around that process is further detailed in Section 4.1 below.

Part 5, Division 5.1 of the EP&A Act imposes environmental assessment obligations on determining authorities, which are usually public authorities and statutory state-owned corporations, but also include other specified agencies such as local government authorities. Part 5, Division 5.1 applies to activities (as defined in Section 5.1) that:

- are to be carried out by a Minister or public authority; or
- are to be carried out on behalf of a Minister or public authority; or
- which require the approval of a Minister or public authority.

This Proposal is permitted without development consent under Clause 79 of the Infrastructure SEPP and as such the Proposal is assessed under Part 5, Division 5.1 of the EP&A Act. Accordingly, Council is both the proponent and the determining authority.

Under Section 5.5 of the EP&A Act, Council is responsible for assessing the impacts of its activities. This REF presents an assessment of the potential environmental impacts associated with the Proposal. Clause 228 (2) of the EP&A Regulation identifies the factors that must be considered. These factors are summarised in Appendix C.

## 4.1. LEGAL PERMISSIBILITY

Table 4-1 Legal requirements for the proposal

Law, Policy or Regulation	Objective	Requirement for the proposal
<b>Local Law</b>		
<b>Wyong Local Environmental Plan 2013 (Wyong LEP)</b>	<p>This plan establishes the framework for future development within the local government area (LGA) of Wyong Shire, now amalgamated into the Central Coast LGA.</p> <p>The particular aims of this plan are:</p> <ul style="list-style-type: none"> <li>a) to foster economic, environmental and social well-being so that Wyong continues to develop as a sustainable and prosperous place to live, work and visit,</li> <li>b) to encourage a range of housing, employment, recreation, human services and appropriately located tourism-related development in Wyong to meet the existing and future needs of residents and visitors,</li> <li>c) to promote the efficient and equitable provision of public services, infrastructure and amenities,</li> <li>d) to provide for a range of local and regional community facilities for recreation, culture, health and education purposes,</li> <li>e) to apply the principles of ecologically sustainable development to guide future development within Wyong,</li> <li>f) to conserve, protect and enhance the environmental and cultural heritage (both indigenous and non-indigenous) values of Wyong,</li> <li>g) to protect areas of high scenic landscape value,</li> </ul>	<p>The proposal is located within the Central Coast LGA (formally the Wyong LGA) on land to which the Wyong LEP applies. The proposal would be within land zoned SP2 (Infrastructure) and E2 (Environmental Conservation) as per the planning portal mapping (which supersedes the Wyong LEP land zone mapping in Appendix D).</p>

Law, Policy or Regulation	Objective	Requirement for the proposal
	<ul style="list-style-type: none"> <li>h) to maintain and enhance the existing character, amenity and environmental quality of Wyong,</li> <li>i) to minimise risk to the community in areas subject to environmental hazards, including flooding, climate change and bush fires,</li> <li>j) to promote a high standard of urban design that responds appropriately to the existing or desired future character of areas,</li> <li>k) to encourage development that increases public transport patronage, walking and cycling.</li> </ul>	
<b>State Law</b>		
<b><i>Environmental Planning and Assessment Act 1979 (EP&amp;A Act)</i></b>	<p>The NSW <i>Environmental Planning and Assessment Act 1979</i> (EP&amp;A Act) and associated regulations and environmental planning instruments provide the framework for assessing environmental impacts and determining planning approvals for developments in NSW.</p> <p>The Proposal is assessed under Division 5.1 of the EP&amp;A Act because the requirements for consent are removed by the State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP). This is explained in more detail below. Council is the proponent and determining authority for the Proposal.</p> <p>Under section 5.5 of the EP&amp;A Act, the determining authority must consider to the fullest extent all matters affecting or likely to affect the environment.</p>	<p>Clause 228 of the Environmental Planning and Assessment Regulation 2000 gives the factors that must be taken into account when determining an activity under Part 5 of the EP&amp;A Act. These are explicitly addressed in Appendix C.</p> <p>Council is both the proponent and the determining authority for this proposal.</p>

Law, Policy or Regulation	Objective	Requirement for the proposal
<p><b>State Environmental Planning Policy (Infrastructure) 2007 (ISEPP)</b></p>	<p>The ISEPP aims to facilitate the effective delivery of infrastructure across the State.</p>	<p>As the proposal is not characterised as exempt development, it would be assessed under the provisions of the ISEPP in this REF.</p> <p>Clause 94 of the ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent. As the proposal is for road and road infrastructure facilities and is to be carried out by Council, it can be assessed under Division 5.1 of the EP&amp;A Act.</p> <p>Clause 65(3)(i) permits development may be carried out by or on behalf of a council without consent on a public reserve under the control of or vested in the council for the purposes roads, pedestrian pathways, cycleways, single storey car parks, ticketing facilities, viewing platforms and pedestrian bridges. As the proposal is for a pedestrian pathway and is to be carried out by Council, it can be assessed under Division 5.1 of the EP&amp;A Act.</p> <p>The proposal is not located on land reserved under the NSW <i>National Parks and Wildlife Act 1974</i> and does not require development consent or approval under State Environmental Planning Policy (Coastal Management) 2018, State Environmental Planning Policy (State Significant Precincts) 2005 or State Environmental Planning Policy (State and Regional Development) 2011.</p>



Law, Policy or Regulation	Objective	Requirement for the proposal
<b>State Environmental Planning (Coastal Management) 2018</b>	<p>The aim of this Policy is to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the NSW <i>Coastal Management Act 2016</i>, including the management objectives for each coastal management area, by:</p> <ul style="list-style-type: none"> <li>managing development in the coastal zone and protecting the environmental assets of the coast, and</li> <li>establishing a framework for land use planning to guide decision-making in the coastal zone, and</li> <li>mapping the 4 coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the <i>Coastal Management Act 2016</i>.</li> </ul> <p>The 4 coastal management areas include:</p> <ul style="list-style-type: none"> <li>Coastal wetland and littoral rainforest (and associated proximity areas)</li> <li>Coastal vulnerability area</li> <li>Coastal environment area</li> <li>Coastal use area.</li> </ul>	<p>The proposed works would not occur within land mapped as coastal wetlands and littoral rainforest or their proximity zones.</p> <p>Due to no mapping of the coastal vulnerability area, it is unknown if the proposed works would occur within the area. However, due to the works being located on the coast it is likely they would be located within this area.</p> <p>The proposed works are located within the Coastal environment area and coastal use area.</p> <p>This REF considers the proposed works impact on coastal processes, vegetation, access, amenity and heritage; refer to Section 6.</p>
<b>Biodiversity Conservation Act 2016 (BC Act)</b>	<p>The purpose of the NSW <i>Biodiversity Conservation Act 2016</i> (BC Act) is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development.</p>	<p>A Biodiversity Assessment (BA) was prepared for the proposal which considered impacts to BC Act and Commonwealth listed species under the EPBC Act.</p> <p>If proposed works are likely to impact on a listed (threatened) species or ecological community, s 7.3 of the BC Act contains five factors that can be used to determine whether the impact on the</p>

Law, Policy or Regulation	Objective	Requirement for the proposal
		<p>entity will be significant or not. Where a significant impact is likely to occur, a Species Impact Statement (SIS) or a Biodiversity Development Assessment Report (BDAR) must be prepared. The BA concluded that there is unlikely to be a significant impact on threatened species, populations or TECs as a result of the proposal and a BDAR or SIS is not required.</p> <p>This REF considers impacts to biodiversity in Section 0.</p>
<b>State Environmental Planning Policy (Koala Habitat Protection) 2019</b>	State Environmental Planning Policy (Koala Habitat Protection) 2019 (Koala Habitat Protection SEPP) aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline. The SEPP applies to each local government area (LGA) within Schedule 1.	<p>The study area is located within the Central Coast Council, which is listed in Schedule 1. Under the Central Coast koala management area, three of the listed koala tree species were found within the study area.</p> <p>Activities assessed under Division 5 of the EP&amp;A Act are not subject to the Koala Habitat Protection SEPP. Koalas and their habitats are assessed under the BC Act.</p> <p>This REF considers impacts to biodiversity in Section 0.</p>
<b>Biosecurity Act 2015 (NSW)</b>	The primary object of the NSW <i>Biosecurity Act 2015</i> (Biosecurity Act) is to provide a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers. The biosecurity framework and tools safeguard our economy, environment and community and any land managers and users of land have a responsibility for managing weed biosecurity risks that they know about or could reasonably be expected to know about.	<p>During site surveys as part of the BA, three priority weeds listed under the Priority weeds for the Greater Sydney region (NSW WeedWise) were recorded in the study area. This REF considers impacts from the spread of weeds and provides mitigation measures in Section 0.</p>

Law, Policy or Regulation	Objective	Requirement for the proposal
<b>National Parks and Wildlife Act 1974</b>	The objectives of the NSW <i>National Parks and Wildlife Act 1974</i> (NPW Act) are to conserve and preserve nature; conserve objects, places or features (including biological diversity) of cultural value within the landscape; foster public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation; and provide for the management of land reserved under this NPW Act.	Section 6.10 of this REF assesses the potential for the proposal to impact on Indigenous heritage.
<b>Water Management Act 2000</b>	<p>The NSW <i>Water Management Act 2000</i> (WM Act) provides for the sustainable and integrated management of the State's water for the benefit of both present and future generations. The WM Act controls the extraction and use of water, the construction of water bodies such as weirs and dams and any activity that is in or near water sources in NSW.</p> <p>Construction that is located within the 40 m prescribed distance of waterfront land requires a controlled activity approval.</p>	<p>As a public authority, Council have an exemption from Controlled Activity Approval (CAA) under Part 2, clause 41 of the Water Management (general) Regulation 2018.</p> <p>The proposal would not involve the extraction and use of water, nor the construction of water bodies such as weirs and dams.</p>
<b>Protection of the Environment Operations Act 1997 (POEO Act)</b>	The POEO Act is the primary legislation regulating pollution control and waste disposal in NSW. It establishes a structure for regulating polluting activities through Environment Protection Licences (EPLs).	<p>Council must ensure that all stages of the proposal are managed to prevent pollution, including pollution of waters.</p> <p>The contractor and Council are obliged to notify the relevant authorities (e.g. Environment Protection Authority (EPA)) when a 'pollution incident' occurs that causes or threatens 'material harm' to the environment.</p> <p>The proposal is not a 'scheduled activity' as per Schedule 1 of the Act, therefore does not require an EPL.</p> <p>Stockpiling and management of waste to ensure the quantities are maintained within the scheduled quantities – addressed in Section 6.6.3.</p>

Law, Policy or Regulation	Objective	Requirement for the proposal
<b>Heritage Act 1977</b>	The NSW <i>Heritage Act 1997</i> provides for the protection of non-indigenous heritage. Section 148 requires notification to the Heritage Branch of any discovery of relics.	Section 6.11 of this REF addresses potential impacts on non-indigenous heritage items or places.
<b>Roads Act 1993</b>	<p>The objectives of the NSW <i>Roads Act 1993</i> (Roads Act) are to:</p> <ul style="list-style-type: none"> <li>a) to set out the rights of members of the public to pass along public roads, and</li> <li>b) to set out the rights of persons who own land adjoining a public road to have access to the public road, and</li> <li>c) to establish the procedures for the opening and closing of a public road, and</li> <li>d) to provide for the classification of roads, and</li> <li>e) to provide for the declaration of RMS and other public authorities as roads authorities for both classified and unclassified roads, and</li> <li>f) to confer certain functions (in particular, the function of carrying out road work) on RMS and on other roads authorities, and</li> <li>g) to provide for the distribution of the functions conferred by this Act between RMS and other roads authorities, and</li> <li>h) to regulate the carrying out of various activities on public roads.</li> </ul>	The proposal is likely to generate a negligible temporary increase in local traffic during the construction phase. In the operational phase, there would be no increase in local traffic compared to the current condition. Section 6.8 of this REF addresses potential traffic impacts.

Law, Policy or Regulation	Objective	Requirement for the proposal
<b>Commonwealth Law</b>		
<b><i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i></b>	<p>The Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) regulates the assessment and approval of activities that would have or is likely to have a significant impact on Matters of National Environmental Significance (MNES), activities by Commonwealth government agencies and activities by any person on Commonwealth land.</p> <p>Currently MNES include:</p> <ul style="list-style-type: none"> <li>• World Heritage properties</li> <li>• National Heritage places</li> <li>• Wetlands of international importance (listed under the Ramsar Convention)</li> <li>• Nationally listed threatened species and ecological communities,</li> <li>• Migratory species (protected under international agreements)</li> <li>• Commonwealth marine areas</li> <li>• Great Barrier Reef Marine Park</li> <li>• Nuclear actions (including uranium mines)</li> <li>• A water resource, in relation to coal seam gas development and large coal mining development.</li> </ul>	<p>The potential for the proposed activity to impact on MNES has been assessed in Section 7.2 of this REF.</p> <p>The proposal is not likely to significantly impact on any matter of Commonwealth significance. An EPBC referral was originally lodged for a different design iteration for the proposal in 2017 for potential significant impacts on listed threatened species and communities (EPBC REF:2017/7926). On 17 July 2017, DAWE notified Council that the proposal was not a controlled action if undertaken in a particular manner.</p> <p>As the design of the proposal had been updated and consequently minimised impacts on listed threatened species and ecological communities, Council provided an update to DAWE in January 2021 on the current status of the proposal. DAWE concluded on 11 May 2021 that the proposal is not a controlled action if undertaken in a particular manner, refer to Section 5.2.1.</p> <p>The proposal as described in Section 3.1 in conjunction with the implementation of mitigation measures, as prescribed in Section 8, would ensure the proposal is carried out in accordance with the particular manner as stipulated by DAWE.</p> <p>See Section 5.2.1 regarding consultation below.</p>

## 5. CONSULTATION

### 5.1. ISEPP CONSULTATION

Part 2 of the State Environmental Planning Policy (Infrastructure) (ISEPP) contains provisions for public authorities to consult with public authorities prior to the commencement of certain types of development. This is detailed below.

Is consultation with Council required under clauses 13–15 of the infrastructure SEPP?		
<p><b>Are the works likely to have a substantial impact on the stormwater management services which are provided by council?</b></p> <p>Concrete drains/concrete verge drains would be installed where retaining walls are required along the pathway. These works are not anticipated to have a substantial impact on the stormwater management services provided by council.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Are the works likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?</b></p> <p>During construction, there would be an increase in the number of vehicles using local roads to access the site. This would include light vehicles, delivery vehicles and trucks. The works are not anticipated to generate traffic to an extent that would strain the existing road system.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Will the works involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of the system?</b></p> <p>Works would not involve connection to a council owned sewerage system.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Will the works involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?</b></p> <p>Works would not involve connection to a council owned water supply system.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?</b></p> <p>The proposal would involve temporarily closing the Red Gum carpark as it would be used for a site compound during the construction period. Pedestrian access to the existing trails would still be accessible from the southern end of the stage 1 shared pathway or from the northern end of the existing shared pathway from Evans Road. NPWS service vehicles and fire vehicles would still be able to access the tracks from any of the access points as required.</p> <p>As Council is both the proponent and the determining authority, Council consultation is not required.</p>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

Is consultation with Council required under clauses 13–15 of the infrastructure SEPP?		
<p><b>Will the works involve more than a minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?</b></p> <p>The proposal would not involve more than a minor inconsequential excavation of roads or adjacent footpaths for which council is the roads authority.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Is there a local heritage item (that is not also a state heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential?</b></p> <p>There are no locally listed heritage items or heritage conservation areas within the study area.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Is the proposal within the coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land?</b></p> <p>The proposal is not located within a Coastal wetland or proximity area for coastal wetlands (refer to <b>Figure 6-2</b>). At the time of writing, the coastal vulnerability area had not been mapped.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent? (Clause 15)</b></p> <p>The proposal is not located on flood liable land.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

Is consultation with public authorities other than councils required under clauses 15 and 16 of the infrastructure SEPP?		
<p><b>Are the works located on flood liable land? (to any extent) (Clause 15AA). If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance.</b></p> <p>The proposal is not located on flood liable land.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Are the works adjacent to a national park, nature reserve or other area reserved under the <i>National Parks and Wildlife Act 1974</i>, or on land acquired under that Act?</b></p> <p>The works are adjacent to Wyrabalong National Park. Consultation has occurred with the Department of Planning, Industry and Environment – Biodiversity Conservation Division (previously Office of Environment and Heritage, NSW NPWS); refer Section 5.2.3.</p>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

Is consultation with public authorities other than councils required under clauses 15 and 16 of the infrastructure SEPP?		
<p><b>Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?</b></p> <p>The proposal is not on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone, however, the proposal is adjacent to land zoned as E1.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Are the works adjacent to an aquatic reserve or a marine park declared under the <i>Marine Estate Management Act 2014</i>?</b></p> <p>The proposal is not adjacent to an aquatic reserve or a marine park declared under the NSW <i>Marine Estate Management Act 2014</i>.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Is the proposal in the Sydney Harbour Foreshore Area as defined by the <i>Sydney Harbour Foreshore Authority Act 1998</i>?</b></p> <p>The proposal is not in the Sydney Harbour Foreshore Area as defined by the NSW <i>Sydney Harbour Foreshore Authority Act 1998</i>.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional facility or group home in bush fire prone land?</b></p> <p>The proposal is not for the purpose of residential development, an educational establishment, a health services facility, a correctional facility or group home in bush fire prone land.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 km of the Siding Spring Observatory)</b></p> <p>The proposal would not increase the amount of artificial light in the night sky and is not on land within the dark sky region as identified on the dark sky region map.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhardt LEP 2012, Narrandera LEP 2013 and Urana LEP 2011).</b></p> <p>The proposal does not occur on buffer land around the defence communications facility near Morundah.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<p><b>Are the works on land in a mine subsidence district within the meaning of the <i>Mine Subsidence Compensation Act 1961</i>?</b></p> <p>The proposal is not located in a mine subsidence district.</p>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No



## **5.2. OTHER AGENCY AND COMMUNITY CONSULTATION**

Consultation has been undertaken by Council with the community and a number of agencies, including TfNSW (previously Roads and Maritime Services) and NPWS.

### **5.2.1. Department of Agriculture, Water and Environment**

In 2017, Council were progressing the project based on an early iteration of the current design. A Biodiversity Assessment was prepared by Keystone Ecological (Keystone Ecological, 2017) for this early iteration of the design under the then (NSW) *Threatened Species Conservation Act 1995* (now repealed by the BC Act) and lodged along with an EPBC referral (EPBC REF:2017/7926) with the former Department of the Environment and Energy (now the Department of Agriculture, Water and the Environment (DAWE)) in 2017 for potential significant impacts on listed threatened species and communities. On 17 July 2017, DAWE notified Council that the proposal was not a controlled action if undertaken in a particular manner. Refer to Appendix I to see the particular manner the proposal was to be undertaken in, per the 17 July 2017 decision.

Since the EPBC referral, Council have carried out further detailed design and amended the proposed design, resulting in a new project design which has minimised the impacts on ecological communities and threatened species. Council provided an update to DAWE on 13 January 2021 outlining the status of the proposal and specific updates responding to each of the 'manner in which proposed action must be taken'. A new Biodiversity Assessment has been prepared by NGH to assess the impact of the current proposal under the current legislation, BC Act (Appendix E).

An AoS was completed for Magenta Lilly Pilly and Littoral Rainforest CEEC (Appendix E). In both cases, a significant impact is not considered likely. For Magenta Lilly Pilly, this is largely due to the efforts to avoid loss of individuals of the local population such that only 5 would be removed. Impacts to Littoral Rainforest CEEC are contextually minor due to the size of the local extent of the community.

A significant impact to either Magenta Lilly Pilly or Littoral Rainforest CEEC is not anticipated based on the design, as described in Section 3.1 of this REF. DAWE provided written correspondence on 11 May 2021 indicating that the original decision of 17 July 2017 is revoked and substituted with a new decision that the proposed action is not a controlled action, provided it is taken in accordance with the manner described in the enclosed decision document. The manner in which the proposed action must be taken includes:

1. The person taking the action must not clear more than 2.76 ha of Littoral Rainforest. Native vegetation must only be cleared for the construction areas, as described in the Biodiversity Assessment and mapped at Annexure A.
2. The person taking the action must rehabilitate all construction areas to the original vegetation type within five years of commencing rehabilitation. Rehabilitation of construction areas in each sub-section of the pathway must commence immediately following the completion of construction work at that sub-section of the pathway. Rehabilitation must be in accordance with the National Standards for the Practice of Ecological Restoration.
3. The person taking the action must rehabilitate Littoral Rainforest so that it meets EPBC Act key diagnostic and condition threshold.
4. The person taking the action must not clear more than five individual Magenta Lilly Pilly (*Syzygium paniculatum*) trees as described in the Biodiversity Assessment and mapped at Annexure A.
5. The person taking the action must use local provenance Magenta Lilly Pilly (*Syzygium paniculatum*) for any rehabilitation planting.
6. The person taking the action must ensure that there is no increase in weed species cover within the project site compared to the baseline vegetation condition as described in the EPBC Act referral.
7. The person taking the action must implement best practice controls to prevent the invasion and spread of weeds on the project site and prevent the introduction of Myrtle Rust (*Puccinia psidii*) to the project site as a result of the action.

8. The person taking the action must implement regular monitoring capable of detecting any likelihood of failure to meet the above measures and maintain accurate records substantiating all activities associated with or relevant to these matters and provide such records to the Department upon request.

The REF has addressed the listed items from DAWE as follows:

1. The project has been altered from the original submission in 2017 and now includes clearing of 2.76 ha of Littoral Rainforest. The BA has assessed this impact in an Assessment of Significance (AoS). An Assessment of Significance (AoS) (EPBC Act) was undertaken to assess the severity of impact to Littoral Rainforest TEC; a significant impact to the TEC is not considered likely. This is largely due to the small area of clearing proposed relative to the surrounding extent of the TEC, which is likely to be over 140 ha (DPIE 2015). The REF commits to preparation of a Construction Flora and Fauna Management Plan including constructing the project in accordance with the REF, minimising clearing where possible, and temporary fencing to protect significant environmental features.
2. The REF includes commitments to rehabilitation of disturbed areas, as outlined in the Vegetation Management Plan (VMP) attached in Appendix H.
3. Plot data collected through the course of preparing the Biodiversity Assessment (Appendix E) has been used to inform the planting schedule proposed for the rehabilitation areas. The aim of the rehabilitation areas is to mimic, as best practicable, the pre-disturbance state of the Littoral Rainforest that would be impacted. This includes both cover and abundance of characteristic Littoral Forest species known to occur within the disturbed areas. After establishment of plantings, it is anticipated that the rehabilitation areas would satisfy the condition thresholds for listing as Littoral Rainforest under the EPBC Act.
4. The BA for the current proposal has assessed the impact on Magenta Lilly Pilly. Of the 36 Magenta Lilly Pilly individuals recorded during the 2019 surveys, five occur within the development footprint and would be removed. The REF commits to preparation of a Construction Flora and Fauna Management Plan including constructing the project in accordance with the REF, minimising clearing where possible, and temporary fencing to protect significant environmental features, including Magenta Lilly Pilly.
5. The REF includes a commitment to use local provenance of Magenta Lilly Pilly (*Syzygium paniculatum*) for any rehabilitation planting.
6. The REF includes a commitment to a Weed Management procedure to prevent and minimise the spread of weeds.
7. The REF includes a commitment to a Weed Management procedure including implementing best practice controls to prevent the introduction of Myrtle Rust (*Puccinia psidii*).
8. The REF includes a commitment to monitoring through the Construction Environmental Management Plan and FFMP during construction as well as during operation to monitor progress of rehabilitation.

Copies of the consultation is included in Appendix I.

The correspondence from DAWE on 11 May 2021 also included recommendations on behalf of the National Indigenous Australians Agency (NIAA) for Council to engage with the Darkinjung Local Aboriginal Land Council (LALC) regarding Indigenous cultural heritage matters, including on the development of a Cultural Heritage Management Plan. It was also noted that the NIAA encourage the engagement of Indigenous employees and businesses.

Council issued a copy of the Aboriginal Heritage Due Diligence Assessment (NGH, 2020) to the Darkinjung LALC and the Guringai LALC on 7 June 2021. Refer to Appendix G for the Aboriginal Heritage Due Diligence Assessment. Guringai LALC informally responded on 15 June 2021 via correspondence directed to NGH

and indicated that an Aboriginal Cultural Heritage Officer should have been present during the site survey carried out for the Aboriginal Heritage Due Diligence Assessment, given the known heritage sensitivity of the area. The due diligence process as per the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW, 2010) does not formally require consultation with Aboriginal community groups.

Council did not receive a formal response from Darnkinjung LALC or Guringai LALC within two weeks of initial correspondence.

### 5.2.2. TfNSW (Roads and Maritime)

Council consulted with TfNSW on 18 December 2018 (based on the previous 2018 design) in accordance with the requirements of Section 138 of the Roads Act as the proposal involves work with the TfNSW road corridor. Consultation was carried out again on the 7 July 2020 based on the current 2020 design. Subject to requests by TfNSW, Council provided an additional email on 4 August 2020 supplying the Detailed Design Report and an additional email on 5 August 2020 outlining proposed construction timing and construction movements.

On 19 October 2020, TfNSW responded indicating that they have no further comments to add at this stage, however as the project is in early stages, ongoing consultation with TfNSW project team is required.

Council would provide the REF to TfNSW once it is determined. Ongoing consultation would be carried out with TfNSW during construction.

Copies of all consultation is included in Appendix I.

### 5.2.3. NPWS

Consultation with NPWS was originally undertaken in December 2018 (2018 design), with ongoing discussions between Council and NPWS in early 2020 regarding the closing of Red Gum car park (also known as Burrawang carpark) and the crossing of fire trails. The outcomes of these discussions are provided in Table 5-1. Copies of the consultation is included in Appendix I.

Ongoing consultation would be carried out with NPWS during construction.

Table 5-1 NPWS and Council discussions

NPWS comment	Council Response
<b>Email consultation dated 1 May 2020.</b> <ul style="list-style-type: none"><li>Lilly Pilly Fire Trail (south access). Preference for improved/realigned access. Emergency vehicles cannot turn north from current departure angle and forces them across northbound traffic which creates a safety hazard.</li><li>Lilly Pilly Fire Trail (north access). Preference for realigned access (slight cutting) of bank to allow a wider departure angle for emergency service vehicles. Current departure angle forces vehicles across and into oncoming traffic.</li><li>Car park at southern end of Lilly Pilly Loop Trail.</li></ul>	<p>Council does not propose to alter the entry and egress points at the Lilly Pilly Fire Trail access as part of the scope of this proposal.</p> <p>Minor widening may be undertaken if any of the trail accesses are used as a construction access point, which would assist with NPWS concerns.</p> <p>A proposed future TfNSW road upgrade project would address NPWS concerns with Fire Trail accesses.</p>

NPWS comment	Council Response
<p><b>Email consultation dated 2 April 2019.</b></p> <ol style="list-style-type: none"> <li>1. Closure of Red Gum (Burrawang) carpark to visitors during the construction phase to visitors.</li> <li>2. Environmental assessment – lack of information provided regarding process of environmental assessment.</li> <li>3. Access improvements to fire trails for emergency services and National Parks and Wildlife Service.</li> <li>4. Visitor Infrastructure – including visitor facilities, signage and messaging. NPWS do not support the installation of a toilet at this location.</li> <li>5. Consistency with Wyrabalong National Park rules and regulations.</li> <li>6. Weed Management. Wyrabalong National Park would benefit from a collaborative approach to weed control along the shared pathway to improve environmental outcomes in this area.</li> </ol>	<ol style="list-style-type: none"> <li>1. Specific signage relating to the closure of the carpark and alternative access locations would be provided before and during the construction phase.</li> <li>2. Council would undertake all Environmental Assessments as required under Federal, State and Local Government legislation.</li> <li>3. As above.</li> <li>4. Signage and messaging at entry points to the National Park (including the Burrawang car park and Lilly Pilly trail heads) would be developed and installed in partnership with NPWS during the construction phase. Council agree that a toilet block is not suited at this location.</li> <li>5. As above – signage and messaging would be developed in partnership with NPWS at the time of installation.</li> <li>6. Weed management during construction would be controlled through mitigation measures provided within this REF and the Vegetation Management Plan. Council would work with NPWS in the long term regarding ongoing weed management.</li> </ol>

#### 5.2.4. Community Consultation

Council would undertake community consultation regarding the proposal following completion of the final detailed design.

No specific community consultation would be undertaken for this project (i.e. stage 2). Consultation carried out within the Central Coast Bike Plan (Central Coast Council, 2019) included scope of this proposal (it was listed as a priority project) and some targeted consultation was undertaken at the completion of the existing Stage 1 shared path.

The community would be notified of the construction timeframes once budget is allocated and approved.

## **6. ENVIRONMENTAL ASSESSMENT**

This section of the REF provides a detailed description and assessment of the potential environmental impacts associated with the construction and operation of the proposal. All aspects of the environment potentially impacted upon by the proposal are considered. This includes consideration of:

- Potential impacts on matters of national environmental significance under the EPBC Act
- The factors specified in the guidelines 'Is an EIS required?' (DUAP 1995/1996), as required under clause 228(1) of the Environmental Planning and Assessment Regulation 2000 and the Roads and Related Facilities EIS Guideline (DUAP 1996). The factors specified in clause 228(2) of the Environmental Planning and Assessment Regulation 2000 are also considered in Appendix C.

Site-specific safeguards and management measures are provided to mitigate the identified potential impacts.

### **6.1. TOPOGRAPHY GEOLOGY, SOILS AND CONTAMINATION**

#### **6.1.1. Existing environment**

##### **Topography**

The existing topography within the vicinity of the proposed shared pathway is very hilly, with the site located along the low lying (<40 metres above sea level) barrier dune system of Tuggerah Lake. The dune crests and swales are typically aligned perpendicular to the coast. The dunes are variable grade, up to 45% in certain areas, with undulating slopes concentrated towards the centre of the proposal area, with flatter grades experienced both to the north and south. To the west of the proposal area, the dunes transition to gently sloping tidal flats of Tuggerah Lake. To the east, the dunes transition to a coastal dune system of Pelican Beach.

##### **Geology**

Geological mapping of the Gosford-Lake Macquarie 1:100,000 geological map (NSW Government, 2015) shows the regional geology as being Quaternary 'Qhd' soils which is characteristic of having medium to fine-grained marine sand with podsols.

Outcropping occurs both to the north (Norah Head) and to the south (The Entrance), but generally does not occur in the proposal area. Bedrock refusal did not occur during the geotechnical investigations (GHD, 2018), so the proposal is unlikely to interact with geological features.

##### **Soils**

The DPIE eSPADE online tool (DPIE, 2020) shows the site is located in the Tuggerah soil landscape. The landscape is characterised by loose quartz dominated sand, containing some organic inclusions in the top layer. 'Severe' wind erosion has occurred within this soil landscape; attributed to sand mining and destabilisation of dunes from off-road vehicles. Limitations of this soil landscape that relate to the proposal include wind erosion, waterlogging (localised), steep slopes (localised), non-cohesive soils and a foundation hazard. The full soil landscape report is attached in Appendix D.

GHD undertook a geotechnical investigation of the proposal area (Appendix K of the Detailed Design Report attached in Appendix A) to assess the subsurface conditions along the alignment and to provide recommendations for the proposal's detailed design. The investigation was completed in November 2017 and comprised of the excavation of 12 boreholes and 19 auger holes. Boreholes were targeted along the pavement edge of Wilfred Barrett Drive and the proposed route to target boardwalk structures, whilst the auger holes were located in bushland north of Wilfred Barrett. Borehole and hand auger locations were

chosen based on the draft concept design, and as such not all boreholes were located at current proposed boardwalk structures as per the 100% detailed design.

Acid sulfate soil (ASS) risk mapping probability information from eSPADE (DPIE, 2020) shows the proposal area as being low probability (Figure 6-1) of having ASS 1–3 metres below ground surface. The GHD geotechnical investigation report identified there to be no mapped occurrences of Potential Acid Sulfate Soil (PASS) materials across most of the alignment, however, the source of information was dated 1997, and as such the eSPADE information is considered to be a more reliable indicator of probability.

## Contamination

Searches undertaken on 30 June 2020 of the section 58 and section 60 of the NSW *Contaminated Land Management (CLM) Act 1997* indicated that the proposal area has not been registered on the Record of Notices, or on the list of notified sites with regards to the Duty to Report Contamination.

### 6.1.2. Potential impacts

## Soil

### Construction

Potential impacts to soils as a result of the construction of the shared pathway would be associated with the excavation of the proposed corridor to allow for the installation of pavement on ground, boardwalks, retaining walls, and to meet desirable gradients in accordance with Austroads 'Guide to Road Design – Part 6A: Pedestrian and Cyclist Paths' (Austroads, 2017).

Results of the geotechnical investigation showed subsurface conditions encountered were predominantly medium grained sand of aeolian (wind-blown) origins. The aeolian sands sampled in hand auger holes was very loose to loose on the surface, becoming medium dense between approximately 0.8 m and 2.4 m depth in half of the test locations. The aeolian sands sampled in borehole locations were medium dense to between approximately 2 to 3.5 m in depth. Fill was encountered overlaying the aeolian sand at each of the 12 borehole testing locations. Results of laboratory testing support these logged descriptions of the sand soils as being predominantly medium grained sand with minor fine- and coarse-grained sand components, with little to no silt or clay components.

Prior to construction, foundations for fill embankments, cut floors and at-grade sections of subgrade would be stripped to remove uncontrolled fill, vegetation, topsoil, root affected or other potentially harmful materials. Stripped clean sands (with the exception of PASS) are expected to be re-used as engineered fill (fill used to fill in around retaining walls – boardwalks etc), and all other material stockpiled for later re-use in landscaping or for other appropriate purposes.

Given the predominantly sandy soils with challenges of soft soils, erosion, low cohesive strength and highly permeable soils, an at-grade pathway has been utilised where the natural ground profile allows the pathway to be sighted with minimal change in the natural surface profile. Minor cut and fill would be required to achieve desired grades. Revegetation adjacent to the pathway would be critical to stabilise disturbed areas from the construction works, and to minimise ongoing maintenance caused by erosion or wind-blown sand.

In sloped areas and rolling terrain boardwalks would be supported on concrete piles and pad footings.

Sandstone block gravity walls would be installed where battering cannot be used, with a maximum height of 4 m. Any backfill associated with the retaining walls would be required to be graded and compacted with porous fill with adequate sub-drainage to minimise hydrostatic pressures on the retaining walls.

Cut and fill batters are proposed to maintain appropriate grades along the route, with a maximum 3H:1V the preferred option for the design as this is expected to provide safety against slope instability. It is noted in section 4.4.2 of the detailed design report (Appendix A) that 4H:1V or shallower batters would be preferable to reduce the likelihood of erosion prior to revegetation of the disturbed areas.



Soil acidity testing was conducted as part of the geotechnical investigation (GHD, 2018). Field test results indicate that:

- None of the samples tested showed positive indicators of actual ASS material (pH results  $\leq 4$ ).
- Eleven samples showed positive indicators of potential ASS material.

In accordance with the 'Acid Sulfate Soil Manual' criteria an ASS management plan is required as pH exceeded at borehole HA08 (Acid Sulfate Soil Management Advisory Committee, 1998).

### **Operation**

During the early stages of operation of the shared pathway there is potential for increased erosion as vegetation has not had sufficient time to establish itself in the disturbed areas. Impacts are expected to be minimal given the stabilisation of disturbed areas following construction.

## **Contamination**

### **Construction**

Contamination from general construction works pose the biggest contamination risk to the proposal area. This includes:

- Concrete mix used for pathway construction has the potential migrate offsite and enter drainage lines if not managed correctly.
- Contamination of stockpiles by weed propagules if not correctly covered with a geotextile material or equivalent.
- Machine/equipment spills from construction machinery has potential to enter soils and drainage lines.

### **Operation**

There would be negligible impacts from contaminated soil during operation of the proposal associated with maintenance activities (e.g. pest/weed management, pathway maintenance, drainage maintenance).



Figure 6-1 Potential of Acid Sulfate Soils occurring within the proposal area



### 6.1.3. Safeguards and mitigation measures

Impact	Mitigation measures
<b>General</b>	<ul style="list-style-type: none"> <li>A Construction Environmental Management Plan (CEMP) would be prepared prior to the commencement of works and implemented through all phases of the proposed construction works. The CEMP would provide the framework for the management of all potential impacts resulting from the construction works and would detail the environmental mitigation measures to be implemented throughout the construction works.</li> </ul>
<b>Soil erosion and sedimentation</b>	<ul style="list-style-type: none"> <li>An erosion and sediment control plan will be prepared as part of the CEMP in accordance with Managing urban stormwater: soils and construction – Volume 1, 4th Edition (Landcom, 2004) and kept current and appropriate throughout the construction phase and would include the following as a minimum: <ul style="list-style-type: none"> <li>The area of potential soil exposure will be minimised.</li> <li>Progressive rehabilitation will occur during construction to minimise the amount of exposed soil at any one time.</li> <li>Erosion and sediment controls shall be installed at locations where ground disturbance would occur (prior to the disturbance) and maintained until works have been completed and areas have been stabilised.</li> <li>Clean run-off will be diverted to avoid disturbed areas.</li> <li>Upslope diversions will be installed where there is potential for surface water to impact stockpiles or exposed areas.</li> <li>Suitable erosion and sediment controls will be placed on the downslope side of stockpiles or where soils are exposed.</li> <li>Erosion and sediment controls will be inspected regularly and maintained in good working condition.</li> <li>Erosion and sediment controls will be inspected as soon as practical following significant rainfall events of greater than 20 mm within a 24-hour period.</li> <li>Material laydown areas will be located on asphalt or in other previously disturbed areas.</li> <li>Vehicle and machinery movements will be restricted as far as possible to minimise ground disturbance.</li> <li>Vehicles and machinery will not be parked on vegetated areas. Staff will park at designated parking areas.</li> <li>Vegetation cleared during the construction period to be mulched and used onsite for rehabilitation and erosion controls.</li> <li>Any backfill associated with the retaining walls shall be graded and compacted with porous fill with adequate sub-drainage to minimise hydrostatic pressures on the retaining walls. If excavated spoil requires off-site disposal, a waste classification assessment will be undertaken in accordance with the <i>Waste Classification Guidelines: Part 1 Classifying Waste</i> (NSW Environment Protection Authority, 2014) and disposed of appropriately.</li> </ul> </li> </ul>

Impact	Mitigation measures
	<ul style="list-style-type: none"> <li>- Periodic inspections of rehabilitated areas will be undertaken for 6-12 months after the completion of construction activities and maintenance (e.g. weeding and watering) carried out as required.</li> <li>- Topsoil will be stored separately to subsoil and used to rehabilitate disturbed land.</li> <li>- Waste will be managed to ensure quantities onsite at any one time do not exceed 1000 t.</li> </ul>
<b>Acid Sulfate Soils</b>	<ul style="list-style-type: none"> <li>• An acid sulfate soil management plan (ASSMP) in accordance with the Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998) shall be prepared for excavation in the low lying area of borehole HA08.</li> </ul>
<b>Pollution/contamination</b>	<ul style="list-style-type: none"> <li>• Vehicles, plant and equipment will be checked for leaks each day.</li> <li>• Spill kits will always be made available at the site throughout construction.</li> <li>• Bulk chemicals will not be stored on site.</li> <li>• All chemicals and fuels shall be stored in suitable bunded areas away from drainage lines. The capacity of the bunded area would be at least 120 per cent of the largest chemical container stored within the bunded area.</li> <li>• All staff will be appropriately trained through toolbox talks for the minimisation and management of accidental spills.</li> <li>• All staff will be appropriately trained through toolbox talks for the identification of contaminated material, such as asbestos, staining or odours.</li> <li>• If an unexpected find of contaminated material or suspected contaminated material occurs, works shall cease immediately, and the appropriate management requirements would be determined.</li> <li>• Concrete washout would be collected within a bunded area and disposed of at a licenced facility.</li> <li>• All refuelling will be carried out off-site, as far as practicable. If re-fuelling is to occur onsite, it will occur in a bunded area.</li> </ul>
<b>Geotechnical</b>	<ul style="list-style-type: none"> <li>• Backfill associated with the retaining walls shall be graded and compacted with porous fill with adequate sub-drainage to minimise hydrostatic pressures on retaining walls.</li> </ul>

## 6.2. HYDROLOGY, CATCHMENT VALUES AND WATER QUALITY

### 6.2.1. Existing environment

The proposal area is located adjacent to Tuggerah Lake to the west with the closest proximity being 70 m at the southern end of the proposed alignment (Figure 6-2) and the Pacific Ocean to the east. The location of the proposal is approximately 3 km north of the outfall of the Tuggerah Lakes estuary. While the proposal is located within the catchment of the Tuggerah Lakes estuary and the Pacific Ocean, these water bodies are unlikely to be directly affected by the proposal.

Recreational and commercial fishing are socially and economically important activities in the area. Both Tuggerah Lakes and the Pacific Ocean are important commercial and recreational fisheries.

Tuggerah Lake estuary is heavily influenced by human activities around the foreshores and throughout the catchment (Central Coast Council, 2020), with the Tuggerah Lakes Estuary Management Plan (TLEMP) being developed in the early 2000's between the former Wyong Shire Council, State Government and environmental experts to ensure a sustainable future of the Tuggerah Lakes estuary (Central Coast Council, 2020). Tuggerah Lake has a catchment area of 714.5 km<sup>2</sup>, and the estuary covers 80.8 km<sup>2</sup>, with an average depth of 2.4 m (DPIE, 2018).

Land clearing and change in surrounding land use has had detrimental effects on the water quality in Tuggerah Lake, causing loss of important natural filters such as aquatic vegetation, changed water flows, more pollutants/nutrients/sediments entering the water body and extensive foreshore modifications (Central Coast Council, 2020).

Mapped Coastal Wetlands and proximity areas are present west of the proposal area, with the proximity area being approximately 620 m away, and Coastal Wetland being approximately 700 m away. Given the distance between these sensitive environments and the proposal area, it is not anticipated that construction works would have any impact on these mapped areas.

## Review of Environmental Factors Magenta Shared Pathway



Figure 6-2 Coastal Management SEPP mapped area in relation to the proposed pathway



## 6.2.2. Potential impacts

### Surface Water

#### Construction

During construction, cleared areas, areas of excavation and stockpiles have the potential to be eroded by surface runoff. If not managed correctly, runoff could enter drainage lines and impact the adjacent Tuggerah Lake.

The proposal would add approximately 1.5 hectares of hardstand to the proposal area, with the removal of 4.99 hectares of vegetation for pathways, curtilage, compound/stockpile sites and access tracks. Hardstand surfaces are expected to increase the velocity and volume of surface water flows during rain events. In conjunction with this the removal of vegetation, which is important for stabilising soils, and reducing surface water runoff may exacerbate impacts. The removal of this vegetation is expected to increase the potential for erosion during rain events. Bulk earthworks would result in numerous cut and fill batters, proposed to be a maximum of 3H:1V. It is suggested in the detailed design report (Appendix A) that 4H:1V or shallower batters would be preferable to reduce the likelihood of erosion caused by surface water prior to revegetation of the disturbed areas

The combination of increasing hardstand areas, decreasing vegetation cover and steepening slopes is likely to increase the potential for erosion at the proposal area. Erosion and sedimentation control measures would be implemented (refer to Section 6.1.3). Whilst impacts would be minimised where possible, there is increased potential for erosion resulting in an increase in volumes of sediment that would flow to Tuggerah Lakes, however, with the implementation of mitigation measures proposed below the impact is likely to be low. It is expected the construction phase of the proposal would result in a minor short-term negative impact.

Drainage for the proposal includes the installation of seven culverts at chainages 665, 215, 1030, 1270, 1845, 2155 and 2425. Each culvert would be installed with scour protection, a rock lined drain, and layer of 100 DN (diameter nominal) basalt underlay. These culverts beneath the pathway are designed to prevent ponding during operation and divert surface water to the existing drainage lines. During construction, erosion and sediment controls would be required around culverts to prevent excess sediment from exposed soils entering any drainage lines. Inspection of culverts and erosion and sediment controls would be required at the start of each shift to ensure they are working effectively and there have been no discharges into drainage lines.

#### Operation

There is potential for increased surface runoff, particularly during the early stages of operation, following soil compaction from the construction phase. Once vegetation has established in the disturbed areas, surface water runoff impacts would be minimal.

### Groundwater

Groundwater was not encountered in any of the testing locations undertaken as part of the geotechnical investigation (Appendix F). The proposal would not impact on groundwater.

## 6.2.3. Safeguards and mitigation measures

Impact	Mitigation measures
<b>Erosion and sedimentation</b>	<ul style="list-style-type: none"><li>• Mitigation measures described in Section 6.1.3 will be implemented.</li><li>• Disturbed areas will be progressively stabilised.</li></ul>
<b>Pollution / contamination</b>	<ul style="list-style-type: none"><li>• Mitigation measures described in Section 6.1.3 will be implemented.</li></ul>

Impact	Mitigation measures
<b>Drainage</b>	<ul style="list-style-type: none"> <li>Any negative impacts observed during construction and operation to the natural drainage system during works in the corridor will be reported to the Project Manager.</li> <li>Water or wastewater will not be discharged to stormwater, creeks, and drainage channels or into surrounding land.</li> </ul>

## 6.3. CLIMATE AND AIR QUALITY

### 6.3.1. Existing environment

#### Air quality

The closest Bureau of Meteorology weather monitoring site in the vicinity of the proposal is Norah Head AWS (ID 061366). The recorded mean maximum temperature for 2019 in the area varies from 18.5°C to 27.9°C and the recorded mean minimum temperature for 2019 varies from 10.3°C to 20.8°C (Bureau of Meteorology, 2020). The area had an annual rainfall of 1175.2 mm (Bureau of Meteorology, 2020) in 2018. Highest risk periods of heavy rain and localised flooding is February to June.

The main source of air emissions within the study area generally come from the adjacent road (Wilfred Barrett Drive) from motor vehicles. The remaining surrounding environment includes Wyrabalong National Park, Magenta Shores Golf Course, Magenta Shores Resort and residential properties and Tuggerah Lake. The nearest residents are located approximately 220 m east of the proposal area. As residents would be exposed to potential air emissions for longer than holiday makers, they stand to experience greater negative impacts.

Air quality data sourced from DPIE's air quality monitoring station at Wyong for 2019 is presented in Table 6-1. The monitoring station at Wyong is the closest station to the proposal. The time period of 1 September 2019 to 31 December 2019 was chosen to avoid the period of bushfires NSW experienced in 2020, which would skew the data. However, it is noted that smoke haze was experienced from early November 2019.

Table 6-1 Air quality data for Wyong 2019 (DPIE, 2019)

Pollutants	Sulfur dioxide SO <sub>2</sub>	Nitrogen Oxide NO	Nitrogen Dioxide NO <sub>2</sub>	Ozone 1hr average	Ozone 4hr average	Particles PM <sub>10</sub>	Particles PM <sub>2.5</sub>	Visibility NEPH
Measurement	pphm	pphm	pphm	pphm	pphm	µg/m <sup>3</sup>	µg/m <sup>3</sup>	bsp
January	0.1	0.1	0.3	1.9	1.9	24.5	8.4	0.35
February	0.1	0.2	0.2	1.7	1.6	18.5	6.5	0.18
March	0.1	0.1	0.3	1.7	1.7	19.7	6.9	0.23
April	0.1	0.2	0.4	1.4	1.4	15.3	7.1	0.19
May	0.1	0.4	0.5	1.3	1.3	13.9	7.8	0.22
June	0.0	0.3	0.5	1.6	1.4	9.5	6.6	0.14
July	0.0	0.4	0.5	1.6	1.6	11.1	7.3	0.13
August	0.0	0.2	0.1	2.0	1.9	14.8	7.1	0.15
September	0.1	0.3	0.4	2.0	2.0	16.8	6.5	0.17



Pollutants	Sulfur dioxide SO <sub>2</sub>	Nitrogen Oxide NO	Nitrogen Dioxide NO <sub>2</sub>	Ozone 1hr average	Ozone 4hr average	Particles PM <sub>10</sub>	Particles PM <sub>2.5</sub>	Visibility NEPH
October	0.1	0.1	0.4	2.2	2.2	24.5	11.2	0.42
November	0.1	0.1	0.3	2.4	2.4	42.8	19.6	0.85
December	0.1	0.1	0.3	2.5	2.4	47.1	27.4	1.37

Exceedances above Air National Environment Protection Measures (NEPM) standards are highlighted in red. Nitrogen dioxide and both ozone levels exceeded the NEPM standards for every month of 2019 except for Nitrogen Dioxide in August.

### 6.3.2. Climate projections

Within the coastal environment, sea level rise poses one of the biggest risks from climate change, as this can result in inundation of low-lying areas, erosion of coastlines and greater extents of flooding during storm surge events. Through time, climate change will result in greater climatic variance from historical norms. Similarly, sea level rise will have worse effects through time.

Coastal inundation based on a sea level rise of 0.74 m is shown in Figure 6-3. The alignment of the proposed pathway is outside of the areas that are predicted to be inundated in this scenario.

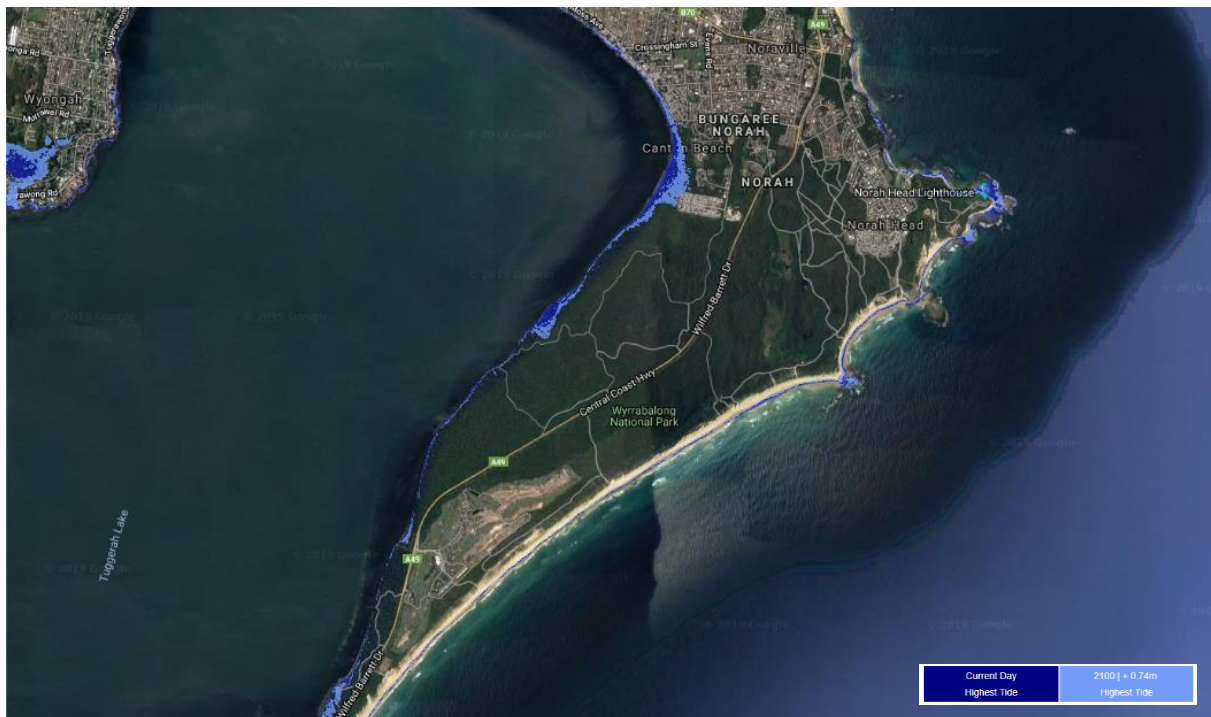


Figure 6-3 Predicted areas of coastal inundation (ngis/Frontier SI, 2019)

### **6.3.3. Potential impacts**

#### **Air quality**

##### **Construction**

The proposal is likely to generate some minor air quality impacts during construction. Potential sources of airborne pollution include:

- Exhaust fumes from construction plant
- Generation of fine saw dust during the removal of the trees
- Dust generated during bulk earthwork
- Welding fumes during metal work
- Dust may also be produced by the transportation of materials and wind on exposed areas or material stockpiles.

The construction air quality impacts would be short term. Relatively large distances occur between the proposed work and residential receivers (closest residents being approximately 220 m east of the proposal area). These residents and users of the Magenta Shores golf course and Wyrabalong National Park would be closest to potential air quality emissions; however, the impacts are likely to be low due to the scope of the works, proximity and screening from vegetation as well as the duration of their exposure. The impacts of construction would be further minimised by the safeguards identified in Section 6.1. Because of these factors, the construction air quality impacts are considered minor short-term impacts.

Clearing of up to 4.99 hectares of vegetation (further discussed in Section 0) would result in the loss of ecological function of this vegetation. Plants play an important role in improving air quality; some studies indicate that proximity to vegetation is a more important factor than proximity to traffic for urban air quality. Due to the proximity to sensitive receivers this impact is considered negligible.

##### **Operation**

By providing the final link in the shared pathway, and therefore encouraging the use of transportation other than motor vehicles (cycling, walking etc) discussed in Section 6.8, the proposal may reduce the number of cars using Wilfred Barrett Drive, and may reduce the need for traffic to slow down, improving efficiency, and in turn result in long term air quality benefits. It is unclear the level of reduction in vehicular traffic that would occur as a result of this proposal, however, it is considered that a minor positive impact would occur.

It is anticipated that rehabilitation activities carried out during construction would assist in reducing air quality impacts in the operational phase, such as through tree plantings which would contribute to long-term positive benefits of carbon capture. Vegetation cleared during the construction period would also be mulched and used onsite for rehabilitation and erosion controls, thereby reducing the potential for windborne dust emissions from exposed soils during the operational phase.

#### **Climate change**

The proposal is located outside of the projected inundation areas. Therefore, it is considered there are no specific impacts to the proposal that would result from climate change within the lifetime of this infrastructure.

#### 6.3.4. Safeguards and mitigation measures

Impact	Mitigation measures
<b>Airborne pollution</b>	<ul style="list-style-type: none"> <li>• Mitigation measures described in Section 6.1 will be implemented.</li> <li>• Works likely to generate dust will be avoided where possible during strong winds or weather conditions where high levels of dust is likely.</li> <li>• Activities involving excavation or disturbance of soils or vegetation must implement controls to prevent and/or minimise the generation of dust as required (i.e water carts or apply soil binders for dust suppression as required).</li> <li>• Minimise vehicle movement and speed on unsealed tracks and access paths.</li> <li>• All plant and equipment must be serviced regularly to ensure exhaust emissions generated are within the specified plant and equipment standards.</li> <li>• If dust is observed migrating offsite, additional dust controls such stopping works in high wind conditions or use of water carts, water sprays or application of dust suppression polymers.</li> <li>• Machinery must not be left running idle when not in use.</li> </ul>
<b>Climate change</b>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

## 6.4. BIODIVERSITY

### 6.4.1. Approach

A Biodiversity Assessment (BA) was prepared by NGH to assess the impacts of the proposal in relation to biodiversity. The assessment is provided in Appendix E and is summarised below.

The following definitions are used for the purposes of the BA:

- Development footprint – The sum area of the permanent and temporary development footprint.
- Study area – The land that has been assessed for the purposes of this BA, inclusive of the development footprint and a 5 m buffer from the edge of the development footprint.

#### Background review

Background searches were undertaken prior to commencement of field surveys to determine whether any threatened flora and fauna species, populations, ecological communities, migratory species and Areas of Outstanding Biodiversity Value (AOBVs), as detailed in State (BC Act) and Commonwealth (EPBC Act), occur or are likely to occur within the study area. In addition to this, searches of the groundwater dependent ecosystems database and priority weeds database were also undertaken (Table 6-2).

Table 6-2 Database searches for threatened species and communities, groundwater dependent ecosystems and priority weeds

Resource	Target	Search date	Search area
<b>NSW BioNet Atlas</b>	Threatened flora and fauna species, populations and ecological communities listed under the BC Act	21/10/20	10 km radius of the study area
<b>EPBC Act Protected Matters Search</b>	Threatened flora and fauna, endangered populations and ecological communities and migratory species	21/10/20	10 km radius of the study area
<b>DPI Weed Wise</b>	Priority weeds declared in the Sydney Region which encompasses Central Coast Council LGA	06/10/20	Central Coast LGA
<b>Bureau of Meteorology National Atlas of Groundwater Dependent Ecosystems</b>	Vegetation communities that are likely to rely on groundwater.	21/10/20	Locality
<b>BioNet Vegetation Classification</b>	Plant Community Type (PCT) identification.	21/10/20	Wyong IBRA Subregion

### Site Inspection

A site assessment of the study area was undertaken between August 2019 to October 2019 by NGH ecologists (refer to Section 3.2 of Appendix E) for more detailed information on survey periods for targeted species). Criteria recorded during the site inspection included:

- Native flora species and vegetation communities present.
- Plots according to the Biodiversity Assessment Method (BAM) were undertaken at four locations throughout the three PCTs identified within the study area.
- Targeted searches for threatened species identified during background searches, if suitable habitat was present.
- Opportunistic fauna sighting.
- Weed species present and their abundance.

### Vegetation survey

Detailed plot data (in accordance with the Biodiversity Assessment Method (BAM) 2017) was used to stratify and map the study area to reflect the Plant Community Types (PCTs) present. Four plots were undertaken throughout the three PCTs identified within the study area. A random meander was also conducted across the study area.

### Targeted survey

Targeted surveys were undertaken for 52 threatened flora and fauna species that habitat assessment identified as having real potential to occur within the study area. A combination of diurnal, nocturnal and passive surveys were undertaken by NGH ecologists. The species targeted are listed in Appendix E.

Not all threatened species considered with a real possibility to occur within the study area could be targeted due to either unfavourable timing or conditions; these species are:

- Wallum Froglet *Crinia tinnula* (BC Act - Vulnerable)
- Mahoney's Toadlet *Uperoleia mahonyi* (EPBC Act -Endangered).

Targeted flora and fauna survey methods and weather conditions can be viewed in Appendix E.

### **6.4.2. Existing environment**

#### **Flora**

About 8.2 ha of native vegetation occurs within the study area comprised of Littoral Rainforest, Sydney Red Gum dominated coastal sand woodland and Coast Tea-tree Coast Banksia dominated scrub and forest.

89 plant species were identified within the four vegetation integrity survey plots, including 80 native species and nine exotic species. The results of the plot field data can be found in Appendix E.

#### **Plant Community Types**

Based on the field surveys, three PCTs were identified to occur within the study area, being:

- PCT 771: Coast Banksia - Coast Tea-tree low moist forest on coastal sands and headlands, Sydney Basin Bioregion and South East Corner Bioregion;
- PCT 1536: Tuckeroo - Lilly Pilly - Coast Banksia littoral rainforest; and
- PCT 1646: Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast.

Existing vegetation mapping suggested that the study area is likely to contain only PCTs 1536 and 1646. However, based on field survey, PCT 771 was also deemed to occur. PCT 771 represents a tonal community that contains rainforest elements as well as dryer heath/scrub species such as Tree Broom-heath and Coastal Teatree. PCT 771 occurs in the south of the study area as well as in between PCT 1536 and PCT 1646 in the north of the study area.

PCT 1832: Tuckeroo - Lilly Pilly - Cheese Tree littoral rainforest on sand dunes in the Sydney basin, is a littoral rainforest PCT known to be present within Wyrabalong National Park according to the BioNet Vegetation Classification (BioNet VC). However, PCT 1536 was found to be a stronger fit for the littoral rainforest vegetation present within the study area due to a higher number of flora species characteristic of PCT 1536 being recorded, particularly vines/scramblers.

#### **Threatened Ecological Communities**

Searches of the NSW BioNet database identified 15 Threatened Ecological Communities (TEC)s with potential to occur within the locality.

The three PCTs identified within the study area were assessed to confirm if they correspond to TECs under the BC Act or EPBC Act. PCT 1536 was confirmed to represent the following BC Act and EPBC Act listed TECs:

- Littoral rainforest in the NSW North Coast, Sydney Basin and South East Corner bioregions (BC Act – Endangered) (Littoral Rainforest EEC); and
- Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (EPBC Act – Critically Endangered) (Littoral Rainforest CEEC).

A summary of the assessment is provided in Table 6-3, while the full assessment is provided in Appendix E. TECs can be seen in Figure 6-4 to Figure 6-6.

Table 6-3 PCTs in the study area and corresponding BC Act and EPBC Act TECs

PCT	BC Act TEC	EPBC Act TEC
<b>PCT 771: Coast Banksia - Coast Tea-tree low moist forest on coastal sands and headlands, Sydney Basin Bioregion and South East Corner Bioregion</b>	N/A  PCT 771 is not associated with any TEC	N/A  PCT 771 is not associated with any TEC
<b>PCT 1536: Tuckeroo - Lilly Pilly - Coast Banksia littoral rainforest</b>	PCT 1536 within the study area represents <i>Littoral rainforest in the NSW North Coast, Sydney Basin and South East Corner bioregions</i> (Littoral Rainforest EEC)  Listed as Endangered	PCT 1536 within the study area meets the key diagnostic and condition thresholds for <i>Littoral Rainforest and Coastal Vine Thickets of Eastern Australia</i> (Littoral Rainforest CEEC)  Listed as Critically Endangered
<b>PCT 1646: Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast</b>	N/A  PCT 1646 is noted as being associated with River-flat eucalypt forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions (River-flat Eucalypt Forest, BC Act – endangered) within the BioNet VC. However, the biodiversity assessment concluded that PCT 1646 within the study area is not consistent with River-flat Eucalypt Forest.	N/A



**Review of Environmental Factors**  
**Magenta Shared Pathway**



Figure 6-4 Threatened ecological communities (Map 1 of 3)





Figure 6-5 Threatened ecological communities (Map 2 of 3)



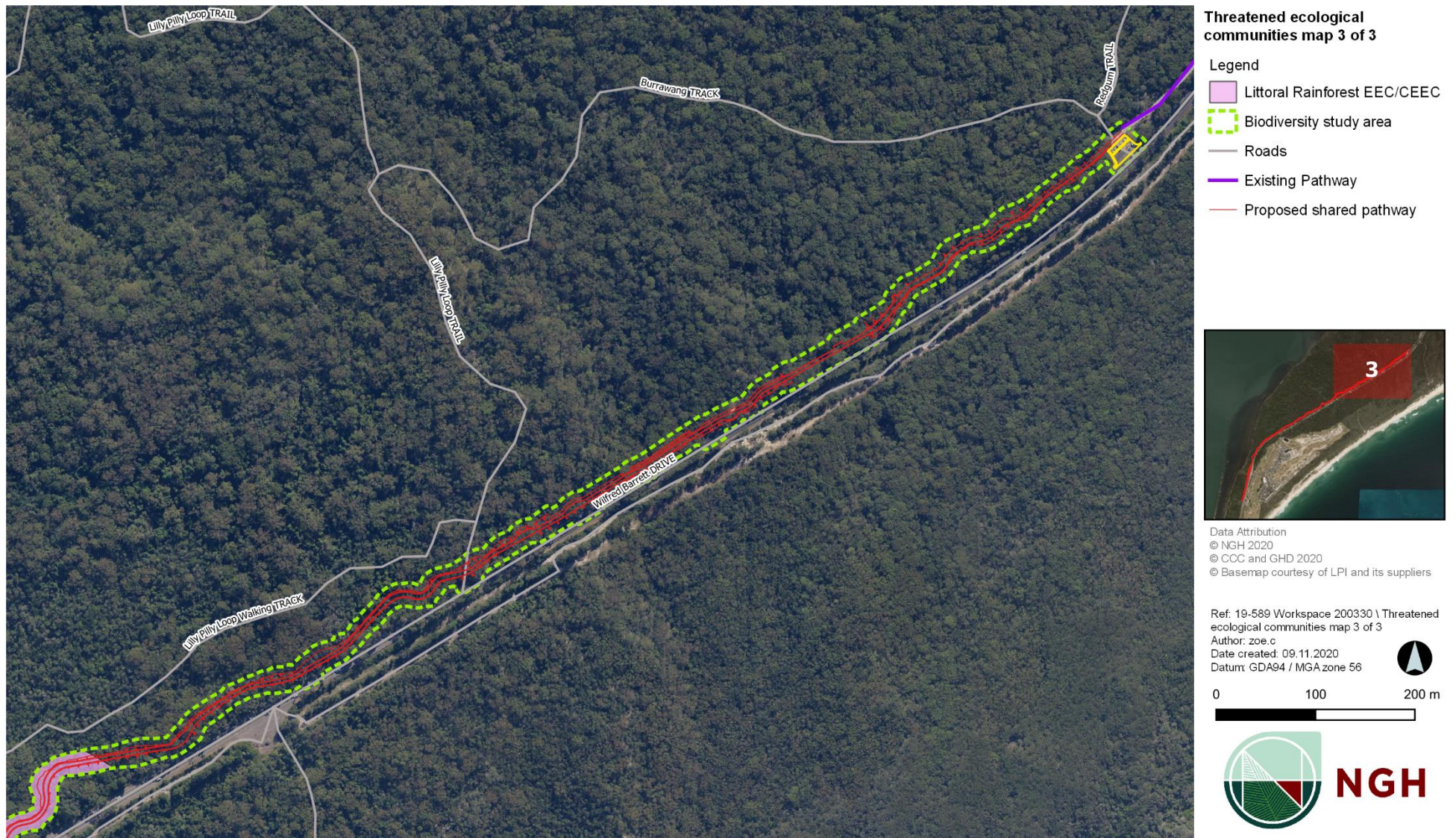


Figure 6-6 Threatened ecological communities (Map 3 of 3)



### Threatened flora species

Searches of the NSW BioNet database identified 19 threatened flora species under the BC Act with potential to occur within the locality. The following threatened flora species were actively searched for during an appropriate time of year:

During the surveys, only Magenta Lilly Pilly was recorded with a total of 36 within the study area. These individuals are members of the Central Coast metapopulation of the species which is thought to number over 100 mature individuals (Keystone Ecological, 2017). No other targeted flora species were found to be present within the study area or are considered likely to occur.

### Groundwater dependent ecosystems

The majority of vegetation within the study area and broader region has a moderate to high potential for groundwater dependent interaction (Figure 6-7).

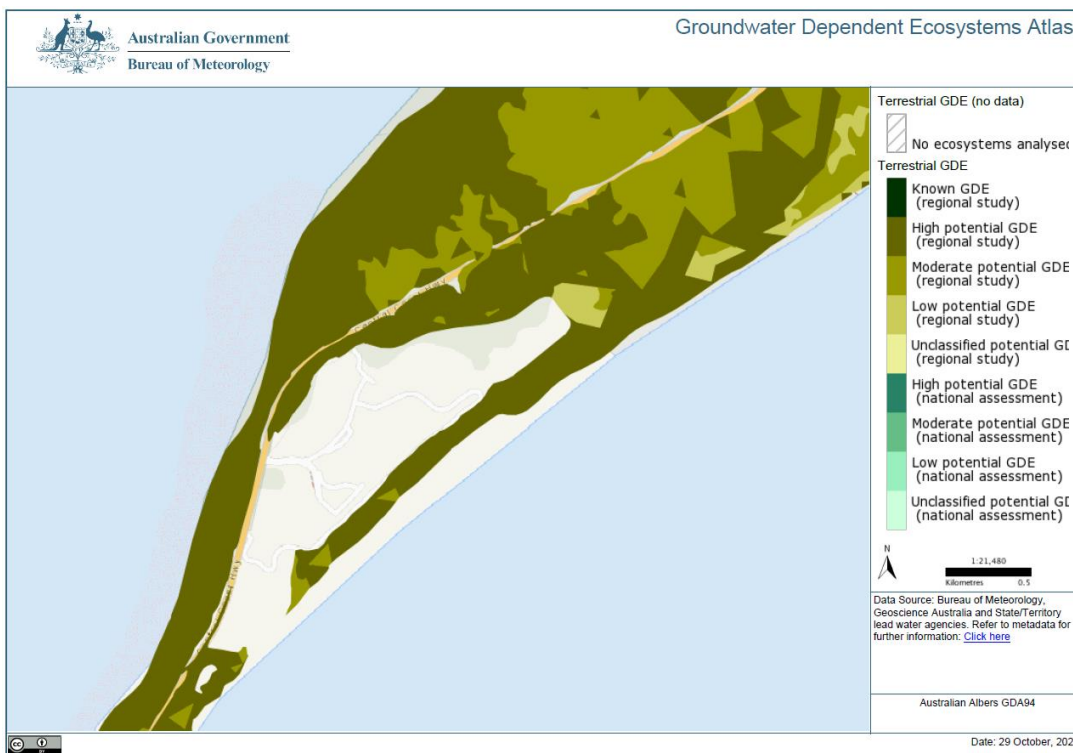


Figure 6-7 GDEs mapped for the study area and surrounds

### Priority weeds

Of the 89 flora species identified in the study area, nine species (10%) were exotic species commonly found in disturbed areas. The Biosecurity Act dictates that all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any land managers or authorities who deal with any plant has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

Four priority weeds listed under the Priority weeds for the Greater Sydney region (NSW WeedWise) were recorded in the study area (Table 6-4).

Table 6-4 Identified priority weeds

Species	Duty
<u>Fireweed</u> <i>Senecio madagascariensis</i>	Prohibition on dealings <i>Must not be imported into the State or sold</i>
<u>Ground asparagus</u> <i>Asparagus aethiopicus</i>	Prohibition on dealings <i>Must not be imported into the State or sold</i>
<u>Lantana</u> <i>Lantana camara</i>	Prohibition on dealings <i>Must not be imported into the State or sold</i>
<b>Bitou Bush</b> <b><i>Chrysanthemoides monilifera</i></b> <b>subsp. <i>rotundata</i></b>	Prohibition on dealings <i>Must not be imported into the State or sold</i>

#### Fauna habitat

No karsts, caves, crevices, cliffs, rocky outcrops, or human-made structures occur within the study area. The habitat present is governed by the PCTs that occur, this includes foraging, refuge, traversal and breeding habitat for a wide range of fauna classes. Forty-one hollow-bearing trees (HBTs) were recorded which provide potential habitat for hollow-dependent fauna including birds, arboreal mammals and microbats.

#### Threatened fauna species

Database searches identified 104 threatened fauna species with potential to occur within the locality. Targeted surveys were undertaken for all those considered to have a real possibility of occurring within the study area with the exception of Wallum Froglet and Mahony's Toadlet. This is due to a lack of sufficient rainfall during the optimal survey periods for these species. These two amphibians have been assumed to occur within the PCTs that they are associated with, which is PCT 1646 for Mahony's Toadlet, and PCT 1646 and PCT 771 for Wallum Froglet.

The only threatened fauna recorded during the targeted survey program were four threatened microbats, all listed under the BC Act only:

- Eastern Coastal Free-tailed Bat *Mormopterus norfolkensis* (BC Act – Vulnerable) (Definite)
- Little Bent-winged Bat *Miniopterus australis* (BC Act – Vulnerable) (Possible)
- Yellow-bellied Sheath-tail-Bat *Saccolaimus flaviventris* (BC Act – Vulnerable) (Definite)
- Southern Myotis *Myotis macropus* (BC Act – Vulnerable) (Probable).

#### Aquatic habitat

No rivers or streams occur within the study area; however, Tuggerah Lake is located approximately 95 m to the west at its closest point. Foreseeably, rainfall that falls within the study area may feed the lake, but this process alone is unlikely to sustain the lake or be integral to its persistence.

#### EPBC Act Matters of National Environmental Significance

An EPBC Act Protected Matters Search Report (PMST) was undertaken most recently on 29 October 2020 (10 km buffer of the study area) to identify Matters of National Environmental Significance (MNES) that have the potential to occur within the study area (Appendix E). MNES within the study area summarised below in Table 6-5.

Table 6-5 MNES within the study area

MNES	Relevance to or presence within the study area
<b>Wetlands of International Importance</b>	No wetlands of international importance were returned from the PMST.
<b>TECs</b>	<p>Three TECs were returned from the PMST. These are:</p> <ul style="list-style-type: none"> <li>• Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community – Endangered</li> <li>• Littoral Rainforest and Coastal Vine Thickets of Eastern Australia – Critically Endangered</li> <li>• Subtropical and Temperate Coastal Saltmarsh – Vulnerable.</li> </ul> <p>PCT 1536 is considered to represent Littoral Rainforest and Coastal Vine Thickets of Eastern Australia. No other EPBC Act listed TECs are considered to occur within the study area.</p>
<b>Threatened species</b>	83 threatened species were identified in the PMST (DAWE 2020b) as having potential to occur within 10 km of the study area. A habitat assessment was undertaken to determine the likelihood of these species being present within the study area (Appendix E). One species, Magenta Lilly Pilly (EPBC Act-Vulnerable), was recorded. No other nationally listed threatened species are considered likely to utilise the study area post targeted surveys.
<b>Migratory species</b>	77 migratory species were identified in the PMST as having potential to occur within 10 km of the study area. A habitat assessment was undertaken to determine the likelihood of these species being present within the study area with marine migratory species excluded for practical reasons. The habitat assessment did not identify any migratory species considered to have more than a transient likelihood of utilising the habitats at the study area.



### 6.4.3. Potential impacts

#### Flora

Impacts on flora as a result of the proposal are summarised in Table 6-6.

Table 6-6 Flora impacts as a result of the proposal

Flora impacts	Description
Loss of vegetation	<p>Habitat clearance would occur for permanent and temporary construction facilities (e.g. pathway and curtilage, compounds sites, stockpile sites, access tracks. As such, the proposal would result in the loss of up to 4.99 ha of native vegetation. This would include:</p> <ul style="list-style-type: none"> <li>• 2.76 ha of PCT 1536,</li> <li>• 0.7 ha of PCT 1646, and</li> <li>• 1.53 ha of PCT 771.</li> </ul> <p>Note that 1.82 ha of this vegetation would be rehabilitated (refer to Appendix H to see the rehabilitated extent).</p>
TEC	<p>Approximately 2.76 ha of Littoral Rainforest TEC (PCT 1536) would be removed as a result of the proposal. This community is listed as Endangered under the BC Act and Critically Endangered under the EPBC Act. About 1.05 ha of this TEC would be rehabilitated.</p> <p>A Test of Significance (ToS) (BC Act) and Assessment of Significance (AoS) (EPBC Act) were undertaken to assess the severity of impact to Littoral Rainforest TEC. In both cases, a significant impact to the TEC is not considered likely. This is largely due to the small area of clearing proposed relative to the surrounding extent of the TEC which is likely to be over 140 ha (DPIE 2015).</p>
Threatened flora	<p>Of the 36 Magenta Lilly Pilly individuals recorded during surveys, five occur within the development footprint and would be removed. Approximately 2.76 ha of potential habitat for this species would be removed (PCT 1536), with 1.05 ha subsequently rehabilitated (as shown in Appendix H). To assess the severity of this impact, a ToS and AoS were undertaken. In both cases, a significant impact to Magenta Lilly Pilly is not considered likely. This is due to only five individuals being proposed to be removed with the local population likely to number over 106 mature individuals (Keystone 2017). Given the surrounding extent of habitat (Littoral Forest) is likely to be over 140 ha (DPIE 2015), the local population may be greater than what is known.</p> <p>No other threatened flora species are likely to be impacted by the proposal.</p>

## Fauna

Impacts on fauna as a result of the proposal are summarised in Table 6-8.

Table 6-7 Flora impacts as a result of the proposal

Flora impacts	Description
Habitat loss	The proposal would result in the loss of up to 4.99 ha of vegetation that would provide habitat for a range of birds, mammals, reptiles and microbats. 1.82 ha would be rehabilitated.
Loss of hollow bearing trees and logs	<p>Surveys across the study area identified 45 HBTs, of which 17 are within the development footprint and earmarked for removal. The proposal would remove the following HBTs:</p> <ul style="list-style-type: none"> <li>• 13 HBTs from PCT 1536</li> <li>• 1 HBT from PCT 1646</li> <li>• 3 HBTs from PCT 771.</li> </ul> <p>Some HBTs occur within the development footprint that can be avoided.</p>
Threatened fauna	<p>Four species of threatened microbats were recorded during the targeted survey program, all of which, except Little Bent-wing Bat, are known to roost in tree hollows.</p> <p>Mahoney's Toadlet is known to breed in northern sections of Wyrabalong National Park. The species is thought to have moderate dispersal capability as females have been recorded up to 400 m from waterbodies (DPIE 2020). Accordingly, vegetation within the study area in the north (PCT 1646), may be utilised by this species for movement between breeding habitat. Wallum Froglet, not known to have similar dispersal capability, is likely to occur within Wyrabalong National Park, as indicated by BioNet records.</p> <p>Tests of Significance (ToS) were undertaken for the following hollow-dependent and non-hollow dependent microbat species:</p> <ul style="list-style-type: none"> <li>• Eastern Coastal Free-tailed</li> <li>• Little Bent-winged Bat</li> <li>• Yellow-bellied Sheath-tail-Bat</li> <li>• Southern Myotis</li> <li>• Eastern False Pipistrelle</li> <li>• Greater Broad-nosed Bat</li> <li>• Little Bent-winged Bat</li> <li>• Large Bent-winged Bat.</li> </ul> <p>ToS were also conducted for Mahony's Toadlet and Wallum Froglet. In all cases, a significant impact to the threatened species concerned is not considered likely. All ToS can be found in Appendix E.</p>
Injury and mortality	Given the narrow nature of the development footprint, the likelihood of threatened species being struck by a construction vehicle or flushed into the path of vehicles using Wilfred Barret Drive is low. The temporary fencing used for the proposal

Flora impacts	Description
	<p>would include measures such as sediment fencing to exclude threatened amphibians during construction. This fence would be monitored regularly and to further mitigate the risk of vehicle strike, pre-clearing inspections would be undertaken the night before each day's clearing and all clearing would be undertaken under ecological supervision.</p> <p>Despite the mitigation measures outlined in Section 6.4.4, potential increase in the risk of vehicle strike to threatened fauna cannot be completely avoided. However, this risk is considered minimal in comparison to the risk currently posed by Wilfred Barret Drive.</p>
Wildlife connectivity and habitat fragmentation	<p>The study area is located within a substantial patch of native bushland dominated by Wyrabalong National Park. Connectivity in this landscape is largely unimpeded in a north-south direction, however, Wilfred Barret Drive poses an impediment and hazard to the movement of less mobile fauna groups such as amphibians in an east-west direction. Wilfred Barret Drive is unlikely to prevent movements of highly mobile threatened species such as Southern Myotis.</p> <p>The pathway is proposed to be sited away from Wilfred Barret Drive and allow for some vegetation to remain between the pathway and Wilfred Barret Drive as much as possible. This is to not exacerbate the impediment that the roadway presents to the movement of some less mobile threatened fauna such as Mahony's Toadlet.</p> <p>A temporary impediment would be generated for the passage of ground dwelling species during construction through the use of temporary fencing.</p> <p>Following rehabilitation of disturbed areas, the cleared corridor for the proposal would be narrow in an otherwise heavily vegetated landscape. The artificial surface, albeit minor, would be introduced to the landscape that threatened species such as Mahoney's Toadlet may need to traverse. There would be an increase in the disconnect of vegetation either side of Wilfred Barret Drive where the proposal abuts this roadway. However, this would not make this area impassable for ground dwelling species. Canopy trees either side of pathway will remain in such proximity that movement of highly mobile species is unlikely to be impacted. Furthermore, the finished pathway would not prevent the movement of less mobile fauna as no significant barriers or disconnects would be generated.</p>

### Aquatic impacts

No named watercourses or waterbodies occur within the study area, and there is no perceivable connection between the study area and Tuggerah Lake, or between the study area and waterbodies to the north within Wyrabalong National Park. No obvious aquatic habitat for amphibians was recorded within the study area such that no key areas of habitat could be identified to be avoided.

No obvious aquatic habitat for amphibians was recorded within the study area such that they could be avoided during design of the proposal. However, lower lying areas that may become inundated, particularly within PCT 1646, may provide suitable habitat for Wallum Froglet and Mahony's Toadlet ephemerally. Perceivably, changes in ground levels and introduction of an impermeable surface resulting from the proposal would alter the processes in place that produce such areas. However, neither species populations are considered likely to rely on these areas given the more permanent, vastly higher quality habitat located in the north of Wyrabalong National Park. Further, ground level changes may also facilitate the production of ephemeral habitat. The residual impact on the hydrological processes that may sustain threatened amphibians is considered to be minor.

## Impacts to MNES

Two EPBC Act listed entities, Magenta Lilly Pilly (Vulnerable) and Littoral Rainforest CEEC (Critically Endangered), were recorded during surveys. Both entities would be directly impacted.

An AoS was completed for Magenta Lilly Pilly and Littoral Rainforest CEEC (Appendix E). In both cases, a significant impact is not considered likely. For Magenta Lilly Pilly, this is largely due to the efforts to avoid loss of individuals of the local population such that only 5 would be removed. Impacts to Littoral Rainforest CEEC are contextually minor due to the size of the local extent of the community.

A significant impact to either Magenta Lilly Pilly or Littoral Rainforest CEEC is not anticipated. DAWE has concluded that the proposal is not a controlled action if undertaken in a particular manner (refer to Section 4.1 and Section 5.2.1). Mitigation measures, as provided in Section 6.4.4, would assist in ensuring the proposal is carried out in accordance with the particular manner as specified by DAWE.

## Non-statutory offsetting

CCC are investigating voluntary, non-statutory offsetting in the form of protecting an offsite area of equivalent vegetation type to that impacted by the proposal (PCT 771, PCT 1536 and PCT 1646).

Non-statutory offsetting is recommended to include management, such as weed control, erosion control, and planting in areas of vegetation that are considered 'like for like' to those that would be impacted by the proposal. This means:

- PCT 771 could be offset with the following PCTs 721, 771, 1701, 1703, 1810
- PCT 1536 (Littoral Rainforest TEC) could be offset by the following PCTs 670, 751, 910, 1275, 1534, 1536, 1537, 1832, 1833
- PCT 1646 could be offset by the following PCTs 685, 776, 1074, 1135, 1184, 1618, 1637, 1646, 1647, 1648, 1775

Non-statutory offset areas should be calculated at a ratio of 3:1, offset to impact, and ideally contain habitat features such as hollow-bearing trees. The areas requiring non-statutory offset are only those that would be permanently developed, as curtilage areas would be subject to rehabilitation under the VMP (refer to Appendix H). Non-statutory offset areas would be confirmed during detailed design and it is noted that this is not an obligation as part of the proposal.

## 6.4.4. Safeguards and mitigation measures

Impact	Mitigation measures
<b>Clearing of Littoral Rainforest EEC and CEEC</b>	<ul style="list-style-type: none"> <li>• No greater than 2.76 ha of Littoral Rainforest EEC and CEEC can be removed.</li> </ul>
<b>Rehabilitation</b>	<ul style="list-style-type: none"> <li>• Rehabilitation is to occur in accordance with the Vegetation Management Plan</li> <li>• Rehabilitation of all construction areas to the original vegetation type is to occur within five years of commencing rehabilitation. Rehabilitation of construction areas in each sub-section of the pathway must commence immediately following the completion of construction work at that sub-section of the pathway. Rehabilitation must be in accordance with the National Standards for the Practice of Ecological Restoration.</li> <li>• Rehabilitation planting must use local provenance Magenta Lilly Pilly (<i>Syzygium paniculatum</i>).</li> </ul>

Impact	Mitigation measures
<b>Clearing of native vegetation</b>	<ul style="list-style-type: none"> <li>The clearing of native vegetation is to be minimised where possible and is only to be cleared within approved project areas in and accordance with the approved design (Appendix B).</li> </ul>
<b>Reuse of cleared vegetation</b>	<ul style="list-style-type: none"> <li>Vegetation cleared during the construction period to be mulched and used onsite for rehabilitation and erosion controls.</li> </ul>
<b>Rehabilitation monitoring</b>	<ul style="list-style-type: none"> <li>Monitoring of the rehabilitation is to be carried out during both construction and operational stages of the proposal to assess the success and long-term viability of the rehabilitation. Monitoring is to include (but not be limited to): <ul style="list-style-type: none"> <li>The maintenance of accurate records documenting all activities associated with the monitoring.</li> <li>The implementation of corrective actions to improve rehabilitation where it is identified to not be thriving.</li> <li>Monitoring in the operational phase is to continue until the rehabilitation is fully established.</li> </ul> </li> </ul>
<b>Temporary fencing to protect significant environmental features such as Magenta Lilly Pilly and HBTs</b>	<ul style="list-style-type: none"> <li>Clear delineation of Magenta Lilly Pilly and HBTs to be retained.</li> </ul>
<b>Timing works to avoid critical life cycle events such as breeding or nursing</b>	<ul style="list-style-type: none"> <li>Where practicable, hollow-bearing trees would not be removed during breeding and hibernation season (June to January) to mitigate impacts.</li> <li>If clearing outside of this period cannot be achieved, pre-clearing surveys would be undertaken by an ecologist or suitably qualified person to ensure no impacts to fauna would occur.</li> </ul>
<b>Preparation of a biodiversity management plan to regulate activity in vegetation</b>	<ul style="list-style-type: none"> <li>Preparation of a Construction Flora and Fauna Management Plan that would include protocols for: <ul style="list-style-type: none"> <li>Protection of native vegetation to be retained.</li> <li>Best practice removal and disposal of vegetation.</li> <li>Staged removal of hollow-bearing trees and other habitat features such as fallen logs with attendance by an ecologist.</li> <li>Weed management.</li> </ul> </li> </ul>

Impact	Mitigation measures
	<ul style="list-style-type: none"> <li>• Unexpected threatened species finds.</li> <li>• Progressive rehabilitation of disturbed areas.</li> </ul>
<b>Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas</b>	<ul style="list-style-type: none"> <li>• A Weed Management procedure would be developed for the proposal to prevent and minimise the spread of weeds. This would include: <ul style="list-style-type: none"> <li>• Management protocol for declared priority weeds under the <i>Biosecurity Act 2015</i> during and after construction.</li> <li>• Weed hygiene protocol in relation to plant, machinery, and fill.</li> <li>• Best practice controls to prevent the introduction of Myrtle Rust (<i>Puccinia psidii</i>).</li> </ul> </li> <li>• The weed management procedure would be incorporated into the Biodiversity Management Plan.</li> </ul>
<b>Fencing or other measures to control animal and vehicle interactions and managing potential direct impacts to Mahony's Toadlet and Wallum Froglet</b>	<ul style="list-style-type: none"> <li>• Study area to be fenced entirely during construction including sediment fencing to a height of 400 mm to act as a frog barrier.</li> <li>• Install sediment fencing as a frog barrier along sections of study area that contain PCT 1646 to a height of 400 mm. The fence would be monitored monthly through active searches after rainfall events.</li> <li>• Pre-clearing surveys will need to include full traversal of PCT 1646 plus a 20 m buffer the evening prior to any works being conducted.</li> <li>• Any individuals encountered would be translocated out of the site.</li> <li>• Fencing must not include barbed wire.</li> <li>• Fencing to be monitored regularly, and after rainfall events.</li> <li>• Pre-clearing surveys to detect fauna within the study area. Any individuals encountered would be relocated out of harm's way to suitable habitat within Wyrabalong National Park.</li> </ul>
<b>Staff training and site briefing to communicate environmental features to be protected and measures to be implemented</b>	<ul style="list-style-type: none"> <li>• Site induction.</li> <li>• Toolbox talks.</li> <li>• Awareness training during site inductions regarding enforcing site speed limits.</li> <li>• Site speed limits to be enforced to minimise fauna strike.</li> </ul>



## **6.5. SOCIO-ECONOMIC IMPACTS**

### **6.5.1. Existing environment**

The proposal is located within an area zoned SP2 (Infrastructure) between Wilfred Barrett Drive and the adjacent National Park zoned E1 (National Parks and Nature Reserves) and E2 (Environmental Conservation). The proposal area is not utilised for any specific activity (designated as the road corridor) and has been left to establish itself as an extension of the vegetation growing in the adjacent Wyrrabalong National Park. Adjacent areas are used by pedestrians and cyclists (along the already established sections of shared pathway), the Wyrrabalong National Park is utilised by recreational users, particularly along walking tracks which include Red Gum Track, the Lilly Pilly Loop Walking Track and the Lilly Pilly Loop Trail, with parking available at the Red Gum carpark located at the start of the Red Gum Track at the northern end of the proposal area. The main land uses surrounding the proposal is:

- Wilfred Barrett Drive (adjacent to the proposal area).
- Wyrrabalong National Park (adjacent to the proposal area).
- Magenta Shores Resort and golf course (100 m east of the proposal area).
- Heritage Village Residential Park (1.2 km north of the proposal area).
- The Entrance North (1.3 km south of the proposal).

The suburb of Magenta has 205 residents according to the 2016 Census (Australian Bureau of Statistics, 2019) with an even split of males and females. Most residents are married (64.5%), followed by never married (20.8%). The most common occupation for Magenta residents is professionals and managers (both 22%), followed by clerical and administrative workers (16.5%) and sales workers (12.1%). Most residents travel to work via car as a driver (64.3%), followed by work at home (14.3%) and car as passenger (4.1%).

### **6.5.2. Potential impacts**

#### **Construction**

The following potential socio-economic impacts have been assessed in the following sections:

- Noise and vibration, including sleep disturbance (Section 6.7).
- Traffic and access (Section 6.8).
- Visual impact (Section 6.9).

During construction, adjacent sensitive receivers, namely users of Wyrrabalong National Park and the Magenta Shores Golf Course facility, may experience elevated noise levels, increased road traffic and temporary visual changes such as stockpiles and machinery.

Users of Wilfred Barrett Drive would be subject to an increase in traffic from construction vehicles, however, it is anticipated to utilise stockpiles and compound sites to reduce the amount of deliveries and traffic required each day. Traffic control would be utilised for construction deliveries to ensure the safety of workers and the public. This may cause short-term delays for users of Wilfred Barrett Drive, however, the impacts would be low and temporary.

The removal of up to 4.99 ha of vegetation is proposed for the proposal. During construction this may negatively impact on recreational users of Wyrrabalong National Park walking adjacent to the proposal area, as their visitor experience would be altered by the removal of natural bushland and the inclusion of a man-made structure, as well as changes to access and parking, including the temporary closure of Red Gum carpark for the construction compound and access for construction vehicles. Alternative parking to safely access these areas of the National Park is provided along Evans Road (which provides access to the Wetland Trail and connects to the Red Gum Trail, as well as the northern portion of existing shared pathway, terminating at Red Gum carpark).

The adjoining sections of pathway would remain open during construction of the proposal.

No disruption to working hours of adjacent businesses or restrictions on access to private property or commercial property is expected as a result of the proposal.

Additional environmental safeguards and mitigation measures are recommended in Section 6.5.3 to further minimise potential socio-economic impacts.

### **Operation**

Once operational the proposal would open up many opportunities for usage by recreational and commuter users. Given the high number of residents travelling to work by car, the completion of the final link in the Magenta shared pathway may provide an opportunity for some of these people to use cycling or walking as a means of travelling to work, providing a long-term positive impact.

As a form of exercise and recreation, the proposal may also have a positive impact on user's health and overall wellbeing, encouraging increased use of the area. The shared pathway would provide greater access which may encourage higher visitation by locals and tourists, and further patronage of Wyrabalong National Park, including people with mobility issues through the provision of disability access.

Cyclists currently having to use the road shoulder along Wilfred Barrett Drive would have the opportunity to utilise the shared pathway, a safer alternative reducing the chance of vehicle strike, providing a long-term positive impact.

### **6.5.3. Safeguards and mitigation measures**

Impact	Mitigation measures
<b>Socio-economic</b>	<ul style="list-style-type: none"> <li>Existing access for nearby and adjoining properties is to be maintained at all times during the works unless otherwise agreed to by the affected property owner.</li> <li>Where required for emergency works or where necessary for safety and logistical purposes, out of hours works would be planned to avoid disrupting traffic along Wilfred Barret Drive.</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>Start of Work letters will be distributed one week (minimum 5 working days) before commencement of works to adjacent land holders.</li> <li>Targeted communication (signage along Wilfred Barrett Drive and at the National Park entrances, media and social media advertising) will be implemented prior to works to alert the public to the upcoming works.</li> </ul>

## **6.6. WASTE MINIMISATION AND MANAGEMENT**

### **6.6.1. Existing environment**

The existing environment of the proposal area is highly vegetated and is not designed to be recreationally used. During site inspections it was observed the area had small amounts of waste thrown from cars or blown into the road reserve. Its natural state is relatively untouched.

## 6.6.2. Potential impacts

### Construction

The main waste streams from the proposal would include:

- General construction waste.
- Excavation material.
- Vegetation.
- Mulch.

It is anticipated that 13,680 m<sup>2</sup> of cut material would be generated by the proposal. This material (with the exception of potential acid sulfate soils), are expected to be re-used as engineered fill, and all other material stockpiled for later re-use in landscaping or for other appropriate purposes.

Excavated ASS would be disposed of in accordance with the ASSMP.

Vegetation removed for construction of the proposal would be mulched on site and stockpiled with the intention to use as mulch during rehabilitation/revegetation of the site.

General construction waste would be segregated with reusable/recyclable waste used where possible, and stockpiled at nominated stockpile sites and all material proposed to be removed from the work site, for recycling or disposal or otherwise, to be waste classified using the Waste Classification Guidelines (NSW EPA, 2014).

Waste bins would be provided at the site office/compound site, with general waste generated by workers to be collected and disposed of offsite each day.

### Operation

As recreational use in the area is increased, it is expected that general waste and litter would also increase. The provision of waste receptacles at the Red Gum carpark and at the northern entry from Evans Road for users to dispose of waste would mitigate this potential impact.

## 6.6.3. Safeguards and mitigation measures

Impact	Mitigation measures
<b>Waste generation</b>	<ul style="list-style-type: none"><li>• General waste and recycling receptacles will be provided onsite and waste collected from site regularly.</li><li>• All waste will be managed in accordance with the <i>Protection of the Environment Operations Act 1997</i>. A licensed waste contractor must be used for the collection and transport of all non-domestic/ commercial wastes for either offsite processing and/or disposal to a licensed facility.</li><li>• Segregate and stockpile reusable and recyclable wastes for salvage where possible.</li><li>• Waste will be managed to ensure quantities onsite at any one time do not exceed 1000 t.</li><li>• All excavated natural, non-contaminated soil, aggregate or rock should be stockpiled separately and re-used onsite where possible.</li></ul>
<b>Waste disposal</b>	<ul style="list-style-type: none"><li>• Working areas are to be maintained, kept free of rubbish, and cleaned up at the end of each working day.</li></ul>

Impact	Mitigation measures
	<ul style="list-style-type: none"><li>• All material proposed to be removed from the work site, for recycling or disposal or otherwise, must be waste classified using the Waste Classification Guidelines Parts 1 and 2 (NSW EPA, 2014) and segregated to ensure opportunities for reuse, recovery and recycling of wastes are optimised.</li><li>• Potential acid sulfate soils will be disposed of in accordance with the ASSMP.</li></ul>

## 6.7. NOISE AND VIBRATION

### 6.7.1. Approach

The ICNG recommends quantitative noise assessment be carried out when a proposal would take over three weeks to construct. However, due to the existing noise environment, type of works and its distance from any sensitive receivers, it is therefore unlikely to impact on any sensitive receivers. A quantitative noise assessment is not required. A qualitative noise assessment has been undertaken using the Roads and Maritime Noise Calculator (Roads and Maritime Services, 2017). No vibration impacts are expected for sensitive receivers during construction.

### 6.7.2. Existing environment

The proposal is located within a vegetated area adjacent to Wilfred Barrett Drive and the Wyrabalong National Park. The noise environment is dominated by traffic using Wilfred Barrett Drive, with the road being highly trafficked with vehicles travelling at speeds of 80 km/hr along single lanes in each direction.

The nearest sensitive receivers are located in Magenta Shores, approximately 220 m east of the proposal.

### 6.7.3. Impacts

#### Construction

Standard construction working hours as per the *Interim Construction Noise Guideline* (DECC, 2009) are as follows:

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 1pm
- Sundays and public holidays: no work.

The proposed hours of work for the proposal would be in accordance with the CCC Civil Works Specific / Construction Specification (CCC, 2018):

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 4pm (noting 1pm to 4pm is day out of hours work as per the ICNG)
- Sundays and public holidays: no work.

Based on the list of equipment proposed for the proposal, a chainsaw would be the noisiest piece of equipment used for construction (as per the RMS noise calculator (Roads and Maritime Services, 2017)). Chainsaws would only be required for the clearing of vegetation, which is during the beginning of construction. Ongoing noise from construction would be predominantly from excavation activities and vegetation clearing including the use excavators, chainsaws, brush cutters and hand tools.

#### *Day work*

It is predicted that given the representative noise environment, the chainsaw noise would affect any sensitive receivers within a 525 m buffer zone. Within this zone are Magenta Shores Resort and residential properties, as well as Magenta Shores Golf Course and Wyrabalong National Park.

#### *Day out of hours work*

If works were to be undertaken outside of standard working hours (1pm to 4pm on Saturdays), the chainsaw noise would affect sensitive receivers within a 760 m buffer zone. Within this zone are Magenta Shores Resort and residential properties, as well as Magenta Shores Golf Course and Wyrabalong National Park. Council would limit the use of excessive noise generating equipment where possible, and work in accordance with the CCC Civil Works Specific Construction Specification (CCC, 2018).

The construction work would move progressively along the proposed shared pathway alignment and would be unlikely to affect any one receiver for the entire duration of the construction period. Noise impacts during construction would be minimised by the implementation of mitigation measures outlined below.

#### **Operation**

Once operational, the proposal would have no noise and vibration impacts.

#### **6.7.4. Safeguards and mitigation measures**

Impact	Mitigation measures
<b>Noise and Vibration</b>	<ul style="list-style-type: none"> <li>• Works would be undertaken during the following hours: <ul style="list-style-type: none"> <li>○ Monday to Friday: 7am to 6pm</li> <li>○ Saturday: 8am to 4pm (noting 1pm to 4pm is day out of hours work as per the ICNG)</li> <li>○ Sundays and public holidays: no work.</li> </ul> </li> <li>• Where required for emergency works or where necessary for safety and logistical purposes, out of hours works would be planned to avoid high noise generating activities and notify any potentially affected sensitive receivers where possible.</li> <li>• Conduct toolbox talks pre-shift to communicate awareness regarding the importance of noise emission management.</li> <li>• Avoid shouting and minimise talking loudly. Avoid dropping materials from height, throwing of metal items and slamming of doors.</li> <li>• Operate plant in a quiet and efficient manner. Reduce throttle settings and turn off equipment when not being used.</li> <li>• Provide information to adjacent sensitive receivers detailing work activities, dates and hours, impacts and mitigation measures, work schedule over the night period, any operational noise benefits from the works (where applicable) and contact telephone number.</li> <li>• Use site information board at the front of the site with relevant details about site contacts, hours of operation and regular information updates.</li> <li>• Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work. Consider the use of ambient sensitive alarms.</li> </ul>

Impact	Mitigation measures
	<ul style="list-style-type: none"><li>• Regularly inspect and maintain equipment to ensure that it is in good working order.</li><li>• Where feasible and reasonable, construction should be carried out during standard construction hours (daytime period). Work generating high noise and/or vibration should be scheduled during less sensitive time periods.</li><li>• Notify residents within the suburb of Magenta and the Magenta Shores Resort at least five working days prior to construction commencing with the following information:<ul style="list-style-type: none"><li>○ Indicative construction start and end dates.</li><li>○ Construction hours.</li><li>○ Information about the proposal.</li><li>○ Project contact for more information/ complaints.</li></ul></li></ul>

## 6.8. TRAFFIC AND ACCESS

### 6.8.1. Existing environment

Wilfred Barrett Drive is the only road connecting Magenta with Norah Head and is therefore heavily utilised by drivers and cyclists and less so by pedestrians. Given its high scenic and environmental significance and proximity to recreation areas, cyclists and pedestrians are drawn to this area.

The Shared Pathway network in the Central Coast Local Government Area serves a variety of different user types including cyclists, pedestrians, scooters, skaters and motorised mobility scooters.

The proposal area is currently not designed to be accessed by the public as it is heavily vegetated with no formed access tracks; however, users of the surrounding Wyrabalong National Park may enter the area on foot as there is no fence between the two areas. At the northern end of the proposal area is Red Gum carpark, which provides access to the Burrawang Track and Red Gum Trail through Wyrabalong National Park. Lilly Pilly Loop Trail crosses the proposed shared pathway at chainages 2235 and 2295, which can be accessed from Wilfred Barrett Drive (though there is no formal parking) and connects to the Red Gum Trail at its northern end.

There are two adjoining sections of shared pathway to the proposal:

- to the North from Evans Road and terminating to the south at Red Gum carpark entrance to the Wyrabalong National Park
- to the South from opposite Magenta Shores heading south towards The Entrance North.

The proposal area is adjacent to Wilfred Barrett Drive, the main route connecting the suburbs east of Tuggerah Lake, with high volumes of traffic. Cyclists currently use the road shoulder along Wilfred Barrett Drive.

Cyclist Crash Data reported in the Central Coast Bike Plan (Central Coast Council, 2019) showed there were 140 cyclist crashes in the Central Coast LGA between 2012 and 2016. The data indicated that the majority of injuries occurred in the Woy Woy, The Entrance and Toukley areas along main roads and intersections.



## 6.8.2. Potential impacts

### Construction

Users of Wilfred Barrett Drive would be subject to an increase in traffic from construction vehicles, however, it is anticipated that the use of stockpiles and compound sites would reduce the amount of deliveries and traffic required each day. Traffic control would be utilised for construction deliveries with a temporary reduced speed limit of 40 km/hr in place during these times to ensure the safety of workers and the public. This may cause short-term delays for users of Wilfred Barrett Drive, however, the impacts would be low and temporary.

The Red Gum carpark would be temporarily closed to public access during the construction period for safety reasons, with alternative parking to safely access these areas of the National Park provided along Evans Road (which provides access to the Wetland Trail and connects to the Red Gum Trail, as well as the northern portion of existing shared pathway, terminating at Red Gum carpark). Variable Message Signs (VMS) will be erected for notification of vehicles travelling north and south along Wilfred Barrett Drive, as well as at Red Gum carpark prior to construction being undertaken to notify users of upcoming temporary closures.

Construction access would utilise a 'left in/left out' approach to enhance the safety precautions for all deliveries and construction vehicles accessing the site.

The contractor would be required to develop and implement an approved traffic management plan (TMP) for the proposal.

### Operation

In order to control access along the shared pathway during operation, bollards would be installed where vehicle egress is possible; still allowing cyclists and approved users to access the pathway whilst keeping private motor vehicles and motorbikes out.

Access to the pathway would tie into the existing shared pathways to the north and south, with signage at the interface to Wilfred Barrett Drive to direct users as required. The completion of the shared pathway missing link would provide a shared path route for cyclists and pedestrians all the way from Magenta to Norah Head, with cyclists no longer sharing lanes with general traffic lanes. The proposal would reduce traffic delays on Wilfred Barrett Drive and increase safety for motorists and cyclists by providing an alternate, safer pathway for cyclists.

The proposal would increase accessibility to the site for all users, including people with mobility issues through the provision of disability access.

It is anticipated that maintenance vehicles would need to access the pathway periodically; turning facilities would be provided for maintenance vehicles at chainages 390 3450, 3340 and 3240.

## 6.8.3. Safeguards and mitigation measures

Impact	Mitigation measures
Traffic	<ul style="list-style-type: none"><li>• All heavy vehicles will travel within daylight hours where feasible. For road safety purposes, it will be necessary to undertake some deliveries out of hours. Additional measures for heavy vehicles will include:<ul style="list-style-type: none"><li>○ Administrative controls to limit truck activities during peak periods.</li><li>○ Implement radio communication and designated truck idling areas to minimise impact of truck queuing on public roads.</li><li>○ Temporary traffic controls.</li></ul></li></ul>

Impact	Mitigation measures
	<ul style="list-style-type: none"> <li>When on site, vehicles will park within designated areas or cleared areas without vegetation.</li> <li>Signage to be erected along Wilfred Barret Drive and at Red Gum carpark prior to construction being undertaken to notify users of upcoming temporary closures and alternative access/parking areas.</li> <li>Provide suitably designed construction site access which will consider: <ul style="list-style-type: none"> <li>Road design guidelines</li> <li>Visible temporary regulatory, warning and guide signs</li> <li>Use of accredited traffic controllers where appropriate.</li> </ul> </li> </ul>

## 6.9. VISUAL AMENITY

### 6.9.1. Existing environment

The existing environment of the proposal area is vegetated bushland adjacent to the road corridor, similar to the landscape of the surrounding National Park. The proposal area is part of a significant area of bushland, as connectivity in the landscape is limited by natural features to the east and west and urban development to the north and south. Vegetation within the proposal area is comprised of Littoral Rainforest, Sydney Red Gum dominated coastal sand woodland and Coast Tea-tree Coast Banksia dominated scrub and forest. The vegetation provides a substantial 'screen' of Wilfred Barrett Drive, being quite thick in most patches along the proposed alignment. From sections of the proposal area Wilfred Barrett Drive is clearly visible. On the opposite (eastern) side of Wilfred Barrett Drive is Magenta Shores Resort and golf course, used by travellers for accommodation, with the golf course open to the public subject to club conditions.

### 6.9.2. Potential impacts

#### Construction

The construction of the shared pathway would introduce a man-made recreational path into the green road corridor landscape, however, would not detract from the existing bushland setting.

Where possible construction materials have been selected to visually match the surrounding landscape; sometimes materials had to be chosen that do not blend with the landscape due to other concerns such as bushfire resistance, high durability and low maintenance costs. As such, the path itself would significantly alter the visual appearance of the site, creating a long-term visual impact.

The removal of up to 4.99 hectares of vegetation would potentially affect the visual landscape of the proposal area, however, the western side would still contain dense vegetation leading into the Wyrabalong National Park which would not substantially change the visual amenity from that currently present. On the eastern side of the proposal (between the proposed path and Wilfred Barrett Drive), the pathway would be set back from Wilfred Barret Drive to allow for some vegetation to remain between the pathway and Wilfred Barret Drive as much as possible. This would help to screen Wilfred Barrett Drive from users of the proposal and vice versa. The design of the pathway has avoided the removal of significant trees where possible.

As works are proposed to be undertaken during standard working hours, it is not anticipated that temporary lighting would be required during the construction phase.

During construction, there would be temporary impacts on landscape character and visual amenity from movement of construction vehicles, temporary placement of traffic controls and increased activities related to

construction personnel and equipment moving about the site. These impacts would be temporary and would occur throughout the construction period only.

### **Operation**

Transient vehicles travelling along Wilfred Barrett Drive would not be highly affected by the shared pathway, as it is proposed there would still be vegetation screening between much of the pathway and Wilfred Barrett Drive. As such the impacts are considered to be low.

Rehabilitation of 1.05 ha of Littoral Rainforest EEC and CEEC would be carried out in accordance with the VMP (refer to Appendix H). This rehabilitation would occur on the immediate periphery of the proposed shared pathway as shown in Figure 2-a in Appendix H, thereby returning the vegetation surrounding the shared pathway to that generally consistent with the existing. Therefore, there is anticipated to be limited visual impact during the operational phase as view would be in keeping with the current view.

For users of Wyrabalong National Park, the removal of vegetation within the road corridor for the shared pathway may make them more 'exposed', however, no vegetation within the National Park itself would be removed, and as such the visual impacts to the National Park and changes in views towards the proposal itself would be negligible. Rehabilitation of the disturbed area between the proposal and the National Park boundary would further reduce any visual impacts (areas to be rehabilitated are shown in the VMP in Appendix H).

The following measures are proposed to be implemented to minimise any visual impacts.

### **6.9.3. Safeguards and mitigation measures**

<b>Impact</b>	<b>Mitigation measures</b>
<b>Traffic and Waste</b>	<ul style="list-style-type: none"> <li>Mitigation measures as per Section 6.6.3 and Section 6.8.3.</li> </ul>
<b>Visual amenity</b>	<ul style="list-style-type: none"> <li>Where possible construction materials to be selected to visually match the surrounding landscape.</li> </ul>
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>Rehabilitation is to be carried out in accordance with the VMP (Appendix H)</li> <li>Mitigation measures as per Section 6.4.4.</li> </ul>

## 6.10. ABORIGINAL HERITAGE

### 6.10.1. Approach

An Aboriginal Heritage Due Diligence report (Appendix G) was prepared by NGH to assess the impacts of the proposal on Aboriginal heritage. The Due Diligence report was prepared in keeping with the sequence of steps identified in the NSW guideline 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW' (DECCW, 2010) (Due Diligence Code). The Due Diligence Code provides a five-step approach to determine if an activity is likely to cause harm to an Aboriginal object, as defined by the NSW National Parks and Wildlife Act. The steps follow a logical sequence of questions, the answer to each question determines the need for the next step in the process.

Table 6-8 Due Diligence Steps undertaken

Due Diligence Steps
<b>Step 1.</b> Will the activity disturb the ground surface?
<b>Step 2a.</b> Search the AHIMS database and use any other sources of information of which you are already aware.
<b>Step 2b.</b> Are activities proposed in areas where landscape features indicate the presence of Aboriginal objects?
<b>Step 3.</b> Can you avoid harm to the object or disturbance of the landscape feature?
<b>Step 4.</b> Undertake a desktop assessment and visual inspection. Is it likely that Aboriginal objects will be impacted by the proposed works?
<b>Step 5.</b> Further investigations and impact assessment.

The Due Diligence Code of Practice sets out the steps which the Proponent is required to take in order to:

- Identify whether Aboriginal objects are, or are likely to be, present in the study area;
- Determine whether their activities are likely to harm Aboriginal objects (if present) in the study area; and
- Determine whether an Aboriginal Heritage Impact Permit (AHIP) application is required.

### Database search

A search of the Aboriginal Heritage Information Management System database was undertaken on 10 January 2019 from latitude -33.3898, longitude 151.4195 to latitude -33.249, longitude 151.642 with a buffer of 1 km, centred on the proposal area. Results identified 52 Aboriginal sites recorded within the search area, and no declared Aboriginal Places.

### Site Inspection

A visual inspection of the project area was undertaken on 17 January 2019 by NGH Archaeologist Bronwyn Partell.

### 6.10.2. Existing environment

The site types of the Aboriginal sites identified in the AHIMS database search are broken down in Table 6-9.

Table 6-9 Previously recorded Aboriginal sites in the region of the proposal.

Site Type	Number of sites
Artefact	18
Shell Midden + Artefact	16
Grinding Grooves	4
Bora/Ceremonial	3
Potential Archaeological Deposit (PAD) + Shell + Artefact	2
Burial	2
Artefact + Culturally Modified Tree	1
Culturally Modified Tree	1
Fish Trap	1
Potential Archaeological Deposit (PAD)	1
Water Hole	1
Art (Pigment or Engraved)	1
<b>Total</b>	<b>51</b>

The nearest Aboriginal site to the proposal area is 47-7-0122 (Tuggerah Beach) – a shell midden with artefacts which is located approximately 480 m south-east of the proposal area.

The proposal area falls across archaeologically sensitive landscape features, being both within 200 m of water and within a sand dune system. The proposal area falls along the coastal barrier between the Pacific Ocean and Tuggerah Lake, within the Central Coast Lowlands physiographic region.

There were no archaeological sites identified during the visual inspection of the proposal site. While the surface visibility was low to nil in some areas due to vegetation cover, there were no areas of archaeological sensitivity or subsurface potential identified during the inspection.

Previous infrastructure works in the area, i.e. to construct Wilfred Barrett Drive and the creation of the adjoining walking paths, particularly through Wyrabalong National Park, have the potential to have impacted upon Aboriginal objects in the area, though there is no evidence to substantiate this.

The Magenta Shores and Tuggerah Beach areas were subject to historical sand mining practices which would have significantly modified the landscape. The sand mining activities would have impacted on the southern portion of the proposal area at a minimum as shown in Figure 6-8.

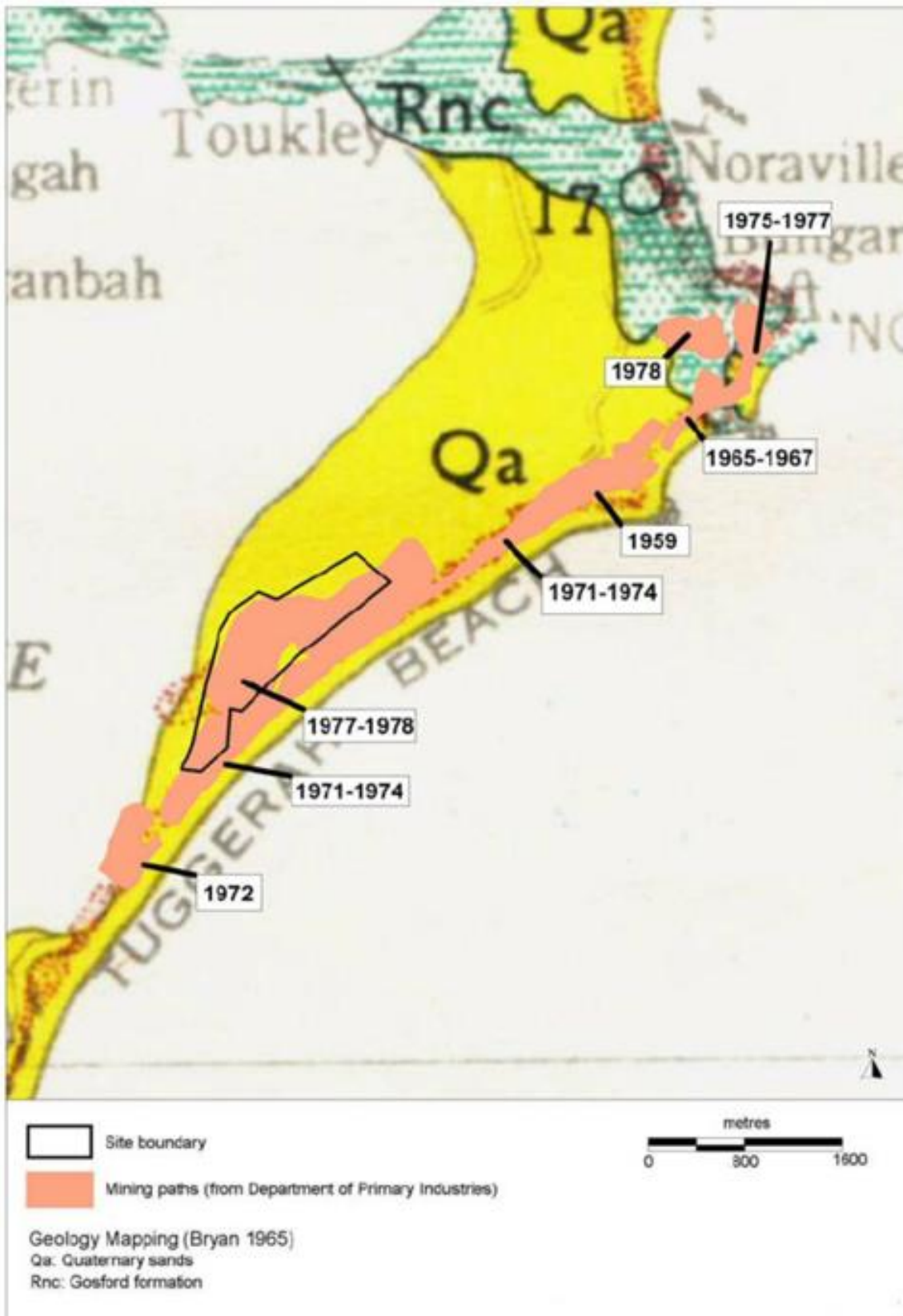


Figure 6-8 Locations of historic sand mining activities (Hazelton, 2009)



### 6.10.3. Potential impacts

#### Construction

There are no records indicating previous archaeological surveys within the proposal area. So far as desktop analysis can identify, there are limited undisturbed landscape features within the proposal area. Based upon the initial desktop assessment, using satellite imagery and topographic data, as well as landscape assessment and land use history, it appears that there is low potential for Aboriginal objects or sites to occur within the project area given the levels of historic disturbances.

The desktop assessment indicates that there are landscapes present within the project area which may have been considered highly sensitive, however, disturbances indicate that it has low potential to contain Aboriginal objects or sites.

The visual inspection concluded the landforms within the proposal area are largely modified from historical land use and is subject to high levels of erosion. Due to this, the proposal area is deemed to have low potential to contain in situ subsurface deposits. The proposal area falls within a transitional coastal barrier between marine resources of the Pacific Ocean and the estuarine resources of Tuggerah Lake. As such there is low potential for permanent or semi-permanent occupation sites to be located within the proposal area.

The visual inspection confirms the findings of the desktop analysis, indicating low archaeological potential across the proposal area. No archaeological sites identified during the visual inspection of the proposal area, with no areas of archaeological sensitivity or subsurface potential identified during the inspection.

Given the findings of the desktop assessment and the visual inspection, the proposal is unlikely to impact any areas of Aboriginal Heritage significance with the implementation of the mitigation measures below, including an unexpected finds protocol.

#### Operation

There would be no impacts to Aboriginal heritage during operation.

### 6.10.4. Safeguards and mitigation measures

Impact	Mitigation measures
<b>Aboriginal heritage sites</b>	<ul style="list-style-type: none"><li>• Works may proceed with caution within the project area as assessed within the Due Diligence report (NGH, 2020).</li><li>• All works must be constrained to the areas assessed within the Due Diligence report, and any activity proposed outside of the assessed area must be subject to an Aboriginal heritage assessment.</li><li>• All access to the site and laydown areas must be within existing roads/tracks and disturbed areas otherwise visual inspection of the sites by a qualified archaeologist is required.</li><li>• When any soil excavation, earth works, vegetation clearing and leaf litter removal activities are conducted, workers will be required to visually inspect the area for surface shell, bone, rocks or any other Aboriginal objects.</li><li>• If any items suspected of being Aboriginal heritage items are discovered during the work, all work in the immediate vicinity must stop and Environmental Reporting notified.</li></ul>

## 6.11. NON-ABORIGINAL HERITAGE

### 6.11.1. Approach

A search of the Australian Heritage Database (DEE 2018a), NSW Heritage Register and s170 Register (OEH 2018d) and the Wyong LEP was undertaken on 24 August 2020 to identify any listed heritage items in the study area (Appendix D). None of the searches identified any heritage listings within the study area.

### 6.11.2. Potential impacts

#### Construction

The desktop assessment did not identify any heritage items within the study area. There would be no impact on heritage values as a result of the development and further assessment of heritage impacts relating to the proposed works is not warranted as a significant impact is not likely, in accordance with the Heritage Act, and the EP&A Act.

#### Operation

There would be no impacts to non-Aboriginal heritage during operation.

### 6.11.3. Safeguards and mitigation measures

Impact	Mitigation measures
Harm to a non-Aboriginal heritage item	<ul style="list-style-type: none"><li>If any suspected items of Heritage are identified during works, Environmental reporting will be notified.</li></ul>

## 6.12. CUMULATIVE IMPACTS

### 6.12.1. Existing environment

When a project is assessed in isolation, the environmental impacts and benefits may not be considered to be large, however, when combined with other projects, the resultant cumulative effects may result in a greater extent, magnitude or duration of impact. Identifying the potential for cumulative impacts assists in guiding the development and appropriate mitigation measures.

The selection of proposed developments assessed as part of this cumulative impact assessment was based on a number of criteria including:

- The proximity of the project to the Proposal.
- The likelihood of the project being constructed during a similar time as the proposal.
- The size of the project and the potential to result in substantial changes to identified key issues (such as traffic, biodiversity, noise and vibration etc) or substantial changes to the existing land use of the area.

Other projects with the potential for cumulative impacts with the proposal were identified through a review of publicly available information and environmental impact assessments from the following databases:

- NSW Major Projects website (NSW Government, 2020).
- Central Coast Council – Development Application search tool (Central Coast Council, 2020).
- Australian Government - Department of Agriculture, Water and the Environment - EPBC Public Notices - referrals (Australian Government DAWE, 2020).

Projects with potential for cumulative impacts in conjunction with the proposal are listed in Table 6-10. Their status is correct at time of writing.

Table 6-10 Projects in the surrounding area with potential for cumulative impacts

Major Project	Address	Status
<b>Modification to Magenta Shores Project Approval (DA32-01-2003 MOD 6)</b>	300 Wilfred Barrett Drive, The Entrance North	Determination (February 2020)

Other projects within the area are likely to include upgrades of Wilfred Barrett Drive by TfNSW, however, no specific project is currently approved for this section of road.

### 6.12.2. Potential impacts

The Modification to Magenta Shores Project Approval (DA32-01-2003 MOD 6) involves the expansion of the Magenta Shores Resort, with the provision of new residential lots in Lot 24 DP270492 and realignment of roads. Potential cumulative impacts from the project in combination with the proposal are listed below.

#### **Traffic**

Construction traffic required for the expansion of Magenta Shores Resort (such as deliveries and workforce vehicles) may require utilisation of Wilfred Barrett Drive and other local roads at the same time as the proposal, depending on when construction starts. This may put further strain on the road network beyond what has been predicted for the proposal and may further impact local traffic. The entrance to Magenta Shores Resort (Magenta Drive off Wilfred Barrett Drive) may become congested with construction vehicles for the Magenta Shores Resort project turning onto Magenta Drive, impacting the flow of traffic along Wilfred Barrett Drive. Should this overlap with the proposal, this congestion would be further exacerbated by the movement of construction vehicles required for the proposal.

Potential cumulative traffic impacts would be managed through the implementation of mitigation measures as per Section 6.8 and Section 6.12.3.

#### **Climate and Air Quality**

Emissions from construction works anticipated from the expansion of Magenta Shores Resort include:

- Exhaust fumes from construction plant.
- Dust from the transportation of materials and wind on exposed areas or material stockpiles.

These emissions are similar in nature as to those expected from the proposal, and as such the impact on sensitive receivers should the construction timing for the Magenta Shores Resort expansion overlap that for the proposal. Emissions likely to have an adverse effect on air quality would be temporary and short-term for both the proposal and the expansion of Magenta Shores Resort.

#### **Socio-economic**

Cumulative construction effects of the proposal and the expansion of Magenta Shores Resort have the potential to increase road delays due to combined vehicle movements and increase noise and vibration impacts on road users, however, the implementation of mitigation measures proposed in Section 0 and Section 6.7 would minimise these impacts.

The construction of both projects in the area may also positively impact the local area through the creation of job opportunities and increasing profitability of businesses through purchase of goods for the project and workforce expenditure at local businesses.

It is also anticipated that there may be some minor benefits in consecutive construction should the proposal and the expansion of Magenta Shores Resort overlap, by minimising the potential for 'construction fatigue' associated with ongoing projects over a longer duration of time.

**Noise**

Noise impacts are not expected from the proposal, and therefore would not increase the impact experienced by sensitive receivers adjacent to the proposed expansion of Magenta Shores Resort.

**Biodiversity**

The land within the Magenta Shores Resort is generally disturbed and cleared. The expansion of the Resort is expected to remain within the existing disturbed footprint and therefore there would be limited cumulative biodiversity impacts with the proposal.

**Visual**

Should construction of the proposal and the Magenta Shores Resort expansion be concurrent, this would increase the amount of construction activity along Wilfred Barrett Drive, mainly from the movement of construction vehicles. These visual impacts would mainly affect road users including motorists and cyclists, however impacts would be temporary.

Changes to visual amenity through the removal of vegetation and transformation of the landscape would occur in different locations i.e. different sides of Wilfred Barrett Drive and potential cumulative impacts are not anticipated to require further mitigation beyond that in Section 6.9.3.

**Waste**

Both the proposal and the Magenta Shores Resort project would produce a need for resources, however, as the anticipated resources are not considered to be in short supply, this would not impact on resource availability.

A need for resource recovery, recycling and disposal is required for the proposal and the Magenta Shores Resort project, and as there are abundant facilities licensed to accept waste from this proposal and other projects, impacts are considered negligible.

**6.12.3. Safeguards and mitigation measures**

Cumulative Impact	Mitigation measures
Traffic	<ul style="list-style-type: none"><li>• Consultation with project contacts for the Magenta Shores Resort expansion should the projects overlap to anticipate any cumulative impacts on the road network/local traffic.</li></ul>

## 7. CONSIDERATION OF STATE AND COMMONWEALTH ENVIRONMENTAL FACTORS

### 7.1. ENVIRONMENTAL PLANNING AND ASSESSMENT REGULATION 2000 CHECKLIST

In addition to the requirements of the 'Is an EIS required?', the following factors listed in clause 228(2) of the Environmental Planning and Assessment Regulation 2000 have also been considered to assess the likely impacts of the proposal on the natural and built environment. This consideration is required to comply with sections 5.5 and 5.7 of the EP&A Act. The clause 228 factors are provided in Appendix C.

### 7.2. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

Under the environmental assessment provisions of EPBC Act, the following matters of national environmental significance and impacts on Commonwealth land are required to be considered to assist in determining whether the proposal should be referred to the Australian Government Department of the Environment.

A referral is not required for proposed actions that may affect nationally listed threatened species, populations, endangered ecological communities and migratory species. Impacts on these matters are still assessed as part of the REF in accordance with Australian Government significant impact criteria and taking into account relevant guidelines and policies.

Table 7-1 Matters of National Environmental Significance

Factor	Impact
<b>Any impact on a World Heritage property?</b> The proposed works would not impact on any World Heritage property.	Nil
<b>Any impact on a National Heritage place?</b> The proposed works would not impact on a National Heritage place.	Nil
<b>Any impact on a wetland of international importance (often called 'Ramsar' wetlands)?</b> The proposed works would not impact on any Ramsar wetlands.	Nil
<b>Any impact on nationally threatened species and ecological communities?</b> Two EPBC Act listed entities, Magenta Lilly Pilly (Vulnerable) and Littoral Rainforest CEEC (Critically Endangered), were recorded during surveys. Both entities would be directly impacted through removal of individuals or CEEC. Approximately 2.76 ha of potential habitat for Magenta Lilly Pilly (PCT 1536) and 2.76 ha of Littoral Rainforest CEEC would be removed, with 1.05 ha of each subsequently rehabilitated (Appendix H). An AoS was completed for Magenta Lilly Pilly and Littoral Rainforest CEEC which concluded that a significant impact to either Magenta Lilly Pilly or Littoral Rainforest CEEC is not anticipated, therefore, a referral to the DAWE is not considered necessary.	Negative

Factor	Impact
DAWE confirmed in written correspondence on 11 May 2021 that the proposed action is not a controlled action, provided it is taken in accordance with the manner described in the enclosed decision document, refer <b>Section 5.2.1</b> .	
<b>Any impacts on listed migratory species?</b> The proposed works would not impact on any migratory species.	Nil
<b>Any impact on a Commonwealth marine area?</b> The proposed works would not impact on a Commonwealth marine area.	Nil
<b>Any impact to the Great Barrier Reef Marine Park?</b> The proposed works would not impact on the Great Barrier Reef Marine Park.	Nil
<b>Does the proposal involve a nuclear action (including uranium mining)?</b> The proposed works do not involve any nuclear activities.	Nil
<b>Any impact on a water resource, in relation to coal seam gas development and large coal mining development?</b> The proposed works would not impact on a water resource in relation to coal seam gas development and large coal mining development.	Nil
<b>Additionally, any impact (direct or indirect) on Commonwealth land?</b> The proposed works would not impact (directly or indirectly) on the environment of Commonwealth land.	Not applicable



## 8. SUMMARY OF SAFEGUARDS AND MITIGATION MEASURES

Table 8-1 Key environmental safeguards and mitigation measures

Major Issues	Impact	Key Environmental Objectives
General	General	<ul style="list-style-type: none"> <li>A Construction Environmental Management Plan (CEMP) would be prepared prior to the commencement of works and implemented through all phases of the proposed construction works. The CEMP would provide the framework for the management of all potential impacts resulting from the construction works and would detail the environmental mitigation measures to be implemented throughout the construction works.</li> <li>Ongoing consultation is to be carried out with TfNSW and NPWS (and any other relevant stakeholders) during construction.</li> </ul>
Topography, geology, soils and contamination	Soil erosion and sedimentation	<ul style="list-style-type: none"> <li>An erosion and sediment control plan will be prepared as part of the CEMP in accordance with Managing urban stormwater: soils and construction – Volume 1, 4th Edition (Landcom, 2004) and kept current and appropriate throughout the construction phase and would include the following as a minimum: <ul style="list-style-type: none"> <li>The area of potential soil exposure will be minimised.</li> <li>Progressive rehabilitation will occur during construction to minimise the amount of exposed soil at any one time.</li> <li>Erosion and sediment controls shall be installed at locations where ground disturbance would occur (prior to the disturbance) and maintained until works have been completed and areas have been stabilised.</li> <li>Clean run-off will be diverted to avoid disturbed areas.</li> <li>Upslope diversions will be installed where there is potential for surface water to impact stockpiles or exposed areas.</li> <li>Suitable erosion and sediment controls will be placed on the downslope side of stockpiles or where soils are exposed.</li> <li>Erosion and sediment controls will be inspected regularly and maintained in good working condition.</li> <li>Erosion and sediment controls will be inspected as soon as practical following significant rainfall events of greater than 20 mm within a 24-hour period.</li> <li>Material laydown areas will be located on asphalt or in other previously disturbed areas.</li> </ul> </li> </ul>

Major Issues	Impact	Key Environmental Objectives
		<ul style="list-style-type: none"> <li>- Vehicle and machinery movements will be restricted as far as possible to minimise ground disturbance.</li> <li>- Vehicles and machinery will not be parked on vegetated areas. Staff will park at designated parking areas.</li> <li>- Vegetation cleared during the construction period to be mulched and used onsite for rehabilitation and erosion controls.</li> <li>- Any backfill associated with the retaining walls shall be graded and compacted with porous fill with adequate sub-drainage to minimise hydrostatic pressures on the retaining walls. If excavated spoil requires off-site disposal, a waste classification assessment will be undertaken in accordance with the 'Waste Classification Guidelines: Part 1 Classifying Waste' (NSW Environment Protection Authority, 2014) and disposed of appropriately.</li> <li>- Periodic inspections of rehabilitated areas will be undertaken for 6-12 months after the completion of construction activities and maintenance (e.g. weeding and watering) carried out as required.</li> <li>- Topsoil will be stored separately to subsoil and used to rehabilitate disturbed land.</li> <li>• Waste will be managed to ensure quantities onsite at any one time do not exceed 1000 t.</li> </ul>
	Acid Sulfate Soils	<ul style="list-style-type: none"> <li>• An acid sulfate soil management plan (ASSMP) in accordance with the Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998) shall be prepared for excavation in the low lying area of borehole HA08.</li> </ul>
	Pollution/contamination	<ul style="list-style-type: none"> <li>• Vehicles, plant and equipment will be checked for leaks each day.</li> <li>• Spill kits will always be made available at the site throughout construction.</li> <li>• Bulk chemicals will not be stored on site.</li> <li>• All chemicals and fuels shall be stored in suitable bunded areas away from drainage lines. The capacity of the bunded area would be at least 120 per cent of the largest chemical container stored within the bunded area.</li> <li>• All staff will be appropriately trained through toolbox talks for the minimisation and management of accidental spills.</li> <li>• All staff will be appropriately trained through toolbox talks for the identification of contaminated material, such as asbestos, staining or odours.</li> <li>• If an unexpected find of contaminated material or suspected contaminated material occurs, works shall cease immediately,</li> </ul>

Major Issues	Impact	Key Environmental Objectives
		<p>and the appropriate management requirements would be determined.</p> <ul style="list-style-type: none"> <li>Concrete washout would be collected within a bunded area and disposed of at a licenced facility.</li> <li>All refuelling will be carried out off-site, as far as practicable. If re-fuelling is to occur onsite, it will occur in a bunded area.</li> </ul>
	Geotechnical	<ul style="list-style-type: none"> <li>Backfill associated with the retaining walls shall be graded and compacted with porous fill with adequate sub-drainage to minimise hydrostatic pressures on retaining walls.</li> </ul>
Hydrology, catchment values and water quality	Erosion and sedimentation	<ul style="list-style-type: none"> <li>Mitigation measures described in Section 6.1.3 will be implemented.</li> <li>Disturbed areas will be progressively stabilised.</li> </ul>
	Pollution / contamination	<ul style="list-style-type: none"> <li>Mitigation measures described in Section 6.1.3 will be implemented.</li> </ul>
	Drainage	<ul style="list-style-type: none"> <li>Any negative impacts observed during construction and operation to the natural drainage system during works in the corridor will be reported to the Project Manager.</li> <li>Water or wastewater will not be discharged to stormwater, creeks, and drainage channels or into surrounding land.</li> </ul>
Climate and air quality	Airborne pollution	<ul style="list-style-type: none"> <li>Mitigation measures described in Section 6.1 will be implemented.</li> <li>Works likely to generate dust will be avoided where possible during strong winds or weather conditions where high levels of dust is likely.</li> <li>Activities involving excavation or disturbance of soils or vegetation must implement controls to prevent and/or minimise the generation of dust as required (i.e water carts or apply soil binders for dust suppression as required).</li> <li>Minimise vehicle movement and speed on unsealed tracks and access paths.</li> <li>All plant and equipment must be serviced regularly to ensure exhaust emissions generated are within the specified plant and equipment standards.</li> <li>If dust is observed migrating offsite, additional dust controls such stopping works in high wind conditions or use of water carts, water sprays or application of dust suppression polymers.</li> </ul>
Biodiversity	Clearing of Littoral	<ul style="list-style-type: none"> <li>No greater than 2.76 ha of Littoral Rainforest EEC and CEEC can be removed.</li> </ul>

Major Issues	Impact	Key Environmental Objectives
	Rainforest EEC and CEEC	
	Rehabilitation	<ul style="list-style-type: none"> <li>Rehabilitation is to occur in accordance with the Vegetation Management Plan.</li> <li>Rehabilitation of all construction areas to the original vegetation type is to occur within five years of commencing rehabilitation. Rehabilitation of construction areas in each sub-section of the pathway must commence immediately following the completion of construction work at that sub-section of the pathway. Rehabilitation must be in accordance with the National Standards for the Practice of Ecological Restoration.</li> <li>Rehabilitation planting must use local provenance Magenta Lilly Pilly (<i>Syzygium paniculatum</i>).</li> </ul>
	Clearing of native vegetation	<ul style="list-style-type: none"> <li>The clearing of native vegetation is to be minimised where possible and is only to be cleared within approved project areas in and accordance with the approved design (Appendix B).</li> </ul>
	Reuse of cleared vegetation	<ul style="list-style-type: none"> <li>Vegetation cleared during the construction period to be mulched and used onsite for rehabilitation and erosion controls.</li> </ul>
	Rehabilitation monitoring	<ul style="list-style-type: none"> <li>Monitoring of the rehabilitation is to be carried out during both construction and operational stages of the proposal to assess the success and long-term viability of the rehabilitation. Monitoring is to include (but not be limited to): <ul style="list-style-type: none"> <li>The maintenance of accurate records documenting all activities associated with the monitoring.</li> <li>The implementation of corrective actions to improve rehabilitation where it is identified to not be thriving.</li> </ul> </li> <li>Monitoring in the operational phase is to continue until the rehabilitation is fully established.</li> </ul>
	Temporary fencing to protect significant environmental features such as Magenta Lilly Pilly and HBTs	<ul style="list-style-type: none"> <li>Clear delineation of Magenta Lilly Pilly and HBTs to be retained.</li> </ul>

Major Issues	Impact	Key Environmental Objectives
	Timing works to avoid critical life cycle events such as breeding or nursing	<ul style="list-style-type: none"> <li>Where practicable, hollow-bearing trees would not be removed during breeding and hibernation season (June to January) to mitigate impacts.</li> <li>If clearing outside of this period cannot be achieved, pre-clearing surveys would be undertaken by an ecologist or suitably qualified person to ensure no impacts to fauna would occur.</li> </ul>
	Preparation of a biodiversity management plan to regulate activity in vegetation	<ul style="list-style-type: none"> <li>Preparation of a Construction Flora and Fauna Management Plan that would include protocols for: <ul style="list-style-type: none"> <li>Protection of native vegetation to be retained.</li> <li>Best practice removal and disposal of vegetation.</li> <li>Staged removal of hollow-bearing trees and other habitat features such as fallen logs with attendance by an ecologist.</li> <li>Weed management.</li> <li>Unexpected threatened species finds.</li> </ul> </li> <li>Progressive rehabilitation of disturbed areas.</li> </ul>
	Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas	<ul style="list-style-type: none"> <li>A Weed Management procedure would be developed for the proposal to prevent and minimise the spread of weeds. This would include: <ul style="list-style-type: none"> <li>Management protocol for declared priority weeds under the <i>Biosecurity Act 2015</i> during and after construction.</li> <li>Weed hygiene protocol in relation to plant, machinery, and fill.</li> <li>Best practice controls to prevent the introduction of Myrtle Rust (<i>Puccinia psidii</i>).</li> </ul> </li> <li>The weed management procedure would be incorporated into the Biodiversity Management Plan.</li> </ul>
	Fencing or other measures to control animal and vehicle interactions and managing potential direct impacts to Mahony's Toadlet and Wallum Froglet	<ul style="list-style-type: none"> <li>Study area to be fenced entirely during construction including sediment fencing to a height of 400 mm to act as a frog barrier.</li> <li>Install sediment fencing as a frog barrier along sections of study area that contain PCT 1646 to a height of 400 mm. The fence would be monitored monthly through active searches after rainfall events.</li> <li>Pre-clearing surveys will need to include full traversal of PCT 1646 plus a 20 m buffer the evening prior to any works being conducted.</li> <li>Any individuals encountered would be translocated out of the site.</li> <li>Fencing must not include barbed wire.</li> </ul>



Major Issues	Impact	Key Environmental Objectives
		<ul style="list-style-type: none"> <li>Fencing to be monitored regularly, and after rainfall events.</li> <li>Pre-clearing surveys to detect fauna within the study area. Any individuals encountered would be relocated out of harm's way to suitable habitat within Wyrabalong National Park.</li> </ul>
	Staff training and site briefing to communicate environmental features to be protected and measures to be implemented	<ul style="list-style-type: none"> <li>Site induction.</li> <li>Toolbox talks.</li> <li>Awareness training during site inductions regarding enforcing site speed limits.</li> <li>Site speed limits to be enforced to minimise fauna strike.</li> </ul>
Socio-economic impacts	Socio-economic	<ul style="list-style-type: none"> <li>Existing access for nearby and adjoining properties is to be maintained at all times during the works unless otherwise agreed to by the affected property owner.</li> <li>Where required for emergency works or where necessary for safety and logistical purposes, out of hours works would be planned to avoid disrupting traffic along Wilfred Barret Drive.</li> </ul>
	Communication	<ul style="list-style-type: none"> <li>Start of Work letters will be distributed one week (minimum 5 working days) before commencement of works to adjacent land holders.</li> <li>Targeted communication (signage along Wilfred Barrett Drive and at the National Park entrances, media and social media advertising) will be implemented prior to works to alert the public to the upcoming works.</li> </ul>
Waste minimisation and management	Waste generation	<ul style="list-style-type: none"> <li>General waste and recycling receptacles will be provided onsite and waste collected from site regularly.</li> <li>All waste will be managed in accordance with the <i>Protection of the Environment Operations Act 1997</i>. A licensed waste contractor must be used for the collection and transport of all non-domestic/ commercial wastes for either offsite processing and/or disposal to a licensed facility.</li> <li>Segregate and stockpile reusable and recyclable wastes for salvage where possible.</li> <li>Waste will be managed to ensure quantities onsite at any one time do not exceed 1000 t.</li> <li>All excavated natural, non-contaminated soil, aggregate or rock should be stockpiled separately and re-used onsite where possible.</li> </ul>

Major Issues	Impact	Key Environmental Objectives
	Waste disposal	<ul style="list-style-type: none"> <li>Working areas are to be maintained, kept free of rubbish, and cleaned up at the end of each working day.</li> <li>All material proposed to be removed from the work site, for recycling or disposal or otherwise, must be waste classified using the Waste Classification Guidelines Parts 1 and 2 (NSW EPA, 2014) and segregated to ensure opportunities for reuse, recovery and recycling of wastes are optimised.</li> <li>Potential acid sulfate soils will be disposed of in accordance with the ASSMP.</li> </ul>
Noise and vibration	Noise and Vibration	<ul style="list-style-type: none"> <li>Works would be undertaken during the following hours: <ul style="list-style-type: none"> <li>Monday to Friday: 7am to 6pm.</li> <li>Saturday: 8am to 4pm (noting 1pm to 4pm is day out of hours work as per the ICNG)</li> <li>Sundays and public holidays: no work.</li> </ul> </li> <li>Where required for emergency works or where necessary for safety and logistical purposes, out of hours works would be planned to avoid high noise generating activities and notify any potentially affected sensitive receivers where possible. <ul style="list-style-type: none"> <li>Conduct toolbox talks pre-shift to communicate awareness regarding the importance of noise emission management.</li> <li>Avoid shouting and minimise talking loudly. Avoid dropping materials from height, throwing of metal items and slamming of doors.</li> <li>Operate plant in a quiet and efficient manner. Reduce throttle settings and turn off equipment when not being used.</li> <li>Provide information to adjacent sensitive receivers detailing work activities, dates and hours, impacts and mitigation measures, work schedule over the night period, any operational noise benefits from the works (where applicable) and contact telephone number.</li> <li>Use site information board at the front of the site with relevant details about site contacts, hours of operation and regular information updates.</li> <li>Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work. Consider the use of ambient sensitive alarms.</li> <li>Regularly inspect and maintain equipment to ensure that it is in good working order.</li> </ul> </li> </ul>

Major Issues	Impact	Key Environmental Objectives
		<ul style="list-style-type: none"> <li>Where feasible and reasonable, construction should be carried out during standard construction hours (daytime period). Work generating high noise and/or vibration should be scheduled during less sensitive time periods.</li> <li>Notify residents within the suburb of Magenta and the Magenta Shores Resort at least five working days prior to construction commencing with the following information: <ul style="list-style-type: none"> <li>Indicative construction start and end dates.</li> <li>Construction hours.</li> <li>Information about the proposal.</li> <li>Project contact for more information/ complaints.</li> </ul> </li> </ul>
Traffic and Access	Traffic	<ul style="list-style-type: none"> <li>All heavy vehicles will travel within daylight hours where feasible. For road safety purposes, it will be necessary to undertake some deliveries out of hours. Additional measures for heavy vehicles will include: <ul style="list-style-type: none"> <li>Administrative controls to limit truck activities during peak periods.</li> <li>Implement radio communication and designated truck idling areas to minimise impact of truck queuing on public roads.</li> <li>Temporary traffic controls.</li> </ul> </li> <li>When on site, vehicles will park within designated areas or cleared areas without vegetation.</li> <li>Signage to be erected along Wilfred Barret Drive and at Red Gum carpark prior to construction being undertaken to notify users of upcoming temporary closures and alternative access/parking areas.</li> <li>Provide suitably designed construction site access which will consider: <ul style="list-style-type: none"> <li>Road design guidelines.</li> <li>Visible temporary regulatory, warning and guide signs.</li> </ul> </li> <li>Use of accredited traffic controllers where appropriate.</li> </ul>
Visual amenity	Traffic and Waste	<ul style="list-style-type: none"> <li>Mitigation measures as per Section 6.6.3 and Section 6.8.3.</li> </ul>
	Visual amenity	<ul style="list-style-type: none"> <li>Where possible construction materials to be selected to visually match the surrounding landscape.</li> </ul>
		<ul style="list-style-type: none"> <li>Rehabilitation is to be carried out in accordance with the VMP (Appendix H).</li> </ul>

Major Issues	Impact	Key Environmental Objectives
Indigenous heritage	Aboriginal heritage sites	<ul style="list-style-type: none"> <li>• Works may proceed with caution within the project area as assessed within the Due Diligence report (NGH, 2020).</li> <li>• All works must be constrained to the areas assessed within the Due Diligence report, and any activity proposed outside of the assessed area must be subject to an Aboriginal heritage assessment.</li> <li>• All access to the site and laydown areas must be within existing roads/tracks and disturbed areas otherwise visual inspection of the sites by a qualified archaeologist is required.</li> <li>• When any soil excavation, earth works, vegetation clearing and leaf litter removal activities are conducted, workers will be required to visually inspect the area for surface shell, bone, rocks or any other Aboriginal objects.</li> <li>• If any items suspected of being Aboriginal heritage items are discovered during the work, all work in the immediate vicinity must stop and Environmental Reporting notified.</li> </ul>
Non-indigenous heritage	Harm to a non-Aboriginal heritage item	<ul style="list-style-type: none"> <li>• If any suspected items of Heritage are identified during works, Environmental reporting will be notified.</li> </ul>
Cumulative impacts	Traffic	<ul style="list-style-type: none"> <li>• Consultation with project contacts for the Magenta Shores Resort expansion should the projects overlap to anticipate any cumulative impacts on the road network/local traffic.</li> </ul>

## 9. SUMMARY OF LICENCES AND APPROVALS

Table 9-1 Summary of licences and approvals required

Licence or Approval	
<b>Approval under Part 5 of the EP&amp;A Act</b>	<p>The proposal is assessed under Division 5.1 of the EP&amp;A Act because the requirements for consent are removed by the Infrastructure SEPP.</p> <p>Council is both the proponent and the determining authority for this proposal.</p>
<b>Road Occupancy Licence (ROL)</b>	<p>An ROL may be required from TfNSW should road closures be required when undertaking the works.</p>



## 10. CONCLUSION

### 10.1. PRINCIPLES OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The NSW *Protection of the Environment Administration Act 1991* defines the principles of ecologically sustainable development (ESD). These are presented below and discussed in relation to the proposal.

#### 10.1.1. The Precautionary Principle

According to the precautionary principle, if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be seen as a reason not to protect the environment. The use of the precautionary principle implies that proposals should be carefully evaluated to identify possible impacts and assess the risk of potential consequences.

The precautionary principle has been applied in assessing conservation values and environmental threats and impacts associated with works proposed throughout this REF. The development of mitigation measures and safeguards to manage impacts aims to reduce the risk of serious and irreversible impacts on the environment.

Generally, throughout this assessment, there has been found to be a low level of uncertainty in regard to the factors assessed.

#### 10.1.2. Inter-generational Equity

The principle of inter-generational equity requires the present generation to ensure that the health diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.

The impacts of the proposed works are likely to be localised and temporary and would not significantly diminish resources and nature conservation values available for the use by future generations. The proposal would provide improved access and connectivity along the Central Coast for future use as a shared pathway, as well as greater access to the Wyrabalong National Park.

#### 10.1.3. Conservation of Biological Diversity and Ecological Integrity

Conservation of biological diversity and ecological integrity are a fundamental consideration of ESD.

An assessment of the existing local environment has been undertaken in order to identify and manage any potential impacts of the proposal on local biodiversity. The impacts of the proposal on local populations of threatened species, threatened communities and their habitats have been assessed in detail in Appendix E and summarised in Section 0. The proposal is not considered to have a significant impact on biological diversity and ecological integrity.

#### 10.1.4. Appropriate Valuation of Environmental Factors

This principle requires that '*costs to the environment should be factored into the economics costs of a project*'. This REF has examined the environmental consequences of the proposal and identified mitigation measures for factors which have the potential to experience adverse impacts. Requirements imposed in terms of implementation of these mitigation measures would increase both the capital and operations costs of the proposal. This signifies that environmental resources have been given appropriate valuation.

## **10.2. JUSTIFICATION OF THE PROPOSAL**

This REF has assessed the potential construction and operational impacts of the proposed Stage 2 Magenta Shared Pathway.

The REF has been prepared with due consideration given to the provisions of the EP&A Act and the Environmental Planning and Assessment Regulation 2000. A Clause 228 checklist has been completed and is provided in Appendix C.

This assessment found that once operational, the proposal would allow for the completion of the missing link of the shared pathway system along this section of the Central Coast and would build infrastructure to work towards completion of the NSW Coastal Cycleway. The works were not found to result in any substantial impacts to threatened species, populations or ecological communities listed on the BC Act, or the EPBC Act.

Having considered all the relevant factors documented in this document, it is concluded that the proposal would not have a significant impact on the environment, and would achieve the identified project objectives with the implementation of the mitigation measures identified within this REF.

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**Notification of**

**RECONSIDERATION DECISION – not controlled action if undertaken in a particular manner**

**Magenta Shared Pathway Stage 2, NSW (EPBC 2017/7926)**

This decision is made under sections 78 and 78C of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

**Proposed action**

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<b>person named in the referral</b>	Central Coast Council ABN: 73 149 644 003
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<b>proposed action</b>	To construct a 3.7 km long dual-use cycleway and footpath alongside Wilfred Barrett Drive, Magenta, NSW [See EPBC Act referral 2017/7926 and reconsideration request dated 19 February 2021].
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**Reconsideration of decision: Not a controlled action if undertaken in a particular manner**

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<b>Reconsideration of decision</b>	Pursuant to sections 78 and 78C of the EPBC Act, I, Louise Vickery, Assistant Secretary, Environment Assessments (NSW, ACT) Branch, Department of Agriculture, Water and the Environment, a delegate of the Minister for the Environment, for the purposes of the EPBC Act, revoke the decision of 17 July 2017 and substitute the following decision under section 75(1) of that Act.
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<b>status of proposed action</b>	The proposed action is not a controlled action provided it is undertaken in the manner set out in this decision.
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**Person authorised to make decision**

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<b>Name and position</b>	Louise Vickery Assistant Secretary Environment Assessments (NSW, ACT) Branch
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**signature**

**date of decision**

11 May 2021

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**Manner in which  
proposed action  
must be taken**

To avoid significant impacts on listed threatened species and communities (sections 18 & 18A), the person taking the action must:

1. Not **clear** more than 2.76 ha of **Littoral Rainforest**. Native vegetation must only be cleared for the **construction areas**, as described in the **Biodiversity Assessment** and mapped at Annexure A.
  2. Rehabilitate all **construction areas** to the **original vegetation type** within five years of commencing rehabilitation.  
Rehabilitation of **construction areas** in each sub-section of the pathway must commence immediately following the completion of construction work at that sub-section of the pathway.  
Rehabilitation must be in accordance with the **National Standards for the Practice of Ecological Restoration**.
  3. Rehabilitate **Littoral Rainforest** so that it meets the **EPBC Act key diagnostic and condition threshold**.
  4. **Not clear** more than five individual Magenta Lilly Pilly (*Syzygium paniculatum*) trees as described in the **Biodiversity Assessment** and mapped at Annexure A.
  5. Use local provenance Magenta Lilly Pilly (*Syzygium paniculatum*) for any rehabilitation planting.
  6. Ensure that there is no increase in weed species cover within the **project site** compared to the baseline vegetation condition as described in the **EPBC Act** referral.
  7. Implement **best practice controls** to prevent the invasion and spread of weeds on the **project site** and prevent the introduction of Myrtle Rust (*Puccinia psidii*) to the **project site** as a result of the action.
  8. Implement regular monitoring capable of detecting any likelihood of failure to meet the above measures and maintain accurate records substantiating all activities associated with or relevant to these manners and provide such records to the **Department** upon request.
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## **Definitions:**

**Best practice controls** mean the measures specified in the **Weed Management procedure** within the **Biodiversity Assessment**.

**Biodiversity Assessment** means the document attached to the reconsideration request cited as True B. and Palmer M. (2020) *Magenta Shared Pathway Stage 2 Biodiversity Assessment Final Draft V1.2*.

**Clearing** means the cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning of vegetation (but not including weeds – see the *Australian weeds strategy 2017 to 2027* for further guidance).

**Construction areas** means the construction tracks and disturbed curtilage as described in the **Biodiversity Assessment** and shown marked within the red outline and labelled as 'Proposed shared pathway' on the maps at Annexure A.

**EPBC Act** means the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

**Key diagnostic and condition threshold** means the *Key Diagnostic Characteristics and Condition Thresholds* that vegetation must meet for it to be classified as **Littoral Rainforest** under the **EPBC Act** (as detailed in the Commonwealth Listing Advice on Littoral Rainforest and Coastal Vine Thickets of Eastern Australia 2008).

**Littoral Rainforest** means the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia listed as critically endangered under the **EPBC Act**.

**National Standards for the Practice of Ecological Restoration** means *National Standards for the Practice of Ecological Restoration*, Society for Ecological Restoration Australasia Standards Reference Group (2017), or a subsequent version.

**Original vegetation type** means the native vegetation types as mapped at Annexure A and described in the **Biodiversity Assessment**.

**Project site** means the area enclosed by a green dotted line labelled 'Biodiversity study area' in Annexure A.

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# ANNEXURE A – Project site map (source Magenta Shared Pathway Stage 2 Biodiversity Assessment Final Draft V1.2 2020)

Figure 1





[illegible]







Legend

Study Area

Magenta Lily Pili

Hollow: Bearing Trees

Keep

Remove



Data Attribution:  
 © 2024, 2025  
 0 6304, Internet: 2025, Google Hybrid 2025

Ref: 10-560 Biodiversity, Workspace  
 200729-6512-5604921 The altered Species  
 list: 10-560  
 Address: 10-560  
 Date created: 10/11/2025



# HIGH





Figure 6



