ENVIRONMENTAL IMPACT STATEMENT

ENVIRONMENTAL PROTECTION WORKS – REHABILITATE DISUSED QUARRY

251 ADELAIDE STREET, RAYMOND TERRACE (PART LOT 232 DP593512)

CLIENT: RAYMOND TERRACE PARKLANDS

DATE: 06 APRIL 2022

PREPARED BY:

ABN 23 104 067 405
7 Canberra Street Charlestown NSW 2290 | PO Box 850 Charlestown NSW 2290
87 Herbert Street Gulgong NSW 2852 | PO Box 232 Gulgong NSW 2852
02 4942 5441 | 02 6374 2911
admin@dewittconsulting.com.au
www.dewittconsulting.com.au

DECLARATION

Environmental Impact Statement (EIS) – Proposed Environmental Protection Works to Rehabilitate Disused Quarry

Prepared under Part 4 of the *Environmental Planning and Assessment Act 1979*

EIS Prepared by:

Name	Marina Budisavljevic
Qualifications	Bachelor of Urban & Environmental Planning
Address	de Witt Consulting 7 Canberra Street CHARLESTOWN NSW 2290
Proponent name	Raymond Terrace Parklands
Proponent address	PO Box 342 EARLWOOD NSW 2206
Project address	Part Lot 232 DP593512 251 Adelaide Street RAYMOND TERRACE NSW 2324
Proposed project	Environmental protection works to rehabilitate disused quarry
Certification	I certify that I have prepared the contents of this Environmental Impact Statement and to the best of my knowledge: ➢ the document has been prepared in accordance with Part 4 of the *Environmental Planning and Assessment Act 1979* and Schedule 2 of the Environmental Planning and Assessment Regulation 2021; ➢ the contents of the environmental impact statement have been prepared in accordance with the NSW Department of Planning, Industry & Environment Secretary's Environmental Assessment Requirements; ➢ the document contains all information made available from the proponent; and ➢ The information contained in the document is neither false nor misleading.
Signed	

Reviewed by	Released by
Name: Emma Mason **Position:** Principal Town Planner	**Name:** Marina Budisavljevic **Position:** Senior Town Planner **Date:** 6 April 2022

CONTENTS

APPENDICES

GLOSSARY AND ABBREVIATIONS

Key terms and abbreviations used throughout this document are specified in the following list.

Acronym	Legislation
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulations	Environmental Planning and Assessment Regulations 2021
BC Act	*Biodiversity Conservation Act 2016*
	Biosecurity Act 2015
	Coal Mine Subsidence Compensation Act 2017
	Coastal Management Act 2016
	Contaminated Land Management Act 2008
	Crown Land Management Act 2016
	Environmentally Hazardous Chemicals Act 1985
FM Act	*Fisheries Management Act 1994*
	Heritage Act 1997
	National Parks and Wildlife Act 1974
	Native Vegetation Act 2003
POEO Act	*Protection of the Environment Operations Act 1997*
	Protection of the Environment (Clean Air) Regulation 2010
	Protection of the Environment (General) Regulation 2009
	Protection of the Environment (Noise Control) Regulation 2008
POEO (Waste) Regulations	Protection of the Environment Operations (Waste) Regulations 2014
	Roads Act 1993
	Rural Fires Act 1997
	Soil Conservation Act 1938
	Waste Avoidance and Resource Recovery Act 2001
	Water Management Act 2000

Acronym	Terms
ABS	Australian Bureau of Statistics
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
ASS	Acid sulfate soils
BDAR	Biodiversity Development Assessment Report
DA	Development Application
DPIE	Department of Planning, Industry and Environment
CEMP	Construction Environmental Management Plan
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
ENM	Excavated Natural Material
EPA	Environmental Protection Authority
EPL	Environmental Protection Licence
ESD	Ecologically Sustainable Development
CEMP	Construction Environmental Management Plan
LGA	Local Government Area
NES	National Environmental Significance
NSW	New South Wales
NRAR	Natural Resource Access Regulator
PASS	Potential acid sulfate soils
RAAF	Royal Australian Air Force
RFS	Rural Fire Service
SEARs	Secretary's Environmental Assessment Requirements
VENM	Virgin Excavated Natural Material

1. INTRODUCTION

1.1. PROJECT OVERVIEW

This Environmental Impact Statement (EIS) has been prepared for Raymond Terrace Parklands to accompany a Development Application (DA) for the rehabilitation of a disused quarry to enable future development for recreation use of the site. The proposal is defined as environmental protection works, which requires consent pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposal will ensure that an underutilised site can be restored to a recreational use that is appropriate for the land use needs of a growing population in the Port Stephens local government area (LGA).

The proposal is further defined in the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation), Schedule 3, Part 2, Clause 45 as waste management facilities or works:

> ***waste management facility or works*** *means a facility or works that—*
>
> *(a) stores, treats, purifies or disposes of waste, or*
>
> *(b) sorts, processes, recycles, recovers, uses or reuses material from waste.*

Clause 45(4) states that development for the purpose of a waste management facility or works is designated development if, inter alia, the facility or work are located:

> *(a) in or within 100 metres of a natural waterbody, wetland, coastal dune field or environmentally sensitive area of State significance, or*
>
> *(b) in an area of high watertable, highly permeable soils, acid sulfate, sodic or saline soils, or*
>
> *(c) in a drinking water catchment, or*
>
> *(d) in a catchment of an estuary where the entrance to the sea is intermittently open, or*
>
> *(e) on a floodplain, or*
>
> *(f) within 500 metres of a residential zone or 250 metres of a dwelling not associated with the development and, in the consent authority's opinion, considering topography and local meteorological conditions, are likely to significantly affect the amenity of the neighbourhood because of noise, visual impacts, vermin, traffic or air pollution, including odour, smoke, fumes or dust.*

The site is partially mapped as a wetland (local), is mapped as containing acid sulfate soils, is flood affected and is within 500 metres of a residential zone. As a result, the proposal is designated development. Part 3 Division 1 of the EP&A Regulation states that a development application for designated development must be accompanied by an EIS.

This EIS has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued by the Secretary of the NSW Department of Planning, Industry and Environment (DPIE) on 28 January 2020 (**Appendix 1**) and the relevant provisions of Part 8 Division 5 of the EP&A Regulation. It is acknowledged that the proposal as referenced within the SEARs states:

> *"The proposal involved the dewatering and filling in of the onsite dam by disposing approximately 3.5 million tonnes clean fill of ENM* [Excavated Natural Material] *and VENM* [Virgin Excavated Natural Material]*."*

The proposal as described in this EIS differs from the SEARs where it more correctly involves:

> The backfilling of the disused quarry by disposing approximately 1,443,000m^3 or 2,921,700 tonnes of fill material including ENM, VENM, Potential Acid Sulfate Soils (PASS) and other material that is suitable to be used for backfill that is General or Specific Resource Recovery Exempt Material (RRE) approved by the NSW Environment Protection Authority (NSW EPA).

The input of specialised geotechnical engineers has resulted in more accurate fill quantities and a refined approach to the proposed works that are suited to the site conditions and future land use. Notwithstanding, the SEARs are considered to remain relevant and additional details are provided

within this EIS particularly where the proposal differs from the SEARs. A detailed description of the proposal including backfill material, volume, mass and methodology is provided in Section 3 of this EIS and **Appendix 12**.

1.2. PROJECT OBJECTIVES

The key objectives for the proposal include:

- Rehabilitate the disused quarry over a maximum period of 10 years;
- Return the land to a suitable condition that can be utilised for recreational use; and
- Promote employment through rehabilitation and construction phases as well as ongoing use.

The landowner is exploring options for future land use with the current preferred option being a golf course.

1.3. SEARS

The SEARs (**Appendix 1**) for the preparation of an EIS provides key issues to be addressed. A summary of these issues and where these are addressed within this EIS is provided in Table 1.3 below.

Table 1.3: SEARs

Category	Requirement	Section within EIS
General	The EIS must meet the minimum form and content requirements in Part 8 Division 5 of the EP&A Regulation	Throughout
Key Issues	The EIS must include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts if necessary) and develop appropriate measures to avoid, minimise, mitigate and/or manage these potential impacts. As part of the EIS assessment, the following matters must also be addressed:	
Strategic and statutory context	– a detailed justification for the proposal and suitability of the site for the development – a demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), or justification for any inconsistencies – a list of any approvals that must be obtained under any other Act or law before the development may lawfully be carried out	Sections 4 and 8
Biodiversity	– accurate predictions of any vegetation clearing on site or for any road upgrades – a detailed assessment of the potential impacts on any threatened species, populations, endangered ecological communities or their habitats, including groundwater dependent ecosystems – characterisation of the waterbodies in relation to their ecological and hydrological function – details of weed management during construction and operation in accordance with existing State, regional or local weed management plans or strategies – a detailed description of the measures to avoid, minimise, mitigate or offset biodiversity impacts	Section 6.7 / Appendix 7 and 16
Soil and water	– a description of local soils, topography, drainage and landscapes – a detailed assessment of the extent and nature of any contamination of the soil, groundwater and marine sediments – details of water usage for the proposal including existing and proposed water licencing requirements in accordance with the *Water Act 1912* and/or the *Water Management Act 2000* – an assessment of potential impacts on floodplain and	Sections 6.4 and 6.6 / Appendix 2, 4 and 5

	stormwater management and any impact to flooding in the catchment – details of sediment and erosion controls – a detailed site water balance – an assessment in accordance with ASSMAC Guidelines for the presence and extent of acid sulfate soils (ASS) and potential acid sulfate soils (PASS) on the site and, where relevant, appropriate mitigation measures – an assessment of potential impacts on the quality and quantity of surface and groundwater resources – a description and appraisal of impact mitigation and monitoring measures	
Air quality	– a description of all potential sources of air and odour emissions – an air quality impact assessment in accordance with relevant Environment Protection Authority guidelines – a description and appraisal of air quality impact mitigation and monitoring measures	Section 6.5 / Appendix 11
Noise and vibration	– a description of all potential noise and vibration sources during construction and operation, including road traffic noise – a noise and vibration assessment in accordance with the relevant Environment Protection Authority guidelines – a description and appraisal of noise and vibration mitigation and monitoring measures	Section 6.3 / Appendix 10
Hazards and risk	– an assessment of the risk of bushfire, including addressing the requirements of Planning for Bush Fire Protection 2006 (RFS). Any proposed Asset Protection Zones must not adversely affect environmental objectives (e.g. buffers) – any geotechnical limitations that may occur on the site and if necessary, appropriate design considerations to address this – an assessment of flood risk on the site. The assessment should determine: the flood hazard in the area; address the impact of flooding on the proposed development, and the development's impact (including filling) on flood behaviour of the site and adjacent lands; and address adequate egress and safety in a flood event	Sections 6.7, 6.4, 6.6 and 6.17 / Appendix 2, 3 and 4
Traffic and transport	– details of road transport routes and access to the site – road traffic predictions for the development during construction and operation – an assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development	Section 6.2 / Appendix 13
Visual	– including an impact assessment at private receptors and public vantage points	Section 6.10
Heritage	– including Aboriginal and non-Aboriginal cultural heritage	Sections 6.8 and 6.9
Environmental Planning Instruments and other policies	The EIS must assess the proposal against the relevant environmental planning instruments, including but not limited to: • State Environmental Planning Policy (Transport and Infrastructure) 2021 • State Environmental Planning Policy (Biodiversity and Conservation) 2021 • State Environmental Planning Policy (Resilience and Hazards) 2021 • Port Stephens Local Environmental Plan 2013 • Hunter Regional Plan 2036 • relevant development control plans and section 7.11 plans.	Section 4
Guidelines	During the preparation of the EIS you should consult the Department's Register of Development Assessment Guidelines	Throughout

	which is available on the Department's website at https://www.planning.nsw.gov.au/Assess-and-Regulate/Development-Assessment/Industries. Whilst not exhaustive, this Register contains some of the guidelines, policies, and plans that must be taken into account in the environmental assessment of the proposed development.	

Consultation	During the preparation of the EIS, you must consult the relevant local, State and Commonwealth government authorities, service providers and community groups, and address any issues they may raise in the EIS. In particular, you should consult with the:
	• Department of Planning, Industry and Environment, specifically the:
	  ○ Environment Protection Authority
	• Department of Transport, specifically:
	  ○ Roads and Maritime Services
	• NSW Rural Fire Service
	• Natural Resource Access Regulator
	• Environment, Energy and Science Division
	• Worimi Local Aboriginal Land Council
	• Hunter Water Corporation
	• Port Stephens Council
	• the surrounding landowners and occupiers that are likely to be impacted by the proposal.
	Details of the consultation carried out and issues raised must be included in the EIS.
		Section 4

Further consultation after 2 years	If you do not lodge an application under Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* within 2 years of the issue date of these SEARs, you must consult with the Planning Secretary in relation to any further requirements for lodgement.	The SEARs are dated 28/01/2020. The EIS is lodged within 2 years of the issue of the SEARs.

The SEARs also state:

> *"In preparing the SEARs, the Department of Planning, Industry and Environment (the Department) has consulted with the Natural Resource Access Regulator (NRAR). Unfortunately, NRAR was unable to respond in time. You must undertake direct consultation with them and address their requirements in the EIS."*

Accordingly, NRAR was contacted and the following response was provided:

Table 1.4: NRAR requirements

NRAR Requirement	Section within EIS
The identification of an adequate and secure water supply for the life of the project. This includes confirmation that water can be sourced from an appropriately authorised and reliable supply.	
Annual volumes of surface water and groundwater proposed to be taken by the activity (including through inflow and seepage) from each surface and groundwater source as defined by the relevant water sharing plan.	Section 6.2 / Appendix 2 and 5
Existing and proposed regulatory requirements in accordance with the *Water Act 1912/Water Management Act 2000* (whichever is relevant) and relevant Water Sharing Plan/s. This is to demonstrate that existing licences and/or approvals and licensed uses are appropriate, and to identify where additional licences and/or approvals are required. This is to include an assessment of the current market depth where additional water entitlement is required.	Section 4.8

A detailed and consolidated site water balance.	Section 6.6 / Appendix 5
Assessment of impacts on surface and groundwater sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, and groundwater dependent ecosystems, and measures proposed to reduce and mitigate these impacts.	Section 6.6 / Appendix 2 and 5
Separation of clean and dirty water, and development of sediment and erosion control measures in accordance with industry standards will be required.	Sections 3 and 6.6 / Appendix 11
Assessment of flood related impacts and consistency with relevant floodplain management plans or strategies. Where impacts are identified, measures to mitigate these impacts will be required.	Section 6.6 / Appendix 6
Proposed surface and groundwater monitoring activities and methodologies.	Section 4 and 6.6 / Appendix 2 and 5
Assessment of any potential cumulative impacts on water resources, and any proposed options to manage the cumulative impacts.	Section 6.6 / Appendix 5 and 6
Assessment against the "Guidelines for Controlled Activities on Waterfront Land (NRAR 2018)" for watercourse crossings and works within waterfront land. Identification of relevant buffers for works within waterfront land will be required.	Details to be provided with future Controlled Activity Approval
A statement of where each element of the SEARs is addressed in the EIS in the form of a table.	Section 1.3
Full technical details and data of all surface and groundwater modelling.	Appendix 2
Where groundwater may be intercepted or impacted a detailed assessment against the NSW Aquifer Interference Policy (2012) using DoI Water's assessment framework. Justification is required to support a statement that groundwater is not to be intercepted.	Section 6.6 / Appendix 2 and 5
Details of the final landform of the site, including final void management (where relevant) and rehabilitation measures.	Section 3 / Appendix 6

It is further noted that Attachment A of EPA's response and contribution to the SEARs was incorrect and for a different project. EPA was contacted to amend this error and the revised Attachment A is provided with **Appendix 1**.

1.4. STRUCTURE OF THE EIS

The purpose of this EIS is to:

- Describe the land to which the proposal relates and the character of the surrounding area;
- Describe the proposed activity;
- Define the statutory framework within which the proposal is to be assessed and determined;
- Determine environmental impacts of the proposed development; and
- Provide environmental mitigation measures to manage potential environmental impacts.

The EIS is set out as follows:

- Section 2 presents the site, its attributes and location
- Section 3 presents a detailed description of the proposed works
- Section 4 presents the statutory context
- Section 5 outlines consultation with agencies and the community

- Section 6 provides an environmental assessment of the proposed development and likely impact on the environment
- Section 7 provides consideration of matters of national environmental significance
- Section 8 provides a list of approvals and licences that may be required
- Section 9 provides consideration of Clause 171 factors
- Section 10 provides a compilation of environmental management measures
- Section 11 provides a conclusion and justification for the proposed development.

1.5. PROPONENT DETAILS

The proponent for the development is Raymond Terrace Parklands.

2. SITE ATTRIBUTES AND LOCATION

2.1. SITE PARTICULARS AND LOCATION

The site is located on land legally described as Lot 232 in Deposited Plan (DP) 593512 and known as 251 Adelaide Street, Raymond Terrace. Lot 232 in DP 593512 is approximately 44.36 hectares (ha). The site specifically relates to the disused and now inundated quarry void, which covers an area of approximately 20.71 ha and greater than 1.25 million cubic metres (m^3). The site also includes an area of land covering approximately 1.5 ha to the west of the quarry void, connecting to Adelaide Street.

The site is generally bounded by Grahamstown Drain to the north, Windeyers Creek to the south, Adelaide Street to the west and the Raymond Terrace Wastewater Treatment Plant to the east. Further north is vegetated land and low-density residential development and further south is also vegetated land and the Pacific Highway. Further west is the Hunter River (~2km) and further east to north-east is the Grahamstown Dam (~4km). The site is located within the southern portions of the Raymond Terrace area proximate to Heatherbrae and approximately 17 kilometres (km) north of Newcastle. Figure 2.1 below provides an overview of the above-mentioned site location.

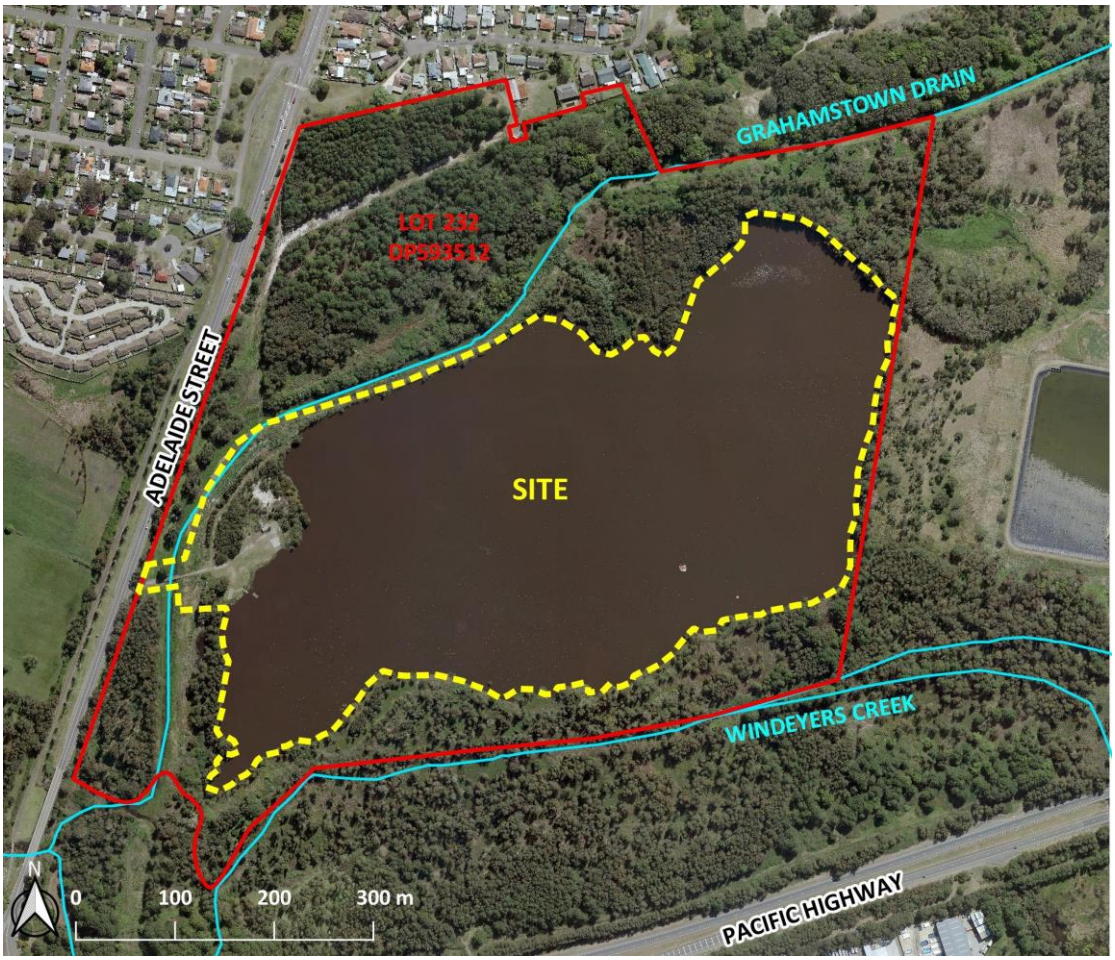


Figure 2.1: Overview of the site indicated by yellow-dash line and Lot 232 DP593512 indicated by red line (indicative only) (Aerial image source: Aerometrex 2021).

The Port Stephens Local Environmental Plan 2013 identifies Lot 232 DP593512 within the RU2 Rural Landscape zone. It is acknowledged that a portion of land to the north-west of Lot 232 DP593512 is being investigated for rezoning potential. The focus of those investigations currently relates to raising the site levels above the flood planning level to potentially accommodate a future residential use. Those works are outside of the site and do not form part of this EIS.

2.2. SITE HISTORY

The site has historically been used as a sand quarry since the late 1950s (**Appendix 2**). The previous land owner, Rocla Quarry Products, had an Environmental Protection Licence (EPL) (No. 7485) for a Scheduled Activity being 'extractive activities', and the Fee Based Activity listed as 'land-based extractive activity' at a scale of >50,000 to 1100,000 tonnes. It is understood that quarrying activities ceased in 2010 and the EPL was surrendered in 2012.

2.3. ENVIRONMENTAL SETTING / PHYSICAL FEATURES

2.3.1. Topography

The site has a gradual slope from Adelaide Street to the quarry void with levels of approximately 2.3 m AHD at the access road into the site and 1.4 m AHD at the top of the bank of the quarry void (**Appendix 10**). A bathymetric survey undertaken in 2010 by Tattersall Lander (**Appendix 10**) determined the quarry void to have a surface area of approximately 219,579m^2 and varying depths from with the deepest area at approximately RL -10.8m which corresponds to an approximate depth to the base of the quarry void of 11.8m (**Appendix 12**).

2.3.2. Geology / Contamination

The Detailed Contaminated Land Assessment (**Appendix 2**) has been undertaken for this EIS, including soil, sediment, surface water and groundwater investigations with field and laboratory analysis for each. A conceptual site model has been developed which identifies potential sources of on and off-site contamination as the previous industrial quarry activities and uncontrolled fill (onsite) and Raymond Terrace Wastewater Treatment Works and Grahamstown Drain (offsite). The assessment concludes that:

> *"Based on the CSM and investigation results, the Site has not been contaminated based on current or historic land use. The Site is environmentally suitable for the proposed commercial/industrial land use. In addition, overall, given the proposed backfilling of the quarry void with environmentally benign and appropriately placed PASS, this is a positive environmental outcome for the site and restoration of a site after an industrial history in order to facilitate positive recreational future use."*

Additionally, an Acid Sulfate Soils Investigation Report (**Appendix 4**) has also been prepared for this EIS, which concludes that acid sulfate soils are not present within the site. This is further discussed in Section 6.4 of the EIS.

2.3.3. Hydrogeology

A Site Water Balance Report (**Appendix 5**) prepared for this EIS provides that the site is underlain by a regionally important aquifer system known as the Tomago Sandbeds. The report also states that within the inundated disused quarry envelope, the depths to water level are generally expected to be less than 2m when measured from the existing surface level around the quarry perimeter but the water levels generally vary according to seasonal changes.

Subsurface and surface water within the study area is expected to discharge either the manmade Grahamstown Drain in the north or the Windeyers Creek in the south, which eventuates to a confluence in the south-west before flowing further to the broader Hunter River system. Grahamstown Dam discharges to Windeyers Creek which then also flows to the Hunter River.

2.3.4. Flooding

An Earthworks Flood Impact Assessment (**Appendix 6**) prepared for the EIS to determine the peak flood levels and flood behaviour at the site for the 10% Annual Exceedance Probability (AEP) and 1% AEP design events. The site provides a storage area for flooding of both Windeyers Creek and the Hunter River. Windeyers Creek is characterised by wide, low-lying swamp areas where ground levels are typically 1.0-1.5 m AHD. Windeyers Creek separates into two branches. The northern creek branch has been realigned into a well-defined channel (Grahamstown Drain) running along the north and west boundaries of the site. Across the remaining site, elevations are generally below 2.5 m AHD except for the north western corner of the block which is raised to around 3.0 m AHD. The report further provides that the site is subject to two flooding mechanisms:

- Local flooding of the Windeyers Creek catchment; and
- Backwater inundation from the broader Hunter River system.

Although the Hunter River flooding will result in peak flood conditions at the site, local flooding of Windeyers Creek is the critical condition in terms of assessing the impact of the proposed earthworks. The Windeyers Creek peak flood levels at Lot 232 DP593512 are:

- 2.0 m (AHD) for the 10% AEP; and
- 2.2 m (AHD) for the 1% AEP.

The report also provides that the road embankment of Adelaide Street acts as a major control for Windeyers Creek flooding, with flow confined to the existing bridge opening (i.e. no local overtopping of Adelaide Street). Upstream of the development site, the elevated Pacific Highway embankment also provides for a significant hydraulic control, particularly on the southern tributary of Windeyers Creek.

The extent of overbank inundation within the Lot 232 DP593512 is generally maintained within the disused quarry lake area between the two Windeyers Creek branches, to the west of the elevated sewage treatment plant. Typical 1% AEP flood depths across Lot 232 DP593512 are within the order of 0.8 - 1.25 m (above the modelled lake surface), with the peak water level at 2.2 m AHD. Velocity of floodwaters are generally less than 0.3 m/s, with higher velocities (up to 1 m/s) contained within the realigned Windeyers Creek channel along the northern boundary of the site. Due to the poorly defined nature of the southern creek branch, the main flood path along the southern boundary of the site is less distinct. Modelled floodwaters spill out of the natural creek channel onto the disused quarry area. The preferential flow path across the lake is indicated in Figure 2.2 below.

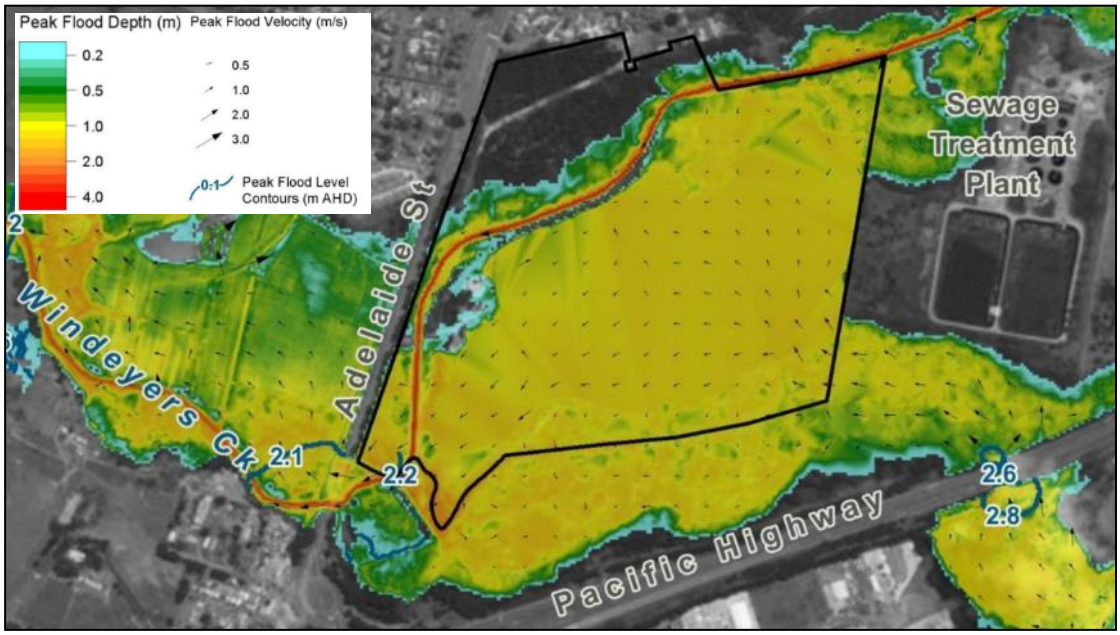


Figure 2.2: Extract from Earthworks Flood Impact Assessment (**Appendix 6**) (prepared by BMT).

2.3.5. Vegetation and Trees

The subject land is comprised of a void from a quarry that has filled with water, native vegetation remnants and exotic grassland. Despite past disturbance within the study area, the subject land is considered to be habitat for threatened flora. A Flora and Fauna Offsets Assessment (**Appendix 16**) was undertaken in 2016 for the previously mentioned investigation of the north-west portion of Lot 232 DP593512. More recently a Biodiversity Development Assessment Report was prepared by de Witt Ecology dated 18 March 2022 (**Appendix 7**). Habitats within the study area are associated with coastal swamp forests and wetlands. There are three Nationally Important Wetlands within the 10 km buffer including Hunter Wetlands Centre, Hexham Swamp and Kooragang Nature Reserve Research (also referred to as the Hunter Wetlands National Park). A number of Plant Community Types including two endangered ecological communities (EECs) were located within a 1500m buffer of the site (Table 2.3.5 and Figure 2.3). It is noted that the site is partly mapped as containing Biodiversity Values as indicated

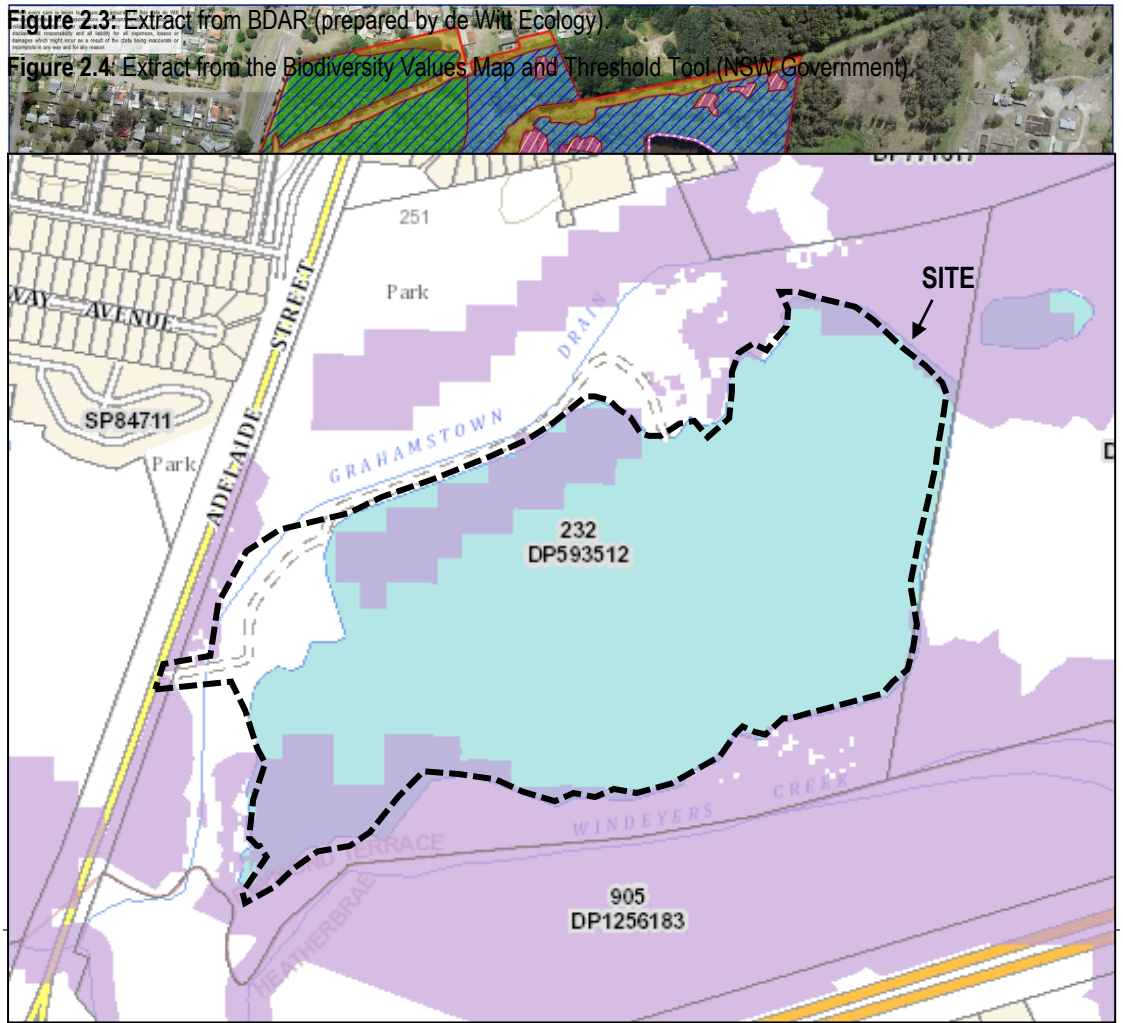
in Figure 2.4. Notwithstanding, the proponent has advised no clearing is required for the proposed works.

Table 2.3.5: Extract from the BDAR (Table 1)

PCT – (mapped Cockerill et al. 2013)	Location		
	Subject Land	Study Area (including adjoining proposed development)	1500 m Buffer
PCT 1591 Grey Gum - Rough-barked Apple shrubby open forest of the lower Hunter	Yes	Yes (including adjoining proposed development; de Witt Ecology ref EC103)	Yes
PCT 1601 Spotted Gum - Narrow-leaved Ironbark-Red Ironbark shrub - grass open forest of the central and lower Hunter	No	No	Yes
PCT 1619 Smooth-barked Apple - Red Bloodwood - Brown Stringybark - Hairpin Banksia heathy open forest of coastal lowlands	No	No	Yes
PCT 1646 Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast	Yes	Yes (including adjoining proposed development; de Witt Ecology ref EC103)	Yes
PCT 1647 Red Bloodwood - Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast	No	No	Yes
PCT 1718 Swamp Mahogany - Flax-leaved Paperbark swamp forest on coastal lowlands of the Central Coast	Yes	Yes (including adjoining proposed development; de Witt Ecology ref EC103)	Yes
PCT 1727 Swamp Oak - Sea Rush - Baumea juncea swamp forest on coastal lowlands of the Central Coast and Lower North Coast	Yes	Yes (including adjoining proposed development; de Witt Ecology ref EC103)	Yes

Figure 2.3: Extract from BDAR (prepared by de Witt Ecology)

Figure 2.4: Extract from the Biodiversity Values Map and Threshold Tool (NSW Government)



2.3.6. Traffic and Access

The vehicular access to the site is from the existing unsealed driveway off Adelaide Street, which was previously used by the quarry. There is no formalised parking on site due to its historical use. There is ample capacity onsite for parking and vehicle manoeuvring.

Adelaide Street provides a link between Raymond Terrace and the Pacific Highway network. Adelaide Street carries some regional traffic beyond Raymond Terrace in the Port Stephens LGA. The local road network is utilised by most vehicle sizes including B-double combinations. Adelaide Street is a single lane (each travel direction) road with sealed shoulders and grass verges. Adelaide Street has a sign-posted speed of 70km/h. An off-road shared pathway for pedestrian and cyclists is located along the western side of Adelaide Street.

2.3.7. Bushfire

The site is partially affected by bushfire prone land, Vegetation Buffer, Vegetation Category 3 and the access with Vegetation Category 1. The centre of the quarry void is not identified as bushfire prone land.

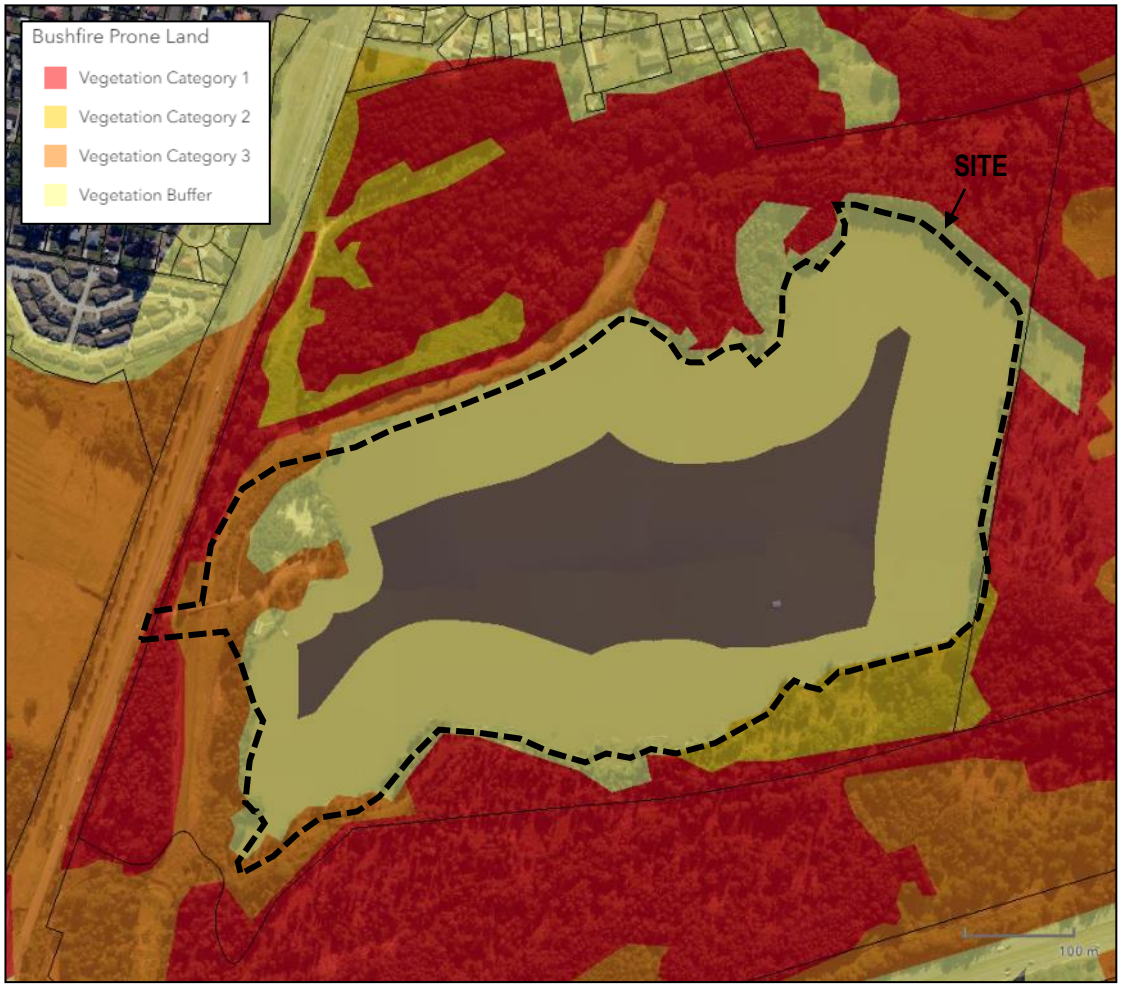


Figure 2.5: Extract from the ePlanning Spatial Viewer (NSW Government).

2.3.8. Coastal Zone

The site is not mapped within these areas, as demonstrated in Figure 2.6. The Coastal Environment Area and Coastal Use Area are approximately 800m and 1km (respectively) from the site and proposed works. The Coastal Wetlands and Proximity Area for Coastal Wetlands are located approximately 1.1km and 1km (respectively) from the site and proposed works.

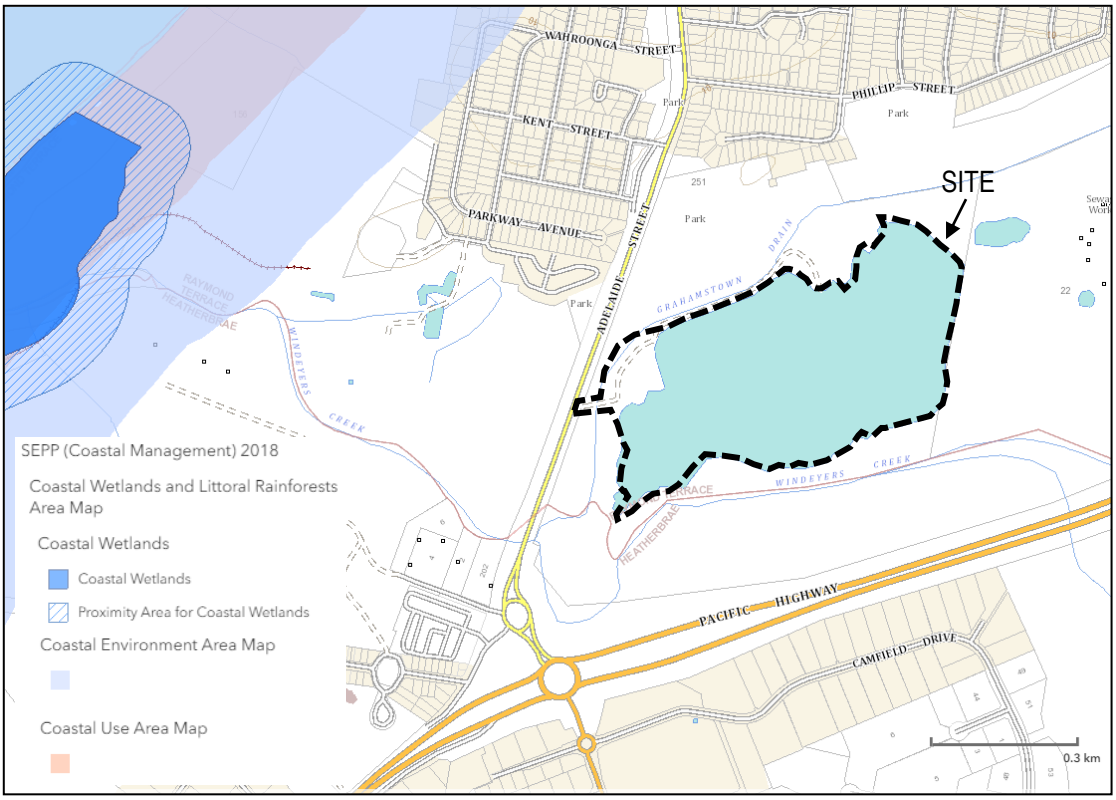


Figure 2.6: Extract from the ePlanning Spatial Viewer (NSW Government).

2.3.9. Local Wetlands

Although the site is not identified as a coastal wetland, it is identified as a local wetland under the Port Stephens LEP 2013. This is addressed further in Section 4 of the EIS.

Figure 2.7: Extract from Port Stephens LEP 2013 Wetlands Map - Sheet WET_002.

2.3.10. Aboriginal Heritage

A search of the Aboriginal Heritage Information Management System (AHIMS) was conducted on 9 April 2020 (**Appendix 8**). No Aboriginal sites were recorded in or near the study area and no Aboriginal places have been declared in or near the above location (50m buffer). The site is substantially cleared and disturbed having regard to its historical use.

2.3.11. Non-Aboriginal (Historic) Heritage

State

The NSW State Heritage Inventory was searched on 24 February 2021. The site is not listed as an item of State Significance on the State Heritage Register. The Raymond Terrace Public School is listed within the NSW State agency heritage register under s.170 of the *Heritage Act 1977* and is approximately 735m north-west of the site. This item is co-located with the Raymond Terrace Public School - Building B00C and Movable Item. The school is also a locally listed item (I73) as provided in Table 2.3.11 and Figure 2.8 (overleaf).

Local

In addition to State Heritage Items, the local heritage register was searched and found the following local heritage items within 1 kilometre of the site (Table 2.3.11 and Figure 2.8 overleaf). It is noted that some of these sites are also located within the Raymond Terrace Heritage Conservation Area (General).

Table 2.3.11: Summary of Schedule 5 Environmental heritage of the PS LEP 2013 proximate to the site

Item No. and Name	Address	Property description	~Proximity to site
I35 – The Free Presbyterian Church of Eastern Australia	155 Adelaide Street	Lot 2, Section 16, DP 758871	950m
I36 – "Woodlands" (timber cottage)	183 Adelaide Street	Lot 76, DP 621767	865m
I37 – Fig tree (*Ficus obliqua*)	193 Adelaide Street	Lot 28, DP 753161	850m
I39 – Raymond Terrace Cemetery and Pioneer Hill Cemetery	1A and 2 Elizabeth Avenue and 4 Tod Street	Part Lot 20, DP 753161; Lots 7008 and 7009, DP 1051708	580m
I45 – "Boomerang Park", including former stone quarry and mature tree planting	17E and 17G Irrawang Street	Lots 1 and 2, DP 1226115	675m
I46 – St Brigid's Catholic Church Group—St Brigid's Convent	52 and 54 Irrawang Street	Lots 13 and 14, Section 15, DP 758871	950m
I47 – St Brigid's Catholic Church Group—St Brigid's Church Hall	58 Irrawang Street	Lot 16, DP 547042	870m
I48 – "Bailiwick" (cottage)	70 Irrawang Street	Lot 2, DP 346695	780m
I51 – "Kia-ora", including mulberry tree beside driveway	13 Kia-ora Street	Lot 13, DP 24939	500m
I68 – Sketchley Cottage and Port Jackson Fig tree (*Ficus rubiginosa*)	1 Sketchley Street	Lot 1, DP 1247072; Part Road Reserve 1243	700m
I70 – St John's Anglican Church Group—church	45 and 45A Sturgeon Street	Lots 3 and 4, Section 9, DP 758871	965m
I73 – Raymond Terrace Public School—former school hall, including WWI school honour board	14 and 16 Swan Street	Lot 2, DP 868750; Lot 11, DP 1034823	735m
I74 – "Kinross," including stone shed and landscaping setting	68 Wahroonga Street	Lot 721, DP 805426	400m
I78 – Uniting Church, including bell tower and WWI honour board	54 William Street	Lot 190, DP 1132724	980m
I80 – St Brigid's Catholic Church Group—St Brigid's Presbytery	67 William Street	Lot 11, Section 15, DP 758871	990m
I81 – St Brigid's Catholic Church Group—St Brigid's Church	69 William Street	Lot 12, Section 15, DP 758871	935m

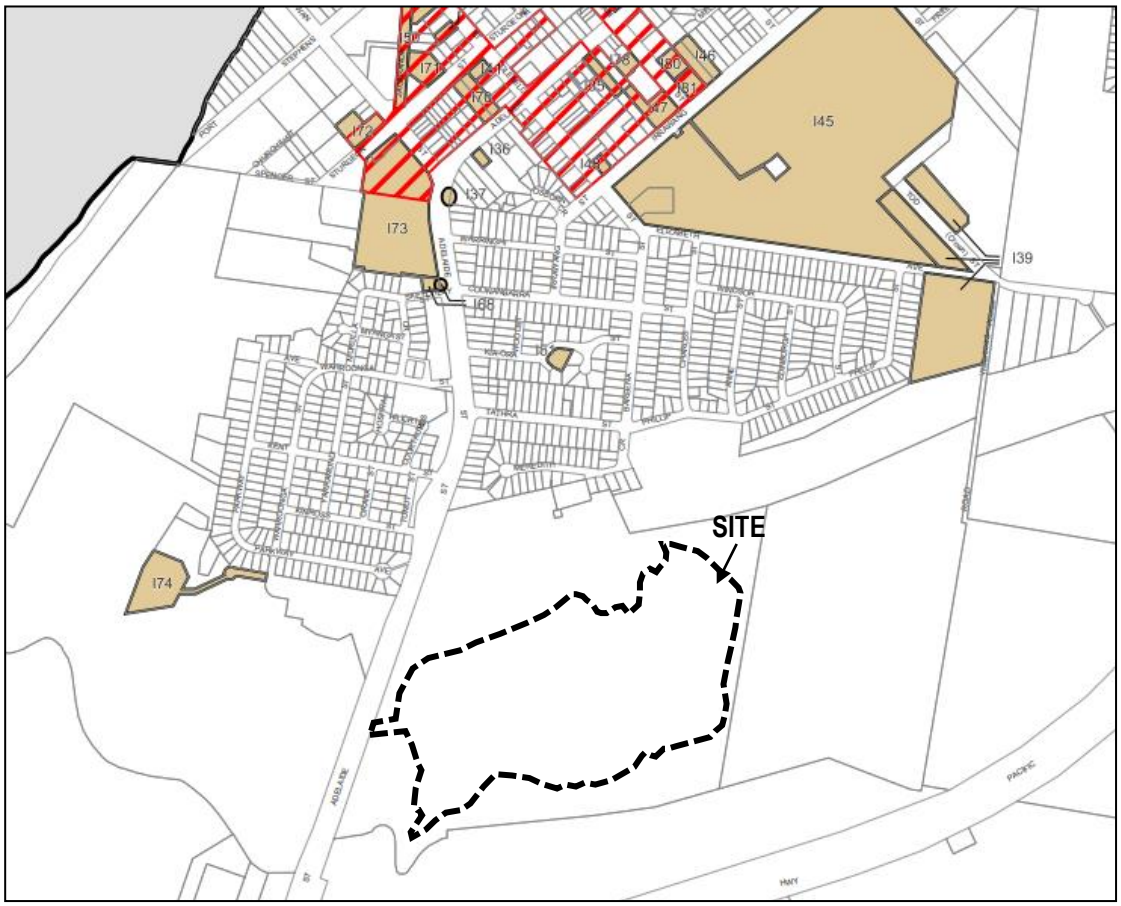


Figure 2.8: Extract from Port Stephens LEP 2013 Heritage Map - Sheet HER_002C.

2.3.12. Mine Subsidence

The site is not identified within a subsidence district.

3. PROJECT DESCRIPTION

3.1. DESCRIPTION OF WORKS

This EIS accompanies an application for the proposed environmental protection works, classified as designated development (waste management facilities or works). The proposed works seek to rehabilitate a disused quarry to enable future recreational use of the site as a golf course.

As stated, it is acknowledged that the proposal as referenced within the SEARs states:

> *"The proposal involved the dewatering and filling in of the onsite dam by disposing approximately 3.5 million tonnes clean fill of ENM* [Excavated Natural Material] *and VENM* [Virgin Excavated Natural Material]*."*

The proposal as described in this EIS differs from the SEARs where it more correctly involves:

> The backfilling of the disused quarry by disposing approximately 1,443,000m^3 or 2,921,700 tonnes of fill material including ENM, VENM, Potential Acid Sulfate Soils (PASS) and other material that is suitable to be used for backfill that is General or Specific Resource Recovery Exempt Material (RRE) approved by the NSW Environment Protection Authority (NSW EPA).

The input of specialised geotechnical engineers has resulted in more accurate fill quantities and a refined approach to the proposed works that are suited to the site conditions and future land use. Notwithstanding, the SEARs are considered to remain relevant and additional details are provided within this section of the EIS, including backfill material, volume, mass and methodology. This information is provided by Consulting Earth Scientists' "Backfill Management Plan" available in **Appendix 12**.

Key phases of the proposed works include:

1. Widening/sealing the existing access road from Adelaide Street;
2. Preliminary earthworks, erosion and sediment control measures and fencing;
3. Transport fill material to the site and backfill quarry void with approximately 1,443,000m^3 or ~2,921,700 tonnes of fill material; and
4. Shaping/grading of fill to allow surface water drainage across the final landform and landscaping.

The works will be conducted in the same order as described above, noting Phase 1 and 2 may be undertaken simultaneously. As provided above, Phase 3 will be effective until the backfilling is completed.

The indicative project timeline is as follows:

- Site establishment and preparatory works (Phase 1 and 2): 4 months
- Transport of fill and backfilling (Phase 3): 7 years 9 months
- Shaping/grading and landscaping the site (Phase 4): 6 months

3.2. HOURS OF OPERATION

It is understood that the proposed construction works will occur during normal hours as follows:

- 7:00am to 6:00pm Monday to Friday; and
- 8:00am to 1:00pm Saturday

No works will occur on Sundays or on public holidays.

3.3. PRELIMINARY WORKS

Preliminary works relate to those undertaken as part of Phase 1 and 2. The existing access road from Adelaide Street is proposed to be widened to allow for the transport vehicles to enter/exit the site and any upgrades required to ensure it is appropriate. Preliminary earthworks including erosion and sediment control measures will be established within the site as well as security fencing and construction signage as required.

3.4. BACKFILL MANAGEMENT PLAN

As stated, a Backfill Management Plan (**Appendix 12**) has been prepared in order to detail the proposed backfill material, backfill acceptance and verification procedures, volume and mass estimates, methodology of backfilling operations, erosion and sediment control measures, PASS contingencies, ground settlement monitoring, ground treatment and environmental monitoring. Extracts of the Backfill Management Plan are provided in subsections 3.4.1 to 3.4.9 below. Appendix 12 should be referred to for full details.

3.4.1. Backfill Material, Volume and Mass

The materials to be imported and used for backfilling the site are to be sourced from various locations in the Sydney, Newcastle, the Hunter region and other sites in New South Wales. The backfill material shall comprise VENM, ENM, PASS and other material that is suitable to be used for backfill that is subject to a General or Specific Resource Recovery Exemption approved by the NSW EPA. Further details of the proposed backfill materials are as follows:

VENM

The *Protection of the Environment Operations Act 1997* (POEO Act) defines VENM as:

Natural material (such as clay, gravel, sand, soil or rock fines):

a) that has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities; and

b) that does not contain any sulfidic ores or soils or any other waste and includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved for the time being pursuant to an EPA Gazettal notice.

ENM

Excavated Natural Material (ENM) is excavated natural material that is, or is intended to be, applied to land as engineering fill or for use in earthworks, that is subject to "*The Excavated Natural Material Exemption 2014*" issued by the NSW EPA under the Protection of the Environment Operations (Waste) Regulation 2014. Under this exemption, ENM is defined as naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:

a) been excavated from the ground, and

b) contains at least 98% (by weight) natural material, and

c) does not meet the definition of Virgin Excavated Natural Material in the Act. Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, Acid Sulfate Soils (ASS), PASS or sulfidic ores.

RRE

Where permitted under an existing General Resource Recovery Exemption (other than the ENM Exemption), geotechnically suitable fill may be used as backfill in accordance with the conditions of the relevant exemption. Applications for a Specific Resource Recovery Exemption(s) may also be made to the NSW EPA for fill used in the quarry rehabilitation works for which there is no current general exemption and where the proposed fill is a bona fide beneficial, fit-for-purpose re-use that will not cause harm to human health or the environment. For the purpose of brevity, fill other than ENM, that is subject to a General or Specific Resource Recovery Exemption and suitable for purpose will be referred to in this document as 'Resource Recovered Exempt Material' or RRE.

PASS

Acid sulfate soils are naturally occurring soils and sediments containing iron sulfide minerals and compounds. When acid sulfate soils are exposed to air, the iron sulfides in the soil react with oxygen and water to produce a variety of iron compounds and sulfuric acid. ASS which has not been oxidised

by exposure to air are known as PASS which when maintained in an anaerobic condition such as below water or in a saturated waterlogged condition, the iron sulfides in the soil are stable.

PASS accepted at the Site shall be classified as VENM in accordance with the NSW EPA Waste Classification Guidelines even though it contains sulfidic ores or soils. PASS will only be backfilled at the Site below water, at elevations at least 2m below the lowest historical level of the water table, in accordance with the requirements stated in NSW EPA *Waste Classification Guidelines, Part 4: Acid Sulfate Soils* (EPA 2014). Based on the groundwater monitoring results for the Site (CES Document Reference: CES200502-PHB-AF), the lowest groundwater level is assessed to be RL 0m. Hence PASS will only be permanently backfilled at the site below an elevation of RL -2m.

Top Soil and Landscaping

Following completion of filling, topsoil should be placed over the backfilled areas and the landform suitably vegetated in accordance with a Landscaping and Vegetation Planting Plan prepared by a suitably experienced and qualified landscaper/horticulturalist. For clarification, the term Topsoil may include the following:

- General purpose soil: Material consisting of natural soil, amended natural soil, a blend of sand and organic materials or a blend of sand, natural soil materials and organic material, which is suitable for growth of plants.
- Topsoil: A natural soil which is the original surface layer of soil from grassland, bushland or cultivated land.
- Natural soil: A soil that has been dug from the landscape and is presented for use with more than minor amendment. This soil can be topsoil, subsoil or a mixture of topsoil and subsoil, typically with a bulk density* of greater than 0.7 kg/L.
- Organic Soil: A general purpose soil (normally an amended natural soil or soil blend) that has a bulk density* of greater than 0.6 kg/L and an organic matter content in the range of 15% to 25% by mass.
- Soil Blend: A general purpose soil derived from the blending of two or more of: sand, natural soil material or organic material; and having a bulk density of greater than 0.7 kg/L and an organic matter content in the range of 3% to 15% by mass.
- Growth mediums being commercial composts to Australian Standards.
- Commercially available soil products and growth media.
- On site blended soil that meets the requirement of, and is tested in accordance with AS4419 "*Soils for Landscaping and Garden Use*".

Assumed Material Properties

Backfill Materials are to be sourced from various locations and hence the material properties of the backfill are anticipated to be variable. For the purpose of estimating backfill volumes, masses and the duration of quarry rehabilitation, it is assumed that the VENM, ENM, PASS and RRE would typically comprise clayey Sand material. The following material characteristics have been assumed in the assessment:

- Bank insitu density of fill material (sourced from various locations in NSW) ~ 2.1 tonnes/m^3.
- Bulking factor (expansion on excavation) = $^{\text{Volume after Excavation}}/_{\text{Volume before Excavation}}$ ~ 1.25.
- Shrinkage Factor (shrinkage on backfilling) = $^{\text{Volume after Backfilling}}/_{\text{Volume after Excavation}}$ ~ 0.95.
- Insitu bulk density when placed in the quarry and consolidated under the weight of the overlying materials ~ 1.8 tonnes/m^3.

The above are assumed parameters which should be confirmed and amended as appropriate at regular intervals during the progress of the rehabilitation works. Construction programmes and filling requirements should be updated accordingly in consideration of any amended parameter.

Backfill Volume and Mass Estimates

An assessment of the required volume of fill to rehabilitate the quarry void has been undertaken using the specialist spatial analytical software programme ArcGIS and considering the survey data provided in the Tattersall Lander survey. Based on this analysis, the following volume estimates are provided:

- The total void space to be backfilled from the surveyed quarry base to an elevation of RL 1m is estimated to be approximately 1,443,000m^3.
- The volume of material required to be placed above the elevation of RL 1m to construct the proposed final landform (Figure 3.1 (Figure 7 of Appendix 12)) is estimated to be approximately 99,000 m^3.
- The total volume of material estimated to be required to rehabilitate the quarry void is therefore approximately 1,540,000 m^3 (Figure 3.2 (Figure 3 of Appendix 12)).

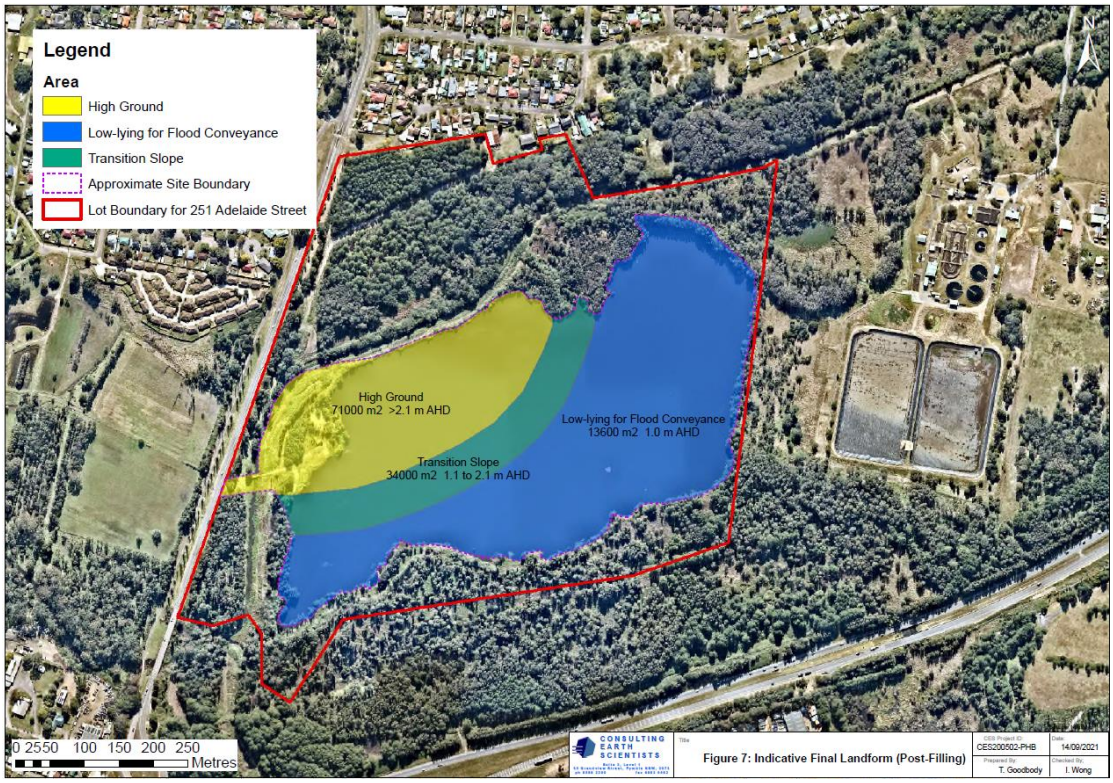


Figure 3.1: Extract of Figure 7 from Backfill Management Plan (Appendix 12 of this EIS).

Figure 3.2: Extract of Figure 3 from Backfill Management Plan (Appendix 12 of this EIS).

Using the assumed bulking and shrinkage factors presented above, the estimate required mass of backfill material is:

- Backfill material to RL -2m (assumed to be PASS) ~ 784,263m^3, calculated to be approximately 1,411,673 tonnes of PASS;
- Backfill material from RL 1m to final landform levels (assumed to be VENM / ENM / RRE) ~ 757,737m^3, calculated to be approximately 1,363,927 tonnes.
- Total estimated weight of placed insitu backfill material is approximately 2,775,600 tonnes.
- Total estimated weight of backfill to be brought to site to rehabilitate the quarry, assuming a backfill shrinkage factor of 0.95 is approximately 2,921,700 tonnes.

3.4.2. Backfill Acceptance and Verification

Prior to receipt at the site

Prior to receipt at the site, VENM and PASS should be appropriately waste classified and certified by a suitably qualified and experienced Environmental Consultant in accordance with applicable NSW EPA waste classification guidelines. ENM or any material the subject of a Resource Recovery Exemption (RRE) to be received at the site must be accompanied by documentation confirming the material's compliance with the exemption conditions.

At the time of receipt at the site

Verification at time of acceptance should be carried out by a suitably trained and experienced Environmental Practitioner or consultant employed or engaged by the Site Operator. The verification procedures should include as a minimum:

a) Visual confirmation that the characteristics of the fill to be accepted is consistent with the material from the source site and is the subject of the corresponding waste classification/compliance certificate.

b) The date and time of entry of the transporting vehicle.

c) A description of the types of imported fill in the load.

d) The identification details of the source of the fill and site of origin.

e) The details of the transporting vehicle including registration number.

Specific requirements applicable to PASS

PASS should only be accepted at the Site if it meets the following criteria which are consistent with the requirements of the NSW EPA publication *Waste Classification Guidelines Part 4: Acid Sulfate Soils* (NSW EPA 2014):

- PASS must be able to be classified as VENM in accordance with the NSW EPA Waste Classification Guidelines even though it contains sulfidic ores or soils.
- The PASS must be kept wet at all times during excavation and subsequent handling, transport and storage until it can be appropriately backfilled. The PASS must be received at the proposed filling point within 16 hours of being excavated.
- The PASS shall only be backfilled in water below the permanent water table before it has had a chance to oxidise i.e. within 24 hours of excavation.
- The PASS must be disposed of within 8 hours of receipt at a site and kept wet at all times until placed at least two metres (2m) below the lowest historical groundwater level at the site, which based on the monitoring results is assessed to be RL 0m, hence PASS is only to be permanently backfilled below an elevation of RL -2m.
- The PASS must have a pH greater than 5.5, both immediately following excavation and immediately prior to filling beneath the permanent water table.
- Documentation must be provided by the supplier of the PASS for each truckload received at the site. The documentation must confirm that excavation, transport and handling of the PASS has been in accordance with the Acid Sulfate Soil Manual (ASS Manual), published by the Acid Sulfate Soils Management Advisory Committee (ASSMAC 1998), thereby preventing the generation of acid. Information to be included in the confirmatory documentation should include:
    - The pH of each load of PASS recorded at the source site and at the site of filling;
    - Details of the source site;
    - Details of the transporter;
    - Date and time of the extraction of the PASS;
    - pH of the PASS at time of extraction;
    - pH of PASS immediately prior to placement under the water at the backfill location;
    - The name and details of the person classifying the material as PASS;
    - A satisfactory review and confirmation by a representative of the Site Operator of geotechnical and contamination reports pertaining to the source site;
    - An inspection of the source site by a representative of the Site Operator.
- The Site Operator should also test the pH of each load of soil received immediately prior to its placement under water using test methods specified in the ASS Manual (Methods 21A and/or 21Af). These details, together with the pH of the soil recorded at the time of its extraction, must be retained by the Site Operator.
- Maintenance of documentation shall be in accordance with the Environment Protection Licence (EPL) for the site.
- The pH of the water at the landfill into which the PASS is placed must not be less than 6 at any time. Monitoring of groundwater and surface waters should be in accordance with the Environmental Monitoring Plan and EPL for the site.

- Soil that has dried out, undergone any oxidation of its sulfidic minerals, or which has a pH of less than 5.5 must be treated by neutralisation with lime or other suitable substance in accordance with the techniques prescribed in the ASS Manual. After treatment the soil should be chemically assessed in accordance with NSW EPA Waste Classification Guidelines and disposed of at a Waste Facility that can lawfully accept the determined class of waste.
- Where PASS cannot be classified as VENM or a suitable underwater disposal site is not available at the Site, the PASS must be neutralised with lime or other suitable substance in accordance with the techniques prescribed in the ASS Manual. After treatment the soil should be chemically assessed in accordance with the NSW EPA Waste Classification Guidelines and disposed of at a Waste Facility that can lawfully accept the determined class of waste.

3.4.3. Estimated Backfill Programme

The proposed timeframe from start to completion of backfilling and construction of the final landform is a maximum period of 10 years. The Traffic Impact Assessment (**Appendix 12**) provides that a maximum 50 truck movements per day may be accommodated.

Assuming the backfill delivery trucks to be a 'truck and dog' combination with a carrying capacity of 32 tonnes and assuming 50 truck movements per day, this corresponds to a maximum backfill import rate of 1,600 tonnes per day. If it is assumed that the available delivery time for backfill material is 235 days per annum (assuming a 5.5 day working week (to allow for late deliveries to be backfilled), including an assumed allowance of 15% due to lost production due to adverse weather and allowing for public holidays), it is estimated that it will take approximately 7 years and 9 months to backfill the site. In consideration of the above, an indicative backfill programme for 8-year period (including preliminaries and project set up) has been developed with respect to the proposed backfill staging areas.

3.4.4. Proposed Backfill Methodology

The proposed backfill methodology is as follows:

- The quarry void is to be backfilled progressively in continuous Stages A to G as shown in Figure 3.3 overleaf (Figure 5 of Appendix 12). Filling should commence in the north western part of the quarry near to the location of the former quarry ancillary works area and work in a clockwise direction from west to east.
- The proposed backfilling method is a combination of placement methods 1) dump short and push, 2) conveyor delivery system and/or 3) using conventional long reach excavator(s) (LRE) to be implemented as follows:
    - Establish haul roads, stockpile areas and identify suitable plant set up areas on existing land.
    - Each Stage to be filled in a series of cells that are to be suitably sized to manage control of filling in consideration of the rate and type of backfill accepted and with a nominal size of 100m x 100m. The extent of the cell to be filled should defined using silt curtains which should be designed to provide sediment control to mitigate the generation of excessive suspended solids during filling.
    - Establish the first lift of fill by placing VENM, ENM and/or RRE (Not PASS) and push the fill forward into the quarry void using a track-dozer to create a working platform and propagating beach front.
    - Once a suitable working platform has been established, use an LRE and/or conveyor dump system to place VENM / ENM / RRE or PASS directly into the quarry void below water in the near shore and central part of the cell.

      The drop height for fill materials should be kept to a minimum and the fill placed directly below the water surface where practicable to reduce the amount of sediment liberated during backfilling.

PASS should only be filled 2m below the standing water level in the quarry void and at permanent elevations below RL -2 m. Above this elevation or where the water in the quarry void is not deeper than 2m, VENM/ENM/RRE only to be placed.

- Once the subaqueous fill has been placed to the required elevation, VENM / ENM / RRE backfill may be dumped and pushed into the water using a track-dozer to create a propagating beach front and extend the working platform over the underlying deposited fill and construct the VENM / ENM / RRE capping layers. Tracked equipment such as dozers and excavators should be used to apply compactive effort to increase the density of the fill.

  The above process of depositing fill in deeper water using LRE or conveyors and then covering and capping by dumping and pushing off using tracked equipment should be repeated in a continuous cycle to progress the filling works and construct the final landform.

- Subaqueous fill batters should be placed at slope ratios no steeper than 1Vertical (V):1.5 Horizontal (H) with a maximum batter height of 8m. Where batter heights are in excess of 8m, the subaqueous fill should be benched with a minimum 5m horizontal bench for every 5m vertical height.

- Regular survey monitoring of the placed fill should be undertaken to confirm that PASS has been placed at appropriate elevations and to monitor the filling progress and geometry of the constructed subaqueous and subaerial landform. The monitoring could be undertaken using conventional survey methods, plumb lines or suitable sonar techniques as appropriate.

- Following completion of filling to final landform level, the ground surface should be stabilised to reduce erosion and dust emission in accordance with a suitable soil and water and landscaping management plan applicable to the final landform and land use.

A proposed works area layout for Stage A is shown in Figure 3.4 overleaf (Figure 6 of Appendix 12).

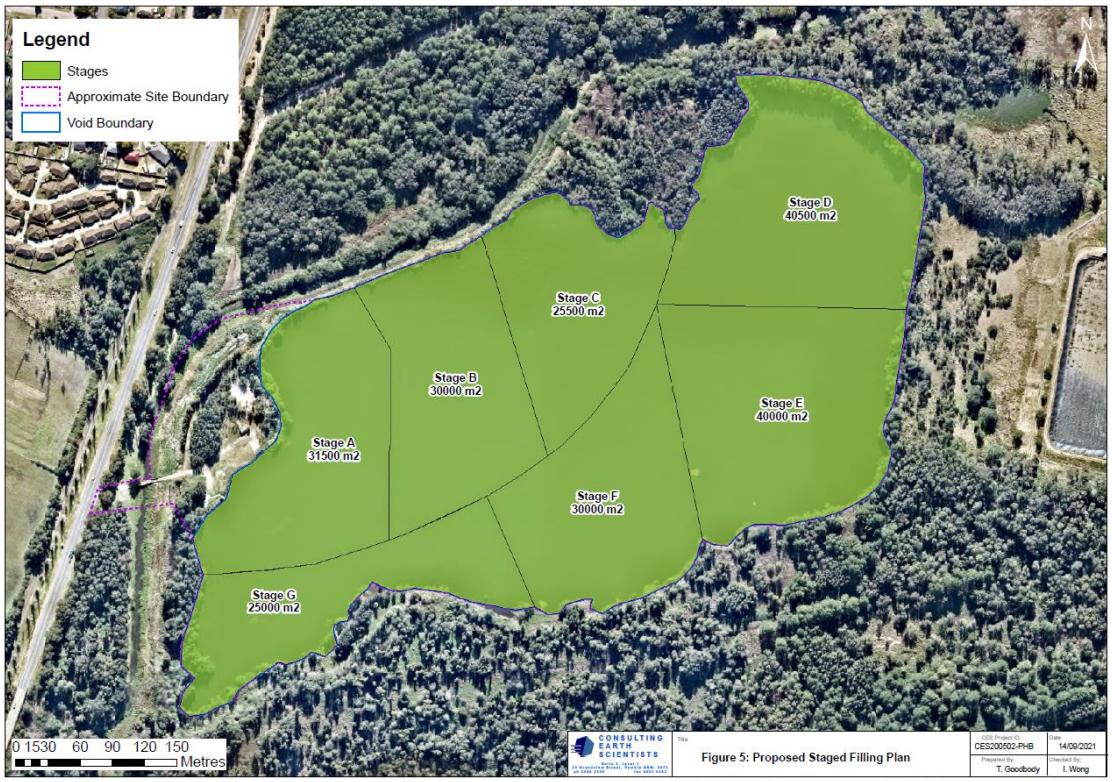


Figure 3.3: Extract of Figure 5 from Backfill Management Plan (Appendix 12 of this EIS).

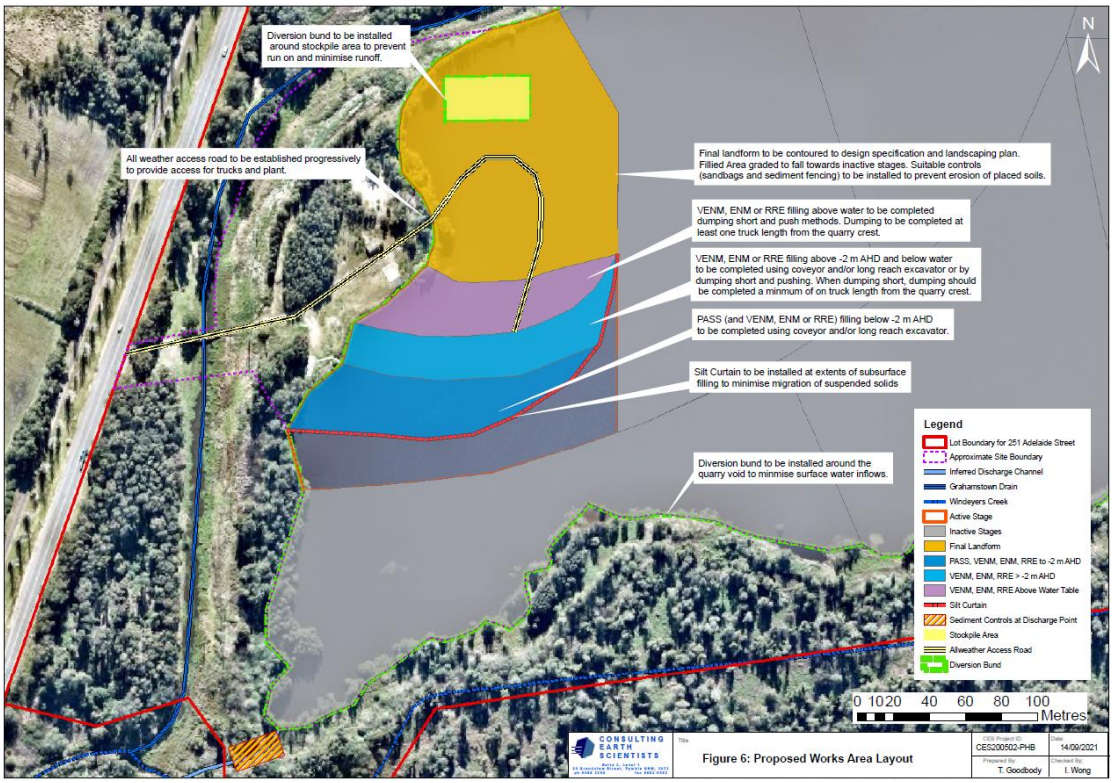


Figure 3.4: Extract of Figure 6 from Backfill Management Plan (Appendix 12 of this EIS).

Whilst it is not explicitly stated within the Backfill Management Plan, continuous dewatering is not considered necessary for the proposed backfill methodology primarily due to the small volume of fill (relative to the quarry void) to be deposited in the specified programme and the inferred discharge channel to the south-west of the site.

3.4.5. Erosion and Sediment Controls

An Erosion and Sediment Control Plan (ESCP) should be established to provide a strategy for the temporary soil and water management at the site to be implemented during the backfilling works and should be based upon the requirements of Landcom (2004) publication Managing Urban Stormwater: Soils and Construction. For the purpose of the backfill management plan, localised erosion and sediment control measures should be implemented to manage surface water during the backfilling works as required (indicatively depicted in Figure 3.4 above). Such management measures include:

- Setting up of silt curtains for the designated cells to contain and control sediment migration to other cells. The silt curtains should be designed for low risk applications:
    - 150mm float size up to 8m depth;
    - A skirt made of non-woven geotextile; and
    - Galvanised chain ballast thickness of 8-10mm.
- Construction of temporary diversion bunds around the stockpile areas and quarry perimeter to direct water to the water-filled inactive cells.
- Covering with suitable geotextiles such as tarpaulin or jute mesh to provide local soil erosion protection.
- Use of sandbags, straw bales, coir logs (or similar) at the edge facing inactive cells to reduce the velocity and control the flow of surface water and provide localised erosion protection.
- Install silt curtains and sediment fences on the downstream boundary in close proximity of the discharge point in the south west.

- Provide a wheel wash system at the site access / egress location, which will further control the tracking of sediment by vehicles onto adjoining roadways.
- Installation of dust control measures, including water sprinklers and a mobile dust suppression system, comprising a fine mist generator ('fogger').
- Revegetation of the filled cells for medium to long term quarry rehabilitation.

3.4.6. PASS Contingency Management Plan

In the event that PASS is not delivered to site or backfilled in an appropriate manner, the contingency plan below should be followed:

- For PASS not delivered to site in an appropriate manner, the PASS must be detected at the gate and not be accepted at the site as per the Backfill Acceptance and Verification procedure described above. The PASS should be transported back to their source locations or disposed of at a Waste Facility that can lawfully accept the determined class of waste.
- For PASS that have been already accepted at the site but cannot be backfilled in an appropriate manner, the PASS must be neutralised with lime or other suitable substance in accordance with the techniques prescribed in the ASS Manual as described above. After treatment the soil should be chemically assessed in accordance with the NSW EPA Waste Classification Guidelines and disposed of at a Waste Facility that can lawfully accept that determined class of waste.

3.4.7. Ground Settlement Monitoring

Ground settlement monitoring could be undertaken at regular intervals less than every six months using a suitable survey technique to the approval of the Geotechnical Practitioner.

3.4.8. Ground Treatment

Should excessive ground movements (settlement or heave) be observed or monitored at the site, ground treatment should be considered. The requirement for any ground treatment should be assessed and confirmed by the Geotechnical Practitioner and could include *inter alia*:

- Preloading of select areas by applying surcharge of additional fill to increase consolidation of the underlying material.
- Dynamic Compaction. This technique increases the density of soil by transmitting high energy impacts to the ground.
- Vibroflotation. This technique uses a vibrating probe (poker) to penetrate the fill and increase density of the ground by applying vibrational energy.
- Any other method considered appropriate by a suitably qualified and experienced Geotechnical Practitioner.

3.4.9. Environmental Monitoring

An Environmental Monitoring Plan should be prepared for the Site that should describe as a minimum, the proposed locations and monitoring frequencies of the following components:

- Groundwater,
- Surface water,
- Air quality;
- Noise and vibration (if applicable for ground treatment works); and
- Discharge.

3.5. PLANT AND EQUIPMENT

The following list of plant and equipment has been provided:

- profile compactor,
- track loader,
- track-dozer,
- excavator;
- mobile dust suppression system ('fogger') and
- Long Reach Excavator and/or conveyor.

It is considered that other plant and equipment will be necessary to undertake the proposed works. Details should be provided prior to commencement of work.

3.6. ALTERNATIVES

It is understood that only two options were considered in developing the proposal, these being the current proposal as described within this EIS and a 'do nothing' scenario.

Option 1 involves the proposed environmental protection works, which are considered to be an improvement to the existing condition of the site. The proposed works are intended to allow suitable future land use such as recreation facility (outdoor) (golf course) at the site. The proponent has designed the proposal including the environmental protection works procedure with the future intended use in mind.

Option 2 involves not proceeding with the proposed works. The site is underutilised in its current form as a disused quarry. Not proceeding with the proposed works will result in the site remaining unusable. Option 2 is not the preferred option.

Accordingly, Option 1 is preferred and is considered throughout this EIS. The proposed works will promote employment through rehabilitation and construction phases as well as ongoing use. Future Golf Course and Parklands will be accessible and open to Public recreational usage. In addition to contributing to the NSW government initiative (LMP) Legacy Mines programme and rehabilitate abandoned disused mines.

4. STATUTORY CONTEXT

4.1. COMMONWEALTH LEGISLATION

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a national framework for environmental protection and management of nationally and internationally important flora, fauna, ecological communities and heritage places. Part 3 of the EPBC Act lists nine matters of National Environmental Significance (NES) that may require approval from the Commonwealth Minister for the Environment. Further details regarding the impact of the development on places or matters of NES is provided in Section 7 of this EIS.

An action taken by any person on Commonwealth land that is likely to have a significant impact on the environment (Section 26(1)) or an action taken by any person outside of Commonwealth land that is likely to have a significant impact on Commonwealth land (Section 26(2)) may require approval from the Commonwealth Minister for the Environment. The proposal does not involve work by a Commonwealth agency and will not impact or be impacted by an activity, or impact on Commonwealth land.

4.2. ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 AND REGULATION 2021

The proposal seeks consent under Part 4 the EP&A Act. The development is both designated and integrated development in accordance with the EP&A Act. Integrated development is discussed in Section 4.3 of this EIS.

Section 4.10 of the EP&A Act states designated development is declared to be designated development by an environmental planning instrument or the regulations and does not include State significant development despite any such declaration. The proposal is defined in Clause 45(6) of Schedule 3 of the EP&A Regulation as waste management facilities or works, where:

> *(6) In this section—*
>
> ***waste management facility or works*** *means a facility or works that—*
>
> *(a) stores, treats, purifies or disposes of waste, or*
>
> *(b) sorts, processes, recycles, recovers, uses or reuses material from waste.*

Clause 45(4) states that development for the purpose of a waste management facility or works is designated development if, inter alia, the facility or work are located:

> *(a) in or within 100 metres of a natural waterbody, wetland, coastal dune field or environmentally sensitive area of State significance, or*
>
> *(b) in an area of high watertable, highly permeable soils, acid sulfate, sodic or saline soils, or*
>
> *(c) in a drinking water catchment, or*
>
> *(d) in a catchment of an estuary where the entrance to the sea is intermittently open, or*
>
> *(e) on a floodplain, or*
>
> *(f) within 500 metres of a residential zone or 250 metres of a dwelling not associated with the development and, in the consent authority's opinion, considering topography and local meteorological conditions, are likely to significantly affect the amenity of the neighbourhood because of noise, visual impacts, vermin, traffic or air pollution, including odour, smoke, fumes or dust.*

The site is partially mapped as a wetland (local), is flood affected and is within 500 metres of a residential zone. As a result, the proposal is designated development.

Part 3 Division 1 of the EP&A Regulation states that a development application for designated development must be accompanied by an EIS. In accordance with Clause 173, an application was made to the Secretary for the SEARs with respect to the proposed development. SEARs were provided on 28 January 2020 (**Appendix 1**) and are summarised in Table 1.3 with a corresponding comment on where each requirement has been addressed in the EIS. This document has been prepared to outline

potential environmental impacts of the proposed development and appropriate management measures to ameliorate that impact in accordance with Schedule 2 of the EP&A Regulation and SEARs.

4.3. PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997 AND PROTECTION OF THE ENVIRONMENT OPERATIONS (WASTE) REGULATION 2014

This section outlines how the proposal is considered a 'scheduled activity' under the *Protection of the Environment Operations Act* (POEO Act) *1997*, requires an Environmental Protection Licence and is subsequently integrated development. Schedule 1 of the POEO Act provides a list of scheduled activities that require a licence pursuant to Section 48 of the POEO Act. The proposed works must consider the applicability of Clause 39 of Schedule 1, which states:

> *"**39 Waste disposal (application to land)***
>
> *(1) This clause applies to **waste disposal by application to land**, meaning the application to land of waste received from off site, including (but not limited to) application by any of the following methods—*
>
> *(a) spraying, spreading or depositing on the land,*
>
> *(b) ploughing, injecting or mixing into the land,*
>
> *(c) filling, raising, reclaiming or contouring the land."*

The proposal seeks to receive waste from off site for the purpose consistent with Paragraph (1)(c). Accordingly, Clause 39 is applicable to the site and works.

> *"(2) However, this clause does not apply to an activity that involves any of the following—*
>
> *(a) sites inside the regulated area that, over any period of time, receive from off site a total of no more than 200 tonnes of the following waste (and no other waste)—*
>
> *(i) building and demolition waste only,*
>
> *(ii) building and demolition waste mixed with virgin excavated natural material,*

Subclause (2)(a) is not applicable as more than 200 tonnes of material. Accordingly Clause 39 remains applicable.

> *(b) sites outside the regulated area that, over any period of time, receive from off site a total of no more than 200 tonnes of the following waste (and no other waste)—*
>
> *(i) building and demolition waste only,*
>
> *(ii) building and demolition waste mixed with virgin excavated natural material, being waste generated inside the regulated area,*
>
> *(c) sites outside the regulated area that, over any period of time, receive from off site a total of no more than 20,000 tonnes of the following waste (and no other waste)—*
>
> *(i) building and demolition waste only,*
>
> *(ii) building and demolition waste mixed with virgin excavated natural material, being waste generated outside the regulated area,*

Subclause (2)(b) and (c) are not applicable as the site is inside a regulated area (Port Stephens). Accordingly Clause 39 remains applicable.

> *"(d) sites that receive from off site no more than 5 tonnes of waste tyres per year or 500 waste tyres in total over any period (and no other waste),"*

Subclause (2)(d) is not applicable as the proposal does not involve the type of waste specified. Accordingly Clause 39 remains applicable.

> *"(e) sites where only virgin excavated natural material is received from off site and applied to land,"*

Subclause (2)(e) is not applicable as the site will receive other types of fill. Accordingly Clause 39 remains applicable.

> *"(f) sites that are outside the regulated area, but only if—*
>
> *(i) the site is owned by and operated by or on behalf of a local council, and*
>
> *(ii) the site was in existence immediately before 28 April 2008 and was not required to be licensed before that date, and*
>
> *(iii) details required under clause 47 of the Protection of the Environment Operations (Waste) Regulation 2005 were provided, in relation to the site, before 28 April 2008, and*
>
> *(iv) the site receives from off site less than 5,000 tonnes per year of waste, and*
>
> *(v) that waste has been generated outside the regulated area and consists only of general solid waste (putrescible), general solid waste (non-putrescible), clinical and related waste, asbestos waste, grease trap waste or waste tyres (or any combination of them)."*

Subclause (2)(f) is not applicable as the site is inside a regulated area (Port Stephens). Accordingly Clause 39 remains applicable.

> *"(3) The activity to which this clause applies is declared to be a scheduled activity."*

The proposed works are considered to be a scheduled activity in accordance with this clause and also integrated development in accordance with Section 4.46 of the EP&A Act. Additionally, the POEO (Waste) Regulations 2014 provides resource recovery orders and resource recovery exemptions under Clauses 91 and 92 of the Regulations. The NSW EPA provides the following information as part of the SEARs (**Appendix 1**):

> *"**1. Waste to which this exemption applies***
>
> *1.1. This exemption applies to excavated natural material that is, or is intended to be, applied to land as engineering fill or for use in earthworks.*
>
> *1.2. Excavated natural material is naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:*
>
> *a) been excavated from the ground, and*
>
> *b) contains at least 98% (by weight) natural material, and*
>
> *c) does not meet the definition of Virgin Excavated Natural Material in the Act.*
>
> *Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, Acid Sulfate Soils (ASS), Potential Acid Sulfate soils (PASS) or sulfidic ores."*

It is understood that the proposed fill will include PASS; accordingly, the proposed works cannot meet the conditions of this exemption and the works are considered a scheduled activity requiring an environmental protection licence (EPL) pursuant to Section 48 of the POEO Act.

Further, for the purpose of Section 50 of the POEO Act the proposed works are also considered to be a controlled development. Section 50 of the POEO Act stipulates that an EPL (under Section 48 of the POEO Act) can only be granted once development consent (under Part 4 of the EP&A Act) has been granted. Accordingly, the proponent will be required to seek an EPL from the NSW EPA prior to importing any fill material onsite.

The project does not meet the definition of any other scheduled activity within Schedule 1 of the POEO Act. However, Clause 120 of the POEO Act states that it is an offence to pollute water, if not regulated under an EPL. An EPL for the discharge of water will be considered due to the volume of water contained in the quarry void and as dewatering is not proposed to be carried out. It is understood that there is no existing groundwater licence and one is likely to be required. Any water discharged to the existing discharge point at Windeyers Creek would be managed in accordance with the erosion and

sediment control plan, and EPL to meet the discharge criteria in the licence for the duration of the works. It is also anticipated that the existing active groundwater monitoring wells on site would continue to be monitored during the project and at post-project completion, with groundwater results reported as required. The licence/s will not be required at the completion of the project (for the future use).

4.4. STATE ENVIRONMENTAL PLANNING POLICY (INFRASTRUCTURE) 2007

It is noted that this SEPP has been repealed and superseded with SEPP (Transport and Infrastructure) 2021 after the SEARs were received for the proposal. State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP) aims to facilitate the effective delivery of infrastructure across NSW and amongst other things allows for development for the purpose of recycling of construction and demolition material or the disposal of virgin excavated natural material or clean fill to be permitted with consent where mining or extractive industries are permitted to be undertaken. Specifically, Clause 2.152(3) states:

> *"(3) Development for the purpose of the recycling of construction and demolition material, or the disposal of virgin excavated natural material (within the meaning of Schedule 1 to the Protection of the Environment Operations Act 1997) or clean fill, may be carried out by any person with consent on land on which development for the purpose of industries, extractive industries or mining may be carried out with consent under any environmental planning instrument."*

Extractive industries are permitted within the RU2 Rural Landscape zone and the proposal is consistent with the provisions of Clause 2.152(3); accordingly, the proposal is considered consistent with the SEPP as the proposal will allow for recycling and beneficial reuse of fill material.

4.5. STATE ENVIRONMENTAL PLANNING POLICY NO.44 – KOALA HABITAT PROTECTION / STATE ENVIRONMENTAL PLANNING POLICY (BIODIVERSITY AND CONSERVATION) 2021

It is noted that SEPP No.44 – Koala Habitat Protection has been repealed and replaced by SEPP (Biodiversity and Conservation) 2021 after the SEARs were received for the proposal. Clause 3.3 of the Biodiversity and Conservation SEPP 2021 provides that this SEPP does not apply to land zoned RU2 Rural Landscape unless it is in an LGA marked with an asterisk (*) in Schedule 1 of the Koala Habitat Protection SEPP 2021. Port Stephens is not a marked LGA; accordingly, the SEPP does not apply to the land. As a result, Koala Habitat Protection 2020 applies. Council must consider whether the land is potential or core koala habitat. All developments within Port Stephens Local Government Area are required to comply with the provisions of Appendix 4 of the Port Stephens Comprehensive Koala Plan of Management (CKPoM) in order to comply with Koala SEPP 2020.

The Biodiversity Development Assessment Report (**Appendix 7**) prepared for the planning proposal provides an assessment of koala habitat in accordance with the CKPoM. The proposed development occurs through land listed by the CKPoM as 'Link over cleared with some area of preferred Koala habitat and associated 50m buffers'. Inspection of the site was undertaken to determine the presence or absence of preferred Koala feed tree species and found:

- Preferred Koala feed tree species were recorded within 20 metres of the proposed subject land.
- Most of the native vegetation within the subject land consists of PCT1717 with Swamp Mahogany being the primary feed tree species recorded, adjacent to but not within the subject land.
- A small number of Forest Red Gums (*Eucalyptus tereticornis*) are also located within the in the southwestern corner of the study area.

No feed tree species, including Swamp Mahogany were observed within the subject land in this vegetation community.

Habitat assessment conducted within the subject land included searching for signs of Koala and Koala feed trees. No Koalas were observed within the subject land or study area adjacent to the subject land, no signs of koala were observed. No scats were observed within the subject land. Pre-clearing

assessment will be conducted to detect individuals utilising the subject land prior to removal and clearing supervision will be undertaken as part of the actions to avoid and minimise impact.

The results of these assessments have determined that the development will be consistent with the objectives of the CKPoM, and therefore with Koala SEPP 2020, provided the recommended safeguards are implemented

4.6. STATE ENVIRONMENTAL PLANNING POLICY NO. 55 – REMEDIATION OF LAND

It is noted that this SEPP has been repealed and superseded with SEPP (Resilience and Hazards) 2021 after the SEARs were received for the proposal. SEPP Resilience and Hazards, Chapter 4 Remediation of Land aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment. The investigations for the site included drilling boreholes, soil sampling, sediment samples, surface and ground water samples. The samples taken from the subject site were suitably stored and transferred to the laboratory to undertake suitable testing for contaminates as per the Detailed Contaminated Land Assessment (DCLA) Report (**Appendix 2**). The sediment samples were generally silty clay and detected nickel concentrations which indicate a potential low-level risk to the ecology of the flooded former quarry void. The surface water samples detected copper, nickel and zinc concentrations which indicate a potential risk to the ecology of the flooded former quarry void, artificial Grahamstown Drain, and Windeyers Creek; however, the assessment considers that the likely source of the metals is offsite, and not a result of the historic site use. In consideration of the above, the surface water exceedances generated by the site are unlikely to pose an unacceptable risk to Windeyers Creek or the Hunter River. Groundwater samples contained various metals, but were determined to either be of low threat levels to the environment or from off-site hydraulic gradient sources.

Based upon the laboratory results the site has not been contaminated by the historic or current usage of the site. The proposed backfilling will restore the site closer to the natural ecosystem by the removal of a man made ecosystem which may not represent a high value ecosystem. The proposed filling works will provide a buffer between the impacted materials through the reduction in opportunities for biota to encounter the identified contaminants. Importantly, the DCLA finds the site suitable for the proposed use as previously discussed.

4.7. PORT STEPHENS LOCAL ENVIRONMENTAL PLAN 2013

The site is zoned RU2 Rural Landscape pursuant to the Port Stephens Local Environmental Plan (LEP) 2013 and environmental protection works are permitted in the zone. The LEP dictionary provides:

> ***Environmental protection works*** *means works associated with the rehabilitation of land towards its natural state or any work to protect land from environmental degradation, and includes bush regeneration works, wetland protection works, erosion protection works, dune restoration works and the like, but does not include coastal protection works.*

The proposed filling of the disused quarry is considered environmental protection works and as such is permitted with consent. Relevant Clauses of the LEP are discussed in Table 4.7.

Table 4.7: Consistency with relevant clauses of LEP 2013

Clause	Consistency
1.2 Aims	The LEP provides for appropriate development within the LGA. The proposal has given due consideration to the site and surrounds and is in keeping with the aims of the LEP.
2.1 Land use zones	The site is zoned RU2 Rural Landscape. Development permitted with consent includes: *Agriculture; Airstrips; Animal boarding or training establishments; Aquaculture; Boat launching ramps; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Cellar door premises; Cemeteries; Community facilities; Correctional centres; Crematoria; Dual occupancies; Dwelling houses; Eco-tourist facilities; Environmental facilities; Environmental protection works; Extractive industries; Farm buildings; Flood mitigation works; Forestry; Group homes; Helipads; Home-based child care; Home businesses; Home industries; Information and education facilities; Jetties; Landscaping material supplies; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries; Tourist and visitor accommodation;*

Clause	Consistency
	Turf farming; Veterinary hospitals; Water recreation structures; Water supply systems
2.3 Zone objectives	Objectives of the RU2 zone are as follows: • *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.* • *To maintain the rural landscape character of the land.* • *To provide for a range of compatible land uses, including extensive agriculture.* The proposed rehabilitation of the disused quarry is considered to be consistent with the objectives of the zone by providing a compatible land use.
5.10 Heritage conservation	A search of the Aboriginal Heritage Information Management System (AHIMS) was conducted on 9 April 2020 (**Appendix 8**). No Aboriginal sites were recorded in or near the study area and no Aboriginal places have been declared in or near the above location (50m buffer). The site is substantially cleared and disturbed having regard to its historical use. Additionally, the site is not listed as an item of State Significance on the State Heritage Register or within Schedule 5 of the LEP.
6.2 Public utility infrastructure	Services are available to the site and can be augmented as required for the proposed works.
7.1 Acid sulfate soils	The site is mapped as containing Class 2 and 4 acid sulfate soils. While the Acid Sulfate Soils Investigation Report (**Appendix 4**) undertaken for the site concludes that acid sulfate soils are not present within the site, an Acid Sulfate Soil Management Plan (ASSMP) has been prepared for the works as it occurs below ground level.
7.2 Earthworks	The proposed works exceed the exempt development conditions for earthworks; accordingly subclause (3) applies to the proposal. This EIS discusses each of the items under (3)(a) to (h). Overall, the proposed works are considered to have a positive effect on the drainage pattern and soil stability in the locality of the development; improve the land for future use and redevelopment; provide quality fill appropriate for the future intended use; not adversely impact on the amenity of adjoining properties; source the fill material from locations within the Hunter to Sydney regions; not disturb relics; and, provide appropriate measures to avoid, minimise or mitigate the impacts of the development on waterways.
7.3 Flood planning	Flood impact assessments have been conducted for the proposed works and the final landform is designed to avoid significant adverse impacts on flood behaviour and the environment (**Appendix 6**).
7.9 Wetlands	The proposed works are not considered to adversely impact the condition or significance of existing native fauna and flora on the land or the provision of quality of habitats on the land for indigenous or migratory species. Additionally, the proposed works will provide for an improved surface water characteristic of the land, including water quality, natural water flows and salinity by rehabilitating the quarry to similar levels as the natural ground.

4.8. OTHER NSW LEGISLATION

Table 4.8 details relevant NSW legislation, the purpose of the legislation and its relevance to the proposal.

Table 4.8: Legislative Requirements and Approvals

Legislation (Responsible Agency)	Purposes of Legislation	Relevance to the Proposal and Approval Requirements
Biodiversity Conservation Act 2016	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. The Act particularly relates to conservation of biodiversity.	The proponent has advised that the proposed works do not involve any vegetation clearing and is not considered to adversely impact biodiversity.
Biosecurity Act 2015	The primary object of this Act is to provide a framework for the prevention, elimination and	The proposed works are not considered to involve any biosecurity risks.

Legislation (Responsible Agency)	Purposes of Legislation	Relevance to the Proposal and Approval Requirements
	minimisation of biosecurity risks.	
Coastal Management Act 2016	The objects of this Act are to manage the coastal environment of New South Wales in a manner consistent with the principles of ecologically sustainable development for the social, cultural and economic well-being of the people of the State.	The proposed works are not located within a coastal management area, coastal wetlands or littoral rainforests.
Contaminated Land Management Act 2008	The Act establishes a process for investigating and (where appropriate) remediating land that the Environment Protection Authority (EPA) considers to be contaminated significantly enough to require regulation under Division 2 of Part 3. Furthermore, under Section 60 a person whose activities have contaminated land or a landowner whose land has been contaminated is required to notify the EPA when they become aware of the contamination.	A search of the NSW EPA Contaminated Land Record on 04 December 2020 did not list the site as contaminated land. The Detailed Contaminated Land Assessment Report (**Appendix 2**) provided that based upon the laboratory results of the assessment, the site has not been contaminated by the historic or current use.
Crown Land Management Act 2016	The Act outlines functions and management of Crown land.	The proposed works do not occur on Crown land.
Environmentally Hazardous Chemicals Act 1985	The Act regulates use and storage of environmentally hazardous chemicals or declared chemical waste. It provides the OEH with assessment and control mechanisms for chemicals and chemical wastes.	This Act would only apply if environmentally hazardous chemicals are used during construction of the proposal and there is potential for a significant impact on the environment. There is no known use of environmentally hazardous chemicals associated with the proposal. Any such chemicals would be identified in the Construction Environmental Management Plan (CEMP) or equivalent.
Fisheries Management Act 1994	The FM Act applies to all waters within the limits of NSW, except where Commonwealth legislation applies. Relevant sections are discussed: • Section 200 requires a permit from the Minister for Primary Industries for Council to carry out dredging or reclamation work • Section 205 requires a permit from the Minister for Primary Industries to harm marine vegetation in a protected area (including any public water land such as Crown land) • Section 219 requires a permit from the Minister for Primary Industries or approval under this or another Act to create an obstruction that would block	The proposed works are not considered to result in any of these impacts or require any permits under the Act.

Legislation (Responsible Agency)	Purposes of Legislation	Relevance to the Proposal and Approval Requirements
	passage of fish Section 220ZZ the Determining Authority must consider whether the Proposal will result in a significant impact on threatened species, population or ecological communities, or their habitats.	
Heritage Act 1977	The Heritage Act is administered by the Heritage Office within the Office of Environment & Heritage and concerns protection and restoration and enhancement of State heritage items. The relevant provisions of the Act are: • Section 139 prohibits disturbance of a relic unless an excavation permit is obtained from the Heritage Office • Section 146 requires notification to the Heritage Office of any discovery of relics.	No heritage items or places are located within the site.
Coal Mine Subsidence Compensation Act 2017	Section 22 of the Act specifies that approval is required for development within mine subsidence districts.	The proposed works are not located within a proclaimed mine subsidence district.
National Parks and Wildlife Act 1974	The Act aims to conserve nature and objects, places or features of cultural value. An Aboriginal Heritage Impact Permit is required under Section 90 to harm or desecrate Aboriginal objects or places.	A search of the Aboriginal Heritage Information Management System (AHIMS) Register was conducted on 9 April 2020 (**Appendix 8**). No Aboriginal sites were recorded in or near the study area and no Aboriginal places have been declared in or near the above location (50m buffer). The site is substantially cleared and disturbed having regard to its historical use.
Native Vegetation Act 2003	The Act aims to prevent broadscale clearing, protect native vegetation of high conservation value and improve conditions of existing native vegetation.	No broadscale clearing is proposed.
Protection of the Environment (Clean Air) Regulation 2010	The Regulation provides general controls on preventing or minimising air pollution.	Environmental management measures under a future CEMP will ameliorate potential for air pollution during the construction phase (primarily dust).
Protection of the Environment (General) Regulation 2009	Regulates EPLs, certain pollutants types and locations and requirement to prepare Pollution Incident Response Management Plans (PIRMP).	A PIRMP may be necessary in accordance with any future EPL requirements.
Protection of the Environment (Noise Control) Regulation 2008	Regulates noise from vehicles, machines and articles.	A Noise Assessment (**Appendix 9**) was undertaken to assess the noise impacts from the construction and operational phases of the proposal. The assessment found that construction noise level during all stages of the work would comply with the EPA Interim Construction Noise Guideline.

Legislation (Responsible Agency)	Purposes of Legislation	Relevance to the Proposal and Approval Requirements
Roads Act 1993	Objects of the Act are to, among other things, confer certain functions (in particular, the function of carrying out road work) on RMS and on other roads authorities, and to provide for the distribution of the functions conferred by this Act between RMS and other roads authorities.	No works are proposed within a road reserve or on roads owned/managed by Transport for NSW or any other roads authorities.
Rural Fires Act 1997	Under Section 63 public authorities must take all practicable steps to prevent the occurrence and spread of bush fires on or from land vested in or under its control or management.	The site is partially affected by bushfire prone land with the centre of the quarry void not being identified as bushfire prone. The proposed activity is not a special fire protection purpose pursuant to the *Rural Fires Act 1997* or Rural Fires Regulation 2013 and does not require a bushfire safety authority.
Soil Conservation Act 1938	The Act allows for conservation of soil resources and erosion mitigation.	The proposed works will result in an improved environment. An Erosion and Sediment Control Plan has been prepared in accordance with the Managing Urban Stormwater: Soils and Construction "The Blue Book" (4th edition, Landcom 2004). However, the Soil Conservation Service may stipulate specific consultation prior to construction of runoff diversion or implementing any erosion and sediment control works.
Waste Avoidance and Resource Recovery Act 2001	Objects of the Act include encouraging efficient use of resources and reducing environmental harm in accordance with the principals of ecologically sustainable development. The Act establishes the waste hierarchy of avoidance, resource recovery and disposal.	The proposed works seek to reuse fill material that may be sourced as a result of resource recovery from other projects within the Hunter to Sydney regions.
Water Management Act 2000	The Act outlines approval requirements for activities at a specified location in, on or under waterfront land. Waterfront land includes the bed of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary. The Act also outlines water access rights and approval / concurrence requirements for use of groundwater and surface water runoff. Taking groundwater that is not managed by a water sharing plan requires a groundwater licence (Section 92).	The proposed works are within 40m of waterfront land and a controlled activity approval will be required prior to undertaking the works.

4.9. REGIONAL PLANS

The following subsections review the Hunter Regional Plan 2036, Greater Newcastle Metropolitan Plan 2036 and Port Stephens Local Strategic Planning Statement. These documents are created to support each other and achieve an overall vision. All of these documents include goals/priorities for housing, economic development, environmental preservation/enhancement and connected communities. Due to the nature of the proposed works and intended future use of the site for recreational purposes many of the provisions of these plans do not apply.

4.9.1. Hunter Regional Plan 2036

The Hunter Regional Plan (HRP) 2036 (NSW Department of Planning & Environment, 2016) provides four (4) overarching Goals and 27 Directions to assist in guiding land use planning priorities and decisions from 2016 to 2036. Raymond Terrace is identified as a Strategic Centre; the HRP states that:

> *"The success of metropolitan Newcastle depends on the ability to develop, diversify and connect strategic centres, including a successful city centre. These are the largest centres of activity and employment in the region. They contain significant clusters of professional, retail, health and education services that are forecast to be major drivers of the economy in the future."*

'Goal 1: The leading regional economy in Australia' identities strengthening the region's economic resilience, protect its well-established economic and employment bases and build on its existing strengths to foster greater market and industry diversification. The proposed works will allow for a currently underutilised site to be redeveloped for the benefit of recreational use and employment (during construction and operation) for the existing and growing population.

'Goal 2: A biodiversity-rich natural environment' seeks to protect and connect natural areas, sustain water quality and security and increase resilience to hazards and climate change. The proposed environmental protection works/ rehabilitation of the site is considered to result in an improved environment for the site and surrounding areas. The Earthworks Flood Impact Assessment (**Appendix 6**) has designed a fill plan for the site that is suitable for current and future flood conditions.

'Goal 3: Thriving communities' provides a direction to enhance access to recreational facilities and open spaces. The proposed works are necessary in order to redevelop the site for a future recreation facility (outdoor) (golf course).

'Goal 4: Greater housing choice and jobs' states that it will be necessary to identify and protect employment lands to support the regional economy and to capitalise on its strengths. The proposal will contribute to employment through the construction and operational phases.

4.9.2. Greater Newcastle Metropolitan Plan 2036

The Greater Newcastle Metropolitan Plan 2036 (GNMP) (NSW Department of Planning & Environment, 2018) sets out strategies and actions for sustainable growth across Cessnock, Lake Macquarie, Maitland, Newcastle and Port Stephens LGAs. The GNMP sets out four (4) key Outcomes, of which Outcome 2 is most relevant to the proposal.

'Outcome 2: Enhance environment, amenity and resilience for quality of life' states that residents value Greater Newcastle's diversity of natural landscapes and enjoy lifestyles based on a range of social, recreation and sporting opportunities. The proposal seeks to rehabilitate the site in order to create new recreation and sporting opportunities for the community.

4.9.3. Port Stephens Local Strategic Planning Statement

The Port Stephens Local Strategic Planning Statement (LSPS) provides twelve (12) Planning Priorities grouped under economy, housing, environment and transport.

'Planning Priority 3: Support tourism development and attract events' recognises that Port Stephens is a popular destination for both domestic and international visitors because it is easily accessible. The site in particular is proximate to the M1 Pacific Motorway and is close to regional transport hubs and accessible to regional tourist attractions. Once rehabilitated, the site has potential to support a future recreational facility that can accommodate tourist and visitor uses.

4.10. PORT STEPHENS DEVELOPMENT CONTROL PLAN 2014

Port Stephens Development Control Plan (DCP) 2014 provides guidance to development of land under LEP 2013 and is intended to act as an integrated planning document. The purpose of the Port Stephens DCP is to supplement the LEP and provide additional information to take into account when preparing a development application. An assessment of the proposed works against DCP requirements is provided in Table 4.10 below.

Table 4.10: Port Stephens DCP 2014

<table>
<tr><th>Clause and Controls</th><th>Compliance</th></tr>
<tr><td colspan="2">B General Provisions</td></tr>
<tr><td colspan="2">B1 Tree Management</td></tr>
<tr><td colspan="2">B1.A Non-rural areas</td></tr>
<tr><td>B1.1 Where any activity specified in Column 2 is proposed an applicant must attain the corresponding approval type specified in Column 1 except for an activity where no approval is required.
Figure BA: Approval requirements thresholds
<table>
<tr><th>Column 1 – Approval type required</th><th>Column 2 – Tree management activity</th></tr>
<tr><td>Native vegetation panel approval</td><td>Clearing of native vegetation that is subject to the biodiversity offset scheme as specified in the Biodiversity Conservation Act 2016</td></tr>
<tr><td>Council issued permit</td><td>• Removal or pruning of a tree or other vegetation where height exceeds 3m or circumference breast height exceeds 300mm; or
• Removal or pruning of a tree or other vegetation, irrespective of the size, that is:
- a NSW Christmas Bush (Ceratopetalum gummiferum);
- a Cabbage Tree Palm (Livistona australis);
- a species listed under the Biodiversity Conservation Act 2016;
- listed under the register of significant trees[3]; or
- part of a heritage item, heritage conservation area, Aboriginal object or Aboriginal place of significance, which Council is satisfied:
- is of a minor nature or is for the maintenance of that item, area, object or place; and
- will not adversely affect the significance of that item, area, object or place</td></tr>
<tr><td>Council issued development consent</td><td>Removal or pruning of a tree or other vegetation that forms part of a heritage item, heritage conservation area, Aboriginal object or Aboriginal place of significance, which Council is not satisfied:
• is of a minor nature or is for the maintenance of that item, area, object or place; and
• will not adversely affect the significance of that item, area, object or place
Note: A development application will need to be lodged</td></tr>
</table></td><td>The proponent has advised that no vegetation clearing is required as part of the proposed works.</td></tr>
</table>

Clause and Controls		Compliance
Council approval not required	Removal or pruning of a tree or other vegetation: • authorised under other legislation, such as vegetation clearing authorised under the *Rural Fires Act 1997*, or a **construction certificate** or **subdivision certificate**; or • where height exceeds 3m or **circumference breast height** exceeds 300mm, that is: - within 5m of the wall of an approved structure measured from the wall to the trunk of the tree; - a tree grown for fruit or nut production; - maintenance of less than 12 months growth or 10% of foliage in accordance with Australian Standard (**AS**) 4373– Pruning of amenity trees; - an **undesirable species**; or • not otherwise listed as requiring Council approval; or • that requires urgent removal on account of immediate failure when Council is provided with a **tree removal notification** post-event; or • where there is a risk to human life or property, when Council is provided with a **tree removal notification** 10 days prior to removal; or • where it is dead or dying and it is not required as the habitat of native animals, when Council is provided with a **tree removal notification** 10 days prior to removal. Note: The onus of proof is on the landowner and photos should be taken before and after removal. Landowners are encouraged to seek the advice of a **qualified arborist** in determining the direct threat of any tree.	
B2 Natural Resources		
B2.A Environmental significance		
B2.1 Development located on land or is within 500m of land that contains items of environmental significance, such as threatened species or communities, listed migratory species, wildlife corridors, wetlands or riparian corridors and has the potential to impact biodiversity provides: • a flora and fauna survey to inform the assessment of significance, - The flora and fauna survey is in accordance with: - NSW Department of Environment and Conservation. 2004, 'Threatened Species Survey and Assessment: Guidelines for development and activities'8 - Hunter and Central Coast Regional Environmental Management Systems. 2002, 'Lower Hunter and Central Coast Regional Fauna and Flora Guidelines'9 - If development poses a significant effect under 5A of the EP&A Act or if development is on land	The site is identified within LEP 2013 as containing local wetlands. A Biodiversity Development Assessment Report (**Appendix 7**) and Flora and Fauna and Offsets Assessment (**Appendix 16**) were completed for the site. The BDAR provides a comprehensive assessment of proposed vegetation clearing and associated management of impacts.

Clause and Controls	Compliance
which is, or is part of, critical habitat then a species impact statement (SIS) is required - If development does not pose a significant effect under 5A of the EP&A Act, but proposes unavoidable vegetation impacts then a vegetation management plan (VMP) that is consistent with the vegetation technical specification2 is required Note: Under section 5.5 of the EP&A Act the determining authority has a duty to consider the environmental impact of proposed activities • If the flora and fauna survey proposes the removal of hollow bearing trees then a hollow tree assessment is required: - Two replacement hollows are provided for each hollow tree identified by the hollow tree assessment - Salvaged hollows are preferred over nest boxes that are consistent with the nest box technical specification5 Note: This is consistent with B1.7 that requires a hollow tree assessment to remove hollow bearing trees on land to which B1 applies • A proposed buffer on the land subject to the development is provided to items of environmental significance. The width of the buffer is recommended by the flora and fauna survey report based and is based on taking into account the following parameters: - The condition of the item of environmental significance - Proposed methods of mitigating adverse impact - Possible external effects, such as weed encroachment or domestic animals and their potential to cause impact - Where the vegetation of buffers are proposed, the vegetation is established along the relevant boundaries prior to the issuing of the relevant subdivision or occupation certificate Note: C4.11 nominates a suitable buffer for residential accommodation adjoining land used for agricultural purposes	
B2.B Biodiversity offsets	
B2.2 If biodiversity offsets are employed as a suitable compensatory measure under the TSC Act then they are: • calculated in accordance with the bio-metric terrestrial biodiversity assessment tool • consistent with the vegetation technical specification2 • in a secure tenure ownership	Removal of 0.72 hectares of PCT 1717 - Broad-leaved Paperbark - Swamp Mahogany - Swamp Oak - Saw Sedge swamp forest of the Central Coast and Lower North Coast (VZ1) consistent with Swamp Sclerophyll Forest EEC listed under the BC Act and Coastal Swamp Sclerophyll Forest listed under the EPBC Act will require offsetting. Section 6 of the BDAR provides a summary of biodiversity credits required for impacts on the biodiversity values within the subject land,

Clause and Controls	Compliance
• located on land to which this Plan applies	following consideration of measures to avoid, minimise and mitigate impacts. Table 17 and Table 18 of the BDAR provide a summary of ecosystem and species credits resulting from the proposed development. The full credit profile is provided in Appendix 2 of the BDAR.
B2.C Noxious weeds	
B2.3 Development situated on land that contains noxious weeds, as identified by a section 64 certificate under the *Noxious Weeds Act 1993* will seek to prevent, eliminate or restrict the spread of noxious weeds in accordance with noxious weeds technical specification	The BDAR (**Appendix 7**) found that seven priority weed species for Hunter Region, which includes the Port Stephens LGA, were recorded in the study area and are listed in Table 23 of the BDAR with their associated biosecurity duties (see below). Potential impacts and mitigation measures further discussed in Section 6.7 of this EIS.

Clause and Controls	Compliance

Scientific name	Common name	General Biosecurity Duty
Senecio madagascariensis	Fireweed	Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017): A person must not, import into the State or sell.
***Cortaderia* sp.**	Pampas Grass	Exclusion zone: Upper Hunter local government area. Core infestation area: Port Stephens, Maitland, Cessnock, Lack Macquarie, Newcastle and MidCoast local government areas. Whole region: The plant should not be bought, sold, grown, carried or released into the environment. Exclusion zone: The plant should be eradicated from the land and the land kept free of the plant. Land managers should mitigate the risk of the plant being introduced to their land. Within Core infestation: Land managers reduce impacts from the plant on priority assets. Land managers prevent spread from their land where feasible.
Lantana camara	Lantana	Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017): A person must not, import into the State or sell.
Alternanthera philoxeroides	Alligator Weed	*Biosecurity Regulation 2017* - Part 5, Division 2 (Alligator weed biosecurity zone) An owner or occupier of land in the Alligator weed biosecurity zone on which there is the weed *Alternanthera philoxeroides* (Alligator Weed) must: a. if the weed is part of a new infestation of the weed on the land, notify the local control authority for the land as soon as practicable in accordance with Part 6, and b. eradicate the weed or if that is not practicable destroy as much of the weed as is practicable and suppress the spread of any remaining weed. Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017): A person must not, import into the State or sell.
Asparagus plumosus ***Asparagus scandens***	Asparagus weeds including Climbing Asparagus Fern, Asparagus Fern	Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017): A person must not, import into the State or sell.
Salvinia molesta		Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017): A person must not, import into the State or sell.

Clause and Controls	Compliance
B2.D Koalas	
B2.4 Development located on or in proximity to land identified as koala habitat complies with the Port Stephens Comprehensive Koala Plan of Management[10] through consideration to the performance criteria, being: • Minimising the removal or degradation of native vegetation within preferred koala habitat or supplementary koala habitat • Maximising the retention and minimising degradation of native vegetation within supplementary habitat, habitat buffers and habitat linking areas • Minimising removal of any individual preferred koala feed trees • Where appropriate, restore and rehabilitate koala habitat/buffers and linking areas - Removal of koala habitat is off-set by a net gain of koala habitat on-site or adjacent • Make provision for long-term management of both existing and restored koala habitat • Not compromise the safe movement of koalas, through: - Maximisation of tree retention - Minimising barriers for movement, such as fences • Restrict development to defined building envelopes • Minimising the threat to koalas from dogs, motor vehicles and swimming pools - Development demonstrates consideration to the performance criteria within the statement of environmental effects (SEE) by providing the following: - Assessment of koala habitat in accordance with Appendix 6 – Guidelines for Koala Habitat Assessment of the Port Stephens Comprehensive Koala Plan of Management[10] - Site analysis plan indicates vegetation to be disturbed, cleared or retained - Illustration of the Asset Protection Zone (APZ) - Proposed measures for the safe movement of koalas, such as fencing or traffic control measures - Details of any programs to monitor koala populations Note: The Port Stephens Comprehensive Koala Plan of Management[10] applies through the application of the SEPP (Koala Habitat Protection) 2019	The BDAR (**Appendix 7**) did not record any koala habitat trees within the site itself. However, it is possible that Koala may sporadically forage within the broader locality. The subject land does not provide ideal habitat for Koala to occupy, as preferred feed trees are absent. As a result, it is not anticipated that the proposal will substantially reduce the area of occupancy of the species. The proposal is not impacting on any preferred koala habitat, is targeted to minimise loss of supplementary habitat, and does not reduce the corridor of trees running north-south along Adelaide Street.
B3 Environmental Management	
B3.A Acid sulfate soils	

Clause and Controls	Compliance
B3.1 Development located on acid sulfate soils (ASS) as identified on the Acid Sulfate Maps of the Local Environmental Plan adheres to the Local Environmental Plan requirements by taking one of the following three paths: 1. Accept that ASS is present and prepare a development application and an ASS management plan as set out in the NSW ASS Manual40; or 2. Provide a framework for the on-going management and monitoring of the impacts throughout the development, in your ASS management plan. There is no set formula for managing ASS and each case must depend on the particular circumstance. Please refer to the NSW ASS Manual40 for details; or 3. Undertake a preliminary assessment as set out in the NSW ASS Manual40, to determine whether ASS is present and whether the proposed works are likely to disturb or oxidise these soils or lower the water table. If ASS is present, Council must consider the following matters before development consent is granted: • The likelihood of the proposed development resulting in the discharge of acid water • The adequacy of the ASS management plan prepared for the proposed development in accordance with the NSW ASS assessment guidelines	An Acid Sulfate Soils Investigation Report (**Appendix 4**) found that no acid sulfate soils were present on site. Notwithstanding, an Acid Sulfate Soil Management Plan (ASSMP) has been provided as part of this proposal where works occur below ground level.
B3.B Air quality	
B3.2 An air quality report is required where development has potential to adversely impact surrounding areas in terms of air quality • An air quality report is to be generally provided for the following development types: o Rural industries o Heavy Industry o Sewerage systems o Waste or resource management facilities o Extractive industry o other development types identified by Council • The air quality report is to: o Address construction, operation and occupational impacts o Identify emissions and measures to mitigate against impact on any nearby residences,	A Dust Management Plan (**Appendix 11**) has been prepared as it was considered that dust would be the key air quality matter relevant to the proposed works. The Plan provides: *"It is expected that there would be dust emissions generated during the mine closure activities. However, it is understood that these activities would occur only for a limited period of time, and therefore the impact of dust emissions generated would be short-term in nature.* *The proposal involves following activities with potential to generate dust emissions:* • *Haulage of materials (sand/gravel/rock) to the site using trucks and tippers* • *Filling of voids by tipping materials into voids* • *Handling of spoil and structural fill material.* • *Earthworks to divert surface stormwater.* • *Levelling or site using bull dozers and excavator.* • *Wind erosion from temporary exposed areas and stockpiles.*

Clause and Controls	Compliance
especially on sensitive receivers o Prepared in accordance with the NSW Department of Environment and Conservation, 2001. 'Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales'39.	… *Given that the activities presented in above section are progressive and short-term / transient in nature, the potential for these dust generating activities to adversely impact the local air quality is low. Moreover, these activities would take place sporadically over a large area which would significantly limit the potential for any adverse off-site impacts."* Potential impacts and mitigation measures further discussed in Section 6.5 of this EIS.
B3.C – Noise	
B3.3 An acoustic report is required for development that has the potential to produce offensive noise, meaning: • that, by reason of its level, nature, character or quality or the time at which it is made, or any other circumstances: - is harmful to (or is likely to be harmful) to a person who is outside the premises from which it is emitted, or - interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted • that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations, such as the Environmental Protection Authority. 2000, 'NSW Industrial Noise Policy'14 Note: Development that is likely to require compliance with this requirements includes: • clubs, hotels and pubs with outdoor smoking, dining and gaming areas, mechanical plant, carparks; • function centres that host outdoor weddings; • childcare centres with outdoor and indoor play areas, air-conditioning plant, carparks; • residential developments with ventilation and air-conditioning plant, carparks; and • commercial developments with workshops, mechanical and ventilation plant such as air exhaust and supply fans, chillers, cooling towers, truck and freight train movements, loading docks etc.	A Noise Assessment (**Appendix 9**) prepared for the proposed works provides that the proposed activity would involve the use of construction plant and equipment. Mobilisation of heavy construction vehicles may also generate additional road traffic noise on the external road network. Construction activity has a low potential to generate noise noticeable at nearby noise sensitive receivers due to the limited number of receivers located in close proximity to the proposed activity. The majority of the works would be undertaken during daytime hours and therefore impacts on any nearby receivers would be minimal. Mitigation measures would also be implemented to minimise any potential noise impacts. Vibration impacts may be present with the filling works proposed. It is considered that the vibration would be felt by close receivers and would only be during the daytime construction hours. Overall, the assessment found that the predicted noise from various construction stages is expected to comply with the EPA managerial noise limits. Potential impacts and mitigation measures further discussed in Section 6.3 of this EIS.
B3.D – Earthworks	
B3.4 Development may need to provide a bulk earthworks plan in order to adequately address the above matters when:	A Backfilling Management Plan (**Appendix 12**) provides the levels of the site that will be filled. No excavation is proposed as part of the earthworks, only filling. A concept fill plan has also been

Clause and Controls	Compliance
• cut exceeds 2m in depth • fill has a total area of 100m2 or more • is within 40m of the top bank of a riparian corridor as defined under the *Water Management Act 2000*	prepared as part of the Earthworks Flood Impact Assessment (**Appendix 6**) that identified finished levels across the site to range from 1.1m AHD to 2.1m AHD.
B3.5 Fill must consist of Virgin Excavated Natural Material (VENM) as defined under the *Protection of Environment Operations Act 1997* or any other waste-derived material the subject of a resource recovery exemption under section 91 of the Protection of the Environment Operations (Waste) Regulation 2014 that is permitted to be used as fill material.	The fill will consist of ENM, VENM, PASS as well as other permitted material (RRE). This is discussed further in Sections 3.4 and 4.3 of this EIS.
B4 Drainage and Water Quality	
B4.A Stormwater drainage plan	
B4.1 Development that applies to this part is to provide a stormwater drainage plan and a written description of the proposed drainage system within the SEE. Note: C1.D also provides drainage requirements for development relating to subdivision Note: Hydrological/hydraulic calculations and designs shall be prepared in accordance with the approaches outlined in the current Australian rainfall and runoff guidelines using the current hydrologic soil mapping data for Port Stephens available from Council. Other current Australian published design guides may also be applied to particular design situations.	The Backfill Management Plan (**Appendix 12**) demonstrates the discharge point at the south-west of the site.
B4.B On-site detention / on-site infiltration	
B4.2 On-site detention / on-site infiltration is required in stormwater requirement areas where: • the post-development flow rate or volume exceeds the pre-development flow rate or volume; or • impervious surfaces exceed the total percentage of site area listed under Figure BC; or • it is identified under Section D Specific Areas of the DCP. Note: A map of stormwater requirement areas is published on Council's website.	No on-site detention or infiltration is proposed.
B4.3 On-site detention / on-site infiltration is to be: • sized so that the post-development flow rate and volume equals the predevelopment flow rate and volume for all storm events up to and including the 1% annual exceedance probability (AEP) storm event • provided by either underground chambers, surface storage or a combination of the two and are generally positioned:	No on-site detention or infiltration is proposed.

<table>
<tr><th>Clause and Controls</th><th>Compliance</th></tr>
<tr><td>- under grassed areas for any cellular system (which can be easily maintained)
- under hardstand areas such as driveways for any concrete tank structures
Note: A neutral or beneficial effect (NorBE) on water quality must be designed for all storm events.</td><td></td></tr>
<tr><td>B4.4 Details of the on-site detention / on-site infiltration concept design must be provided in the stormwater drainage plan and the written description and must include information on:
• the location and type of detention / infiltration system
• demonstrated flow rate / volume for all design storm events up to the 1% AEP
• pipes, pits, overland flow and discharge point
• surface grates and maintenance access points
• orifice type, location and screening facility
• slope/gradient of the land
• post-development flow rate and volume for the site equal to pre-development flow rate and volume for the site
Note: B4.8 states that on-site detention / on-site infiltration may not be required for dual occupancy development if the water quality requirements under Figure BE have been satisfied.
Figure BC: Maximum impervious surface table
<table>
<tr><th>Land use zone</th><th>Maximum impervious surface area (%)</th></tr>
<tr><td>E4, R5, RU1, RU2 & RU3</td><td>Refer to Figure BD (below)</td></tr>
<tr><td>E1, E2, E3, IN4, RE1, RE2, SP1, SP2, W1 & W2</td><td>merit-based approach</td></tr>
<tr><td>R1, R2 & RU5</td><td>60</td></tr>
<tr><td>R3</td><td>75</td></tr>
<tr><td>B5, B7, IN1 & IN2</td><td>90</td></tr>
<tr><td>B1, B2, B3 & B4</td><td>100</td></tr>
</table>
Figure BD: Lot area impervious surface table
<table>
<tr><th>Lot area (m^2)</th><th>Maximum impervious surface area (%)</th></tr>
<tr><td>>5000</td><td>7.5</td></tr>
<tr><td>2000 to 5000</td><td>30</td></tr>
<tr><td>900 to 2000</td><td>40</td></tr>
<tr><td><900</td><td>60</td></tr>
</table>
</td><td>No on-site detention or infiltration is proposed.</td></tr>
</table>

Clause and Controls	Compliance
Note: Figure BD above only applies to land zoned E4, R5, RU1, RU2 and RU3	
B4.C Water quality	
B4.5 Development is to provide stormwater quality improvement devices (SQIDs) in accordance with Figure BE: Water quality table, unless: • a WSUD strategy that applies to the land has been approved by Council and is listed on Council's website for the purposes of this requirement. • the development is a dwelling house, semi-detached dwelling, secondary dwelling, and/or ancillary structure to residential development, or; • the development is for alterations and additions to a dwelling house, semi-detached dwelling, secondary dwelling, and/or ancillary structure to residential development, or; • the development is for other minor alterations and additions on a lot of less than 250m2 A document listing approved WSUD strategies is available on Council's webpage. Where an approved WSUD strategy applies to the land, details are to be provided which demonstrate that any requirements outlined in the list of approved WSUD strategies have been incorporated into the development. Note: The list of approved WSUD Strategies should be consulted for the purpose of determining whether SQIDs are required for a complying development proposal.	The Detailed Contaminated Land Assessment Report (**Appendix 2**) addresses water quality. The report summarises: *"**Surface water*** *Surface water samples were collected from the flooded former quarry void, the up-gradient artificial Grahamstown Drain, and the down-gradient Windeyer's Creek. Some metal exceedances of the adopted criteria indicate a potential risk to the ecology of the flooded former quarry void, artificial Grahamstown Drain, and Windeyer's Creek.* *It is understood that the up-gradient artificial Grahamstown Drain receives surface water run-off from the greater Raymond Terrace region and treated effluent discharged from Raymond Terrace Wastewater Treatment Works area prior to reaching the site. As a result, the Grahamstown Drain is likely to have elevated metal concentrations. In addition, up-gradient surface water sampling (SW11) of Grahamstown Drain and up-gradient groundwater wells (MW4 and MW5) generally have higher or equal to metal concentrations than the flooded former quarry void and down- gradient surface water samples. This is likely indicative of background levels or a result of offsite sources and not contamination produced by the Site's historical use. In consideration of the above, the surface water exceedances generated by the site are unlikely to pose an unacceptable risk to Windeyer's Creek or the Hunter River.* *In consideration of the above, remediation or management of surface water is not required for the proposed development. Through the backfilling of the former quarry void, the sediments containing marginally elevated metal concentrations will cease to be mobile, leading to a potential improvement to the water quality of the down-gradient receptors. However, it should be noted that the Grahamstown Drain and Windeyer's Creek (and the concentrations detected in these watercourses, which were derived upgradient from the site) may continue to impact the surface water quality.* ***Groundwater*** *With respect to metal concentrations in excess of the screening criteria, detected in* [Monitoring Well (MW)] *MW1 to MW5, the following is noted:* • *Groundwater flow is likely to be to the west, towards Windeyer's Creek which feeds the Hunter River, with the Hunter River the likely receiving water body;* • *The Hunter River is a highly disturbed water course, therefore the 95% species protection*

Clause and Controls	Compliance
	criteria for moderately disturbed ecosystems may be overly conservative for the purposes of this assessment; • *Concentrations of metals in site soils were not elevated to an extent that would indicate a source of groundwater contamination resulting from the metals was located onsite during the sites history;* • *Similarly, concentrations of metals in site sediments and ASLP values were not elevated to an extent that would indicate a source of groundwater contamination resulting from the metals that were located onsite during the sites history; and* • *Concentrations in MW5 and MW4 (upgradient wells) which are located on the up-gradient site boundary were generally higher than in MW1 to MW3 (down gradient wells) which may indicate that the concentrations are indicative of background levels or a result of offsite sources and not contamination produced by the Site's historical use.* *In consideration of the above, the groundwater exceedances are unlikely to pose an unacceptable risk to the receiving water body's water quality as the receiving water body is a highly disturbed ecosystem. In addition, it is unlikely that contaminant concentrations in groundwater are a result of onsite sources, rather representative of regional groundwater quality in an urbanised area or a result of upgradient sources.* *In consideration of the above, remediation or management of groundwater is not required for the proposed development.* *…* *overall, given the proposed backfilling of the quarry void with environmentally benign and appropriately placed PASS, this is a positive environmental outcome for the site and restoration of a site after an industrial history in order to facilitate positive recreational future use."*
B4.6 Stormwater quality improvement devices (SQIDs) are designed to be taken off-line from minor and major drainage systems.	Refer to Erosion and Sediment Controls in **Appendix 12**.
B4.7 Development submits the evidence of how the water quality targets have been achieved (eg SSSQM Certificate, MUSIC or MUSIC-Link report).	A MUSIC model has not been provided as part of the proposal.
B4.8 On-site detention / on-site infiltration may not be required for dual occupancy development if the water quality requirements under Figure BE for sites less than 2,500m2 have been satisfied	N/A – The proposal does not involve dual occupancy development.
B4.9 Erosion and sediment measures are provided during the construction phase in accordance	Erosion and Sediment Controls are provided in **Appendix 12**.

<table>
<tr><th>Clause and Controls</th><th>Compliance</th></tr>
<tr><td>with the issued conditions of consent</td><td></td></tr>
<tr><td>B4.10 Development that, in the opinion of the Council, has the potential to significantly adversely affect the water quality of the drinking water catchment will be referred to Hunter Water under section 51 of the Hunter Water Act 1991. Development or activities which pose unacceptable risks to a drinking water catchment are not likely to be supported by Hunter Water.
Note: Refer to Hunter Waters' document 'Guidelines for developments in the drinking water catchments' for development types that will likely trigger referral to Hunter Water.
Figure BE: Water quality table
<table>
<tr><th rowspan="2">Type of development or site area</th><th colspan="2">Water quality targets</th><th rowspan="2">Tool used to achieve target</th></tr>
<tr><th>Devlopment within a drinking water catchment</th><th>Development outside a drinking water catchment</th></tr>
<tr><td>Lots with a site area greater than 250m^2 and less than 2,500m^2</td><td>Before water is released into public drainage, the water quality outcomes shall achieve:
• NorBE; or
• Council's water quality stripping targets
whichever achieves the better water quality outcome.</td><td>Before water is released into public drainage it must achieve Council's water quality stripping targets</td><td>Either:
• Water quality modelling, such as SSSQM or MUSIC; or
• Compliance with a standard drawing produced by Council for the purposes of development control B4.5 published on Council's website</td></tr>
<tr><td>Lots with a site area equal to or greater than 2,500m^2</td><td>Before water is released into public drainage, the water quality outcomes shall achieve:
• NorBe: or
• Council's water quality stripping targets
whichever achieves the better water quality outcome.</td><td>Before water is released into public drainage it must achieve Council's water quality stripping targets</td><td>Water Quality Modelling, such as MUSIC Modelling</td></tr>
</table></td><td>As per the comment for B4.5, no significant adverse effects to water quality are anticipated as a result of the proposed works.</td></tr>
<tr><td colspan="2">B4.D – Riparian Corridors</td></tr>
<tr><td>B4.11 Development involving a controlled activity within waterfront land (within 40m from the highest bank of the river, lake or estuary) adheres to the Water Management Act 2000
Note: Council can advise on the location and order of waterfront land</td><td>The proposed works are within 40m of a watercourse and will therefore involve a controlled activity. The proposal will be subject to a controlled activity approval from NRAR in accordance with the Water Management Act 2000.</td></tr>
<tr><td>B4.12 Development provides the following buffers to riparian corridors that are generally</td><td>The BDAR prepared in relation to the proposal recommends that a Vegetation Management Plan (VMP) will</td></tr>
</table>

Clause and Controls	Compliance
consistent with the recommendations of the NSW Office of Water. 2012, 'Guidelines for riparian corridors on waterfront land'15: • 50m buffer from 3rd order water courses or above with a 40m vegetated riparian zone and 10m vegetated buffer • 30m buffer from 1st-2nd order water courses with a 20m vegetated riparian zone and 10m vegetated buffer	be required in order to guide the restoration or rehabilitation of the riparian corridor established by way of the retained VRZ extending 40 metres from the top of bank from Grahamstown Drain. Management strategy measures are proposed within the BDAR for establishment and monitoring of the VMP.
B4.13 Riparian corridors are dedicated as public open space when Council agrees to take ownership of that land	N/A – No land is proposed to be dedicated to public open space.
B5 Flooding	
B5.A Development on all flood prone land	
B5.1 If multiple flood hazard categories are specified for a site on a flood certificate, the proposed development must be located on the land with the lowest flood risk.	The proposed works will result in an improved state for flood impact of the site.
B5.2 Development must meet the minimum FFL as specified in Figure BJ. Note: The National Construction Code may provide minimum FFLs for some categories of development which prevail to the extent of any inconsistency with these controls. The finished surface of open space car parking, carports and driveways should be designed having regard to vehicle stability, including consideration of depths and velocity during inundation by flood waters.	N/A – The proposed works are not a development specified in Figure BJ.
B5.3 Development for a building (and/or an associated driveway or access) must be of a flood compatible design and construction and shall meet the relevant requirements in the Construction of Buildings in Flood Hazard Areas (Australian Building Codes Board). Council may also require structural certification for development proposed on land which becomes a floodway in the PMF.	N/A – The proposed works are not for a building.
B5.4 Fencing on flood prone land should be stable in events up to the current day 1% AEP flood event and not obstruct the flow of floodwater	Details of fencing are not yet provided; however, it is noted that it should be consistent with this control.
B5.5 All incoming main power service equipment, including all metering equipment, and all electrical fixtures, such as power points, light fittings, switches, heating, ventilation and other service facilities must be located above the FPL, or where possible above the PMF. Where the above cannot be achieved, the following features shall be used: • Electrical cabling is not to be installed within walls, or chased into walls; and • Any circuit containing switches, power points or any other electrical fitting that are located below	Details of any required power service equipment are not yet provided; however, it is noted that it should be consistent with this control.

Clause and Controls	Compliance
the FPL, shall connect to the power supply through an individual Residual Current Device (RCD), located in the meter box.	
B5.6 The storage of hazardous or potentially hazardous materials, potentially polluting material or material that could be washed from site and cause harm downstream must be stored above the FPL with appropriate bunding.	The proposed works will not involve the storage of hazardous or potentially polluting material or material.
B5.7 Items that may wash away during flood events (e.g. rainwater tanks, hot water tanks, gas cylinders, shipping containers) must be elevated above the 1% AEP flood event level in the year 2100 (without freeboard) or anchored to resist buoyancy and impact forces.	N/A – The proposed works are for earthworks only.
B5.B Development on all flood prone land other than minimal risk flood prone land	
B5.8 A flood impact and risk assessment is required for: • Any fill on land identified as floodway. • Any fill located in a flood storage area, unless: - The net volume of fill does not exceed the lesser of 20% or 2000m3 of the flood volume of the lot in the 1% AEP flood event in the year 2100 (this includes consideration of previous fill volumes); and - It is demonstrated that the fill does not adversely affect local drainage patterns of all events up to the 1% AEP flood event in the year 2100. Note: Fill in flood storage areas greater than the abovementioned volume can be offset by flood storage. Offsetting can be achieved through consolidation of lots and/or assigning an 'easement to flood land' on the compensatory lot/s. Compensatory lots must be located within the zone of influence of the proposed fill (as demonstrated by the flood impact and risk assessment) or adjacent to the proposed fill and be of the same hazard category of the subject site. • Any fill for the purposes of a livestock flood refuge mound, unless the livestock flood refuge mound is located in an identified flood fringe area: - The volume/size and location of the livestock flood refuge mound meets the criteria in Figure BK; and - The size of the mound must have regard to the agricultural capacity of the land. The design and size of the mound shall be determined by reference to the NSW Department of Primary Industries –Agriculture. 2009, 'Primefacts: Livestock flood refuge mounds'; and • Where the proposed development could change flood behaviour, affect existing flood risk, or	An Earthworks Flood Impact Assessment (**Appendix 6**) has been prepared which states: *"The site is subject to mainstream Hunter River flooding and local catchment flooding of Windeyers Creek. Although the Hunter River flooding will result in peak flood conditions at the site, local flooding of Windeyers Creek is the critical condition in terms of assessing the impact of the earthworks.* *This assessment has developed a proposed concept earthworks plan for the site to maximise potential filling of the disused quarry, minimise potential flood impacts and provide flood immunity for potential future development opportunities.* *An XP-RAFTS hydrologic model and a TUFLOW hydraulic model were developed for the assessment. Flood behaviour at the site for the 10% AEP and 1% AEP design flood events has been determined for existing and post-development scenarios, identifying that there will be negligible off-site peak flood level impacts associated with filling the site in this manner. This would also be the case for Hunter River flood events."*

Clause and Controls	Compliance
expose people to flood risks that require management or; • If Council determines a flood impact and risk assessment is necessary for any other reason.	
B5.9 For residential accommodation, subdivision, commercial premises, industrial premises, garages, open car parking spaces and carports, a reduced planning horizon of 50 years from the date of determination will be accepted where the design facilitates ongoing flood adaptation (ie the future raising of the building).	N/A – The proposed works do not involve these development types.
B5.10 Where proposed alterations and additions to existing residential accommodation is less than 40% of the gross floor area of the existing residential accommodation, and does not involve a net increase in the number of bedrooms, Council will consider a FFL lower than the flood planning level (FPL), but not lower than the existing floor level. Any additional flood risk must include mitigation measures to reduce the overall flood risk of the development.	N/A – The proposed works do not involve residential development.
B5.11 Access from the building envelope to the public road is to have a minimum finished access level of: • The flood immunity of the connecting public road; or • The current day 1% AEP flood event level for the site.	N/A – The proposed works do not involve residential development
B5.12 Earthworks for driveways and access must satisfy the objectives of B3.D of the DCP and LEP. Note: Impacts on local drainage and localised flooding should be considered and addressed. Driveways should be designed and constructed in accordance with Councils standard design drawings	A Backfill Management Plan (**Appendix 12**) provides the levels of the site that will be filled. No excavation is proposed as part of the earthworks, only filling. A concept fill plan has also been prepared as part of the Earthworks Flood Impact Assessment (**Appendix 6**), that identified finished levels across the site to range from 1.1m AHD to 2.1m AHD.
B5.13 Subdivision that creates the ability to erect additional dwellings is to indicate building envelopes above the FPL and comply with the requirements of B5.11, B5.12 and B5.14 of this Part	N/A – The proposed works do not involve subdivision.
B5.14 If evacuation egress from residential accommodation, a commercial premises, an industrial premises, fill or development vulnerable to emergency response and critical infrastructure to flood free areas cannot be achieved via a route that is flood free in the current day 1% AEP flood event or is a low hazard flood area, an onsite flood refuge must be provided meeting the following criteria: • Is located above the PMF level; • Is intrinsically accessible to all people on the site, plainly evident and selfdirecting; • Is accessible in sufficient time for all occupants with fail safe access and no reliance on	N/A – The proposed works do not involve these development types.

Clause and Controls	Compliance
elevators; • Has unobstructed external access for emergency boats during flooding; • Caters for the number of persons that could reasonably be expected on-site at any one time (approx. 2m2 per person); • Provides adequate shelter from the storm and has natural lighting and ventilation; and • Contains sufficient clean water, a first aid kit, portable radio with spare batteries and a torch with spare batteries. Note: If a flood refuge is required, the DA must be accompanied by structural certification.	
B5.15 A site based overland flow report must be submitted for development located within a designated overland flow path. The purpose of this report is to demonstrate that the development: • Will not result in material increase in flood level or flood hazard upstream, downstream or surrounding properties; and • Will provide acceptable management of flood risk with appropriate development levels to ensure the safety of people	Refer to the Earthworks Flood Impact Assessment (**Appendix 6**).
B5.C Development on land identified as floodway	
B5.16 Development other than farm buildings and/or fill is not supported on land identified as either low hazard floodway or high hazard floodway.	The proposed works are considered to be fill and should therefore be supported.
B5.17 Fencing in a floodway should not include non-permeable materials or fencing types that could restrict or redirect flood waters.	Details of fencing are not yet provided; however, it is noted that the material should be consistent with this control.
B5.D Application of performance based solutions	
B5.18 The proposed land use is consistent with Figure BI, which shows suitable land uses by flood hazard category (as identified on a flood certificate) and the proposed development incorporates adequate measures to manage risk to human life from flooding, including: • Evacuation access from an area affected by flooding to an area free of risk from flooding, taking into account any potential access restrictions; • Warning times and procedures to make people aware of the need to evacuate; • Consideration of the current and potential future occupants; and • Consistency with the most recent Council adopted flood study or floodplain risk management study that has been undertaken for the site	The proposed works will result in an improved flood condition of the site.
B5.19 The proposed development will not increase the potential individual or cumulative flood	The proposed works have been designed to avoid increasing flood impacts or adversely

Clause and Controls	Compliance
impacts on other development or properties that are likely to occur in the same floodplain. In determining any potential increase in flood impacts, Council will consider: • Future (in the year 2100) flood levels and/or velocities including, but not limited to the 5% AEP flood event, 1% AEP flood event and probable maximum flood (PMF) events; • Loss of flood storage in the immediate floodplain; and • Consistency with the most recent, Council adopted flood study or floodplain risk management study that has been undertaken for the site.	contributing to the potential individual or cumulative flood impacts on other development and properties.
B5.20 The proposed development must be compatible with the flood hazard category of the land (as identified on a flood certificate) or include mitigation measures or offsets to reduce the flood risk. In determining compatibility, Council will consider: • Whether there is other land on the site with lower flood risks where the development could be located; • Depth of flood inundation on the site and the adjacent land; • Flow velocity on the site as well as upstream and downstream from the site; • Suitability of design so that the development does not become isolated by high hazard floodwaters; and • Consistency with the most recent, Council adopted flood study or floodplain risk management study that has been undertaken for the site.	As above.
B6 Williamtown RAAF Base - Aircraft Noise and Safety	
B6.A Site acceptability	
B6.1 When development is located within the 2025 ANEF, which is identified by Figure BP, it is classified into one of the following classifications through referencing Figure BL: • Acceptable – no design measures required to reduce aircraft noise, or • Conditionally acceptable – design measures required, or - An acoustic report is required for the following: - to support development that is classified as conditionally acceptable - to support subdivision of land and subsequent permissible development types by referencing Figure BL and Figure BM • Unacceptable – development is generally unacceptable. However, details submitted with a	The proposed works are not of a development type identified within Figure BL.

Clause and Controls	Compliance
development application that demonstrate the following will be considered on a merit-based approach: - Development on a vacant pre-existing lot within the ANEF 25-30 noise contours that satisfies AS 2021 - Acoustics - Aircraft noise intrusion - Building siting and construction indoor noise requirements20 - Replacement of a pre-existing dwelling in any of the ANEF noise contours satisfies the AS 2021 - Acoustics - Aircraft noise intrusion - Building siting and construction indoor noise requirements20 - Development on land zoned B7 Business Park and adjacent to the Williamtown (Newcastle) Airport Note: Part D15 - Defence or Airport Related Employment Zone (DAREZ) provides site specific requirements for land zoned B7 Business Park and adjacent to the Williamtown Airport. **Figure BL: Building site acceptability based on ANEF Zone**	

Development type	Acceptable	Conditionally acceptable	Unacceptable
	ANEF Zone		
• **residential accommodation** • caravan parks	<20	20-25	>25
• tourist & visitor accommodation	<25	25-30	>30
• educational establishments	<20	20-25	>25
• respite day care centres • health services facilities	<20	20-25	>25
• places of public worship • entertainment facility • information and education facility	<20	20-30	>30
• **commercial premises**	<25	25-35	>35
• general industry • light industry	<30	30-40	>40
• heavy industry	Acceptable in any **ANEF** Zone		

B7 Heritage	
This Part applies to development that is situated on land that contains a heritage item or within a heritage conservation area.	The site does not contain a heritage item and is not within a heritage conservation area.

Clause and Controls	Compliance
B8 Road Network and Parking	
B8.A Traffic impacts	
B8.1 The statement of environmental effects (SEE) details: • car parking location, number and dimensions; • access arrangements; • traffic implications on the existing road network and junctions; • street features, such as trees, footpaths and pipes; and • pedestrian impacts and access for disabled persons.	The proposed works do not propose any formalised parking. Access arrangements will remain as existing, with a widening of the access point. A Traffic Impact Assessment (**Appendix 13**) prepared for the EIS has assessed the traffic implications of the proposed works on the existing road network and junctions. The Traffic Impact Assessment states: *"There is minimal construction required for the site with the majority of traffic associated with the operation of the landfill site. There may be the need to bring in some earthmoving equipment prior to the commencement of operation however once on site this shall typically remain. The construction phase shall also allow for the widening of the access and sealing for the first 30 metres as well as fencing of the site. Overall, these traffic movements will be minimal and occur over a short period (< 2 months).* *Allowing for the above access route, the proposed bulk earthworks could therefore see an average of 5 additional heavy vehicles (truck and dog combinations) travelling in each direction on Adelaide Street (south of the subject site) per hour with up to 50 heavy vehicle per hour (each way) throughout the day.* *This represents a 7-8% increase over the existing traffic flows on Adelaide Street with one additional heavy vehicle on average every 10-15 minutes (each direction). Heavy vehicles flows over this 550m to the Pacific Highway will increase to between 12-15% of traffic volumes. Adelaide Street previously operated as part of the Pacific Highway and carried high levels of heavy vehicles. Accordingly, it is considered that these additional vehicles will have a minimal impact upon the operation of this road which traverses non-residential land.* *The impact of 50 additional trucks on the Pacific Highway will represent less than 0.2% of the either the northbound or southbound traffic volumes (2019 AADT) and so shall have a minimal impact on the operation of this highway.* *The majority of these truck movements are anticipated to approach from the south and so turn left at the roundabout intersection of the Pacific Highway and Adelaide Street and return by turning right at this roundabout. Trucks approaching from the north will turn right at the roundabout and return by turning left. The left turn movement has little impact on the overall operation of this roundabout. The right turn from Adelaide Street to the Pacific Highway does not impact the northbound traffic however does require southbound traffic to give way. With an average of 5 trucks exiting per hour, or one every 10-15 minutes, the impact on this southbound*

Clause and Controls	Compliance
	traffic will be minimal. *As noted above, queues were observed at the roundabout of the Pacific Highway and Adelaide Street. As delays on the highway are primarily associated with vehicles slowing to negotiate the roundabout and Adelaide Street queues greater than 60 seconds are infrequent, the impact of 5 additional trucks and dog combinations across an hour will have a minimal and acceptable impact on this queue. Outside of the peak hours this intersection operates with minimal delays and significantly greater efficiency.* *As the number of truck arrivals or departures will be on average one every 10-15 minutes there will be minimal queuing at the access point. The access shall be wide enough to allow two truck combinations to pass concurrently avoiding the need for an entering combination to need to wait for the access to clear. The Drivers Code of Conduct will require trucks to travel on the road network with suitable time gaps to avoid the need for more than one vehicle to arrive at the entry at any one point in time.* *Light vehicle movements associated with the site will be minimal, associated with staff for operation and maintenance of earthmoving equipment."*
B8.2 A traffic impact assessment (TIA) is required for: • development for 20 or more dwellings; • development defined as traffic generating development; or • development deemed in Council's opinion to impact on the existing road network	Refer to above.
B8.3 A construction management plan is provided prior to the issuing of a construction certificate or subdivision works certificate when development will impact on traffic movements during the construction phase.	Noted.
B8.B On-site parking provisions	
B8.4 Except as required by B8.5, B8.6, or B8.7, all development that has the potential to create demand for on-site parking must provide parking in accordance with Figure BU	The proposed works are not a development type listed in Figure BU.
B8.C On-site parking access	
B8.12 The entry, exit and driveway separation widths of access points from a site to a street frontage is provided in accordance with Figure BV and the following steps: 1. Determine the class of parking, either being A, B or C 2. Determine the ingress/egress category by identifying whether that class is located on either an	The proposal seeks to maintain the existing ingress/egress with minor improvements through widening and upgrading to be all weather access. Details of this widening to be provided prior to commencement of works.

Clause and Controls	Compliance
arterial road or local street and by referencing the number of parking spaces that are required, which is determined by B8.4 3. Determine entry, exit and driveway separation widths by using the ingress/egress category	
B8.D Visitor parking & loading facilities	N/A – The proposed works do not include service areas, formal car parking or loading bays.
B8.E Access to public transport for 20 or more dwellings	N/A – The proposed works do not involve residential development.
C Development Types	
	The proposed works are not a type of development specified in Section C of the DCP 2014.
D Specific Areas	
	The proposed works are not within an area specified in Section D of the DCP 2014.

5. CONSULTATION

5.1. PORT STEPHENS CITY COUNCIL CONSULTATION

The proponent has met with Council to discuss the application and proposed development. The purpose of the meeting was a general outline of the development and EIS and timing around lodging the application.

5.2. COMMUNITY CONSULTATION

No community consultation has been conducted at the time of this EIS. Letters can be deposited at neighbouring properties advising them of the proposed development and requesting any feedback. Responses can be provided when received.

5.3. AGENCY CONSULTATION

Clause 77 of the EP& A Regulation requires that, for the purposes of Section 4.64 (1) (g) of the EP&A Act, at the same time as giving public notice, the consent authority must give written notice of a development application for designated development to such public authorities (other than relevant concurrence authorities or approval bodies) as, in the opinion of the consent authority, may have an interest in the determination of that development application.

5.4. NATIONAL PARKS AND WILDLIFE SERVICES

Biodiversity and Conservation Division (BCD) of DPIE provided the following requirement within Attachment A of its response regarding consultation with National Parks and Wildlife Services (NPWS):

> *"**5. National Parks and Wildlife Services estate***
>
> ***Land reserved or acquired under the National Parks and Wildlife Act 1974 (NPW Act)***
>
> *If the proposed development is within, adjacent to, or in proximity to a watercourse that flows directly into National Parks and Wildlife Service (NPSW)-managed conservation estate (e.g. a national park, nature reserve, state conservation area, land which is declared wilderness under the Wilderness Act 1987) then the EIS should include:*
>
> - *The following (as appropriate):*
>   - *Evidence that the proponent has consulted with NPWS on the legal permissibility of the proposal under the NPW Act and its appropriateness."*

Accordingly, NPWS was contacted in the preparation of this EIS to seek clarification as to NPWS interpretation of the above and whether the proposal is subject to provisions under the NPW Act (**Appendix 14**). An automated response was received (**Appendix 14**) stating that

> *"OEH and the EPA will prepare separate responses to any relevant matters relating to their respective portfolio of responsibilities.*
>
> *A nil response from either agency means that no comment on your matter is considered necessary."*

As no response was received this indicates that neither agency considered further action necessary. **Appendix 14** provides evidence that the proponent has consulted with NPWS on the legal permissibility of the proposal under the NPW Act.

5.5. EXHIBITION

After lodgement of the application, community consultation will be undertaken in accordance with the EP&A Act. Section 4.64 of the EP&A Act states the EP&A Regulation contains exhibition and notification requirements for designated development. Clause 56 of the EP&A Regulation requires the consent authority to place the application and any accompanying information on public exhibition for a period of 30 days. A notice of the application must be published on the consent authority's website, and on the land to which the proposal relates and be given to adjoining owners and relevant public authorities. The notice is to contain information as set out in Clause 58 of the EP&A Regulation.

6. ENVIRONMENTAL ASSESSMENT

6.1. LAND USE

6.1.1. Existing Environment

The site is located in Port Stephens LGA, between Heatherbrae and Raymond terrace in a mixed rural and urban area. Surrounding development includes the Raymond Terrace Waste Water Treatment Works site to the east, vegetated land to the north and south. Land to the west is farmland (across Adelaide Street) and land to the north is under a current planning proposal to be rezoned to residential land, which is located beyond this vegetated land.

The site is elevated at the western boundary adjacent to Adelaide Street. Topographically, the site is extensively disturbed by previous excavation of gravel and sand. Drainage generally flows towards Grahamstown Drain and Windeyers Creek.

6.1.2. Potential Impacts

The proposed works have potential to create short term impacts on public access to the site and noise during construction. This has the potential to impact the current uses directly adjoining the site such as the nearby residential developments.

Once construction is complete, the proposal will result in positive impacts for the existing environment in that the land will be rehabilitated from a disused quarry to a site that is suitable for a range of potential uses. A number of options for future use are being investigated including a recreation facility (outdoor) and tourist and visitor facility. Those uses would be subject to development assessment and approval that is separate to the proposed environmental protection works.

6.1.3. Environmental Management Measures

Environmental management measures to minimise impact on land use are:

- Nearby residents and other stakeholders to be advised of proposed construction staging and timing on an ongoing basis,
- Contact details of the site supervisor to be displayed on site at all times,
- Access to be maintained to adjacent properties at all times,
- Lighting is to be designed in accordance with AS 4282 Control of the obtrusive effects of outdoor lighting,
- All mitigation measures identified in this EIS are to be implemented in a CEMP prepared in relation to the activity. Contractor to adhere to all Environmental Management Measures in the CEMP.

6.2. TRAFFIC AND ACCESS

6.2.1. Existing Environment

The vehicular access to the site is from the existing unsealed driveway off Adelaide Street, which was previously used by the quarry. Due to the nature of the site there is no formal parking within the site, there ample capacity onsite for parking in managed vegetated areas throughout the site.

Adelaide Street provides the link between Raymond Terrace and the Pacific Highway network, and carries some regional traffic beyond Raymond Terrace in the Port Stephens LGA. The local road network is utilised by most vehicle sizes including B-double combinations. Adelaide Street is single lane (each travel direction) road with sealed shoulders and grass verges. The signposted speed is 70km/h along Adelaide Street and separate to the road there is an off-road shared pathway for pedestrian and cyclists along the western side of Adelaide Street.

6.2.2. Potential Impacts

There will be impacts to traffic both during construction and for the future use of the site. It is anticipated that the potential Impacts are as follows:

- Construction traffic generation
- Proposed construction traffic route
- Adelaide Street accessway

Construction traffic

Through a review of the proposed works on-site it is anticipated that an additional 50 construction vehicles per day over a ten year period. These vehicle movements are likely to occur during typical construction hours during the week and a shorter day on Saturday and no works on Sunday.

The route taken by construction vehicles will generally be from the M1 Pacific Motorway to Adelaide Street at the Heatherbrae roundabout (as a return trip), as most materials are likely to be sources from within the Hunter or Sydney regions.

Adelaide Street accessway

The Adelaide Street accessway is currently unsealed from the connection through to completion on the subject site. As part of pre-construction works the access road is proposed to be widen and sealed for 30m from the Adelaide Street connection point. The increase in width and proposed sealing will assist in providing safe passage for construction vehicles allowing two way traffic into the site and safer vehicle sightlines.

Given the low levels of proposed vehicles movements and the existing site conditions the installation of no turn treatments are not considered appropriate. Further details of the traffic assessment can be found in **Appendix 13**.

6.2.3. Environmental Management Measures

Environmental management measures to minimise impact on traffic and access are:

- Provide signage along Adelaide Street warning of turning trucks
- Prepare a drivers code of conduct that include the following instructions
    - Ensure that heavy vehicles do not enter Raymond Terrace or transit through
    - Approach the site from the south and depart to south and do not travel north
    - Provide standard construction hours or vehicle movements to abide by
- Regular vegetation trimming along Adelaide Street at the site access and sight triangles
- Increase width of Adelaide Street accessway.

6.3. NOISE AND VIBRATION IMPACTS

6.3.1. Existing Environment

Main sources of ambient noise within the immediate area include vehicles, air conditioners, recreational activities associated with the shared pathway, pacific highway and manufacturing type noises originating from the nearby industrial park (in Heatherbrae). Broader noise impacts include traffic along surrounding roads, small residential power tools, pets and wildlife. A number of sensitive land uses are located in proximity of the site. The closest occupied residences are residential dwellings, located on the north-west approx. 100m from the site boundary.

6.3.2. Potential Impacts

Construction Noise

The proposed activity would involve the use of construction plant and equipment discussed in Section 3.6. Mobilisation of heavy construction vehicles may also generate additional road traffic noise on the external road network. Construction activity has a low potential to generate noise noticeable at nearby noise sensitive receivers due to the limited number of receivers located in close proximity to the proposed activity. The majority of the works would be undertaken during daytime hours and therefore impacts on any nearby receivers would be minimal. Mitigation measures would also be implemented to minimise any potential noise impacts.

Vibration impacts may be present with the filling works proposed. It is considered that the vibration would be felt by close receivers and would only be during the daytime construction hours.

There may be some additional road traffic noise given that only approximately 50 vehicle movements per day are expected, this noise is not expected to be significant.

A noise assessment has been prepared in by the Acoustic consultant to assess the typical noise level of construction (no mitigation) for the proposal.

Stage	Description of Noise Source[2]	# of Sources	SPL @ 10m	Predicted Noise level at Receiver, $L_{eq(15min)}$ dBA		
				R1	R2	R3
1	Excavator	1	79	36-41	27-32	26-31
	Bulldozer	1	80	35-40	27-32	28-33
	Tipper trucks	1	89	33-38	23-28	25-30
	Cumulative	**-**	**-**	**40-45**	**31-36**	**31-36**
2	Track Loader (30T)	1	75	17-22	inaudible	inaudible
	Compactor	1	80	18-23	inaudible	inaudible
	Cumulative	**-**	**-**	**25-30**	**inaudible**	**inaudible**
3	Track Tractor	1	80	32-37	22-27	23-28
	Track Loader (30T)	1	75	24-29	inaudible	inaudible
	Cumulative	**-**	**-**	**36-41**	**26-31**	**27-32**

Figure 6.3.2: Noise assessment provided by Acoruras Consultancy.

As a further precaution, neighbours and other stakeholders will be notified prior to construction activities taking place and a complaint register established to manage any noise issues.

Despite the above, the following management measures apply:

- the proponent should apply all feasible and reasonable work practices to reduce noise impacts
- the proponent should inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details of the onsite construction manager.

6.3.3. Environmental Management Measures

Environmental management measures to minimise noise impacts:

- Consult with surrounding residents and other stakeholders
- Toolbox and induction of personnel prior to shift to discuss noise control measures that may be implemented to reduce noise emissions to the community
- Contact details of the site supervisor to be on site at all times
- Establish a complaint register and deal with all complaints within 24 hours, where practicable
- Regularly inspect and maintain equipment
- Work will occur during standard construction hours (7am to 6pm Monday to Friday, 8am to 1pm Saturday and no work on Sundays or public holidays). Where work occurs outside these hours consultation will be required with adjoining residences depending on the nature of the work
- Notify the community of the nature and timing of construction activity and provide contact details of the site supervisor
- Consider noise screens or similar noise dampening options where numerous complaints are received.

6.4. SOILS AND GEOLOGY

6.4.1. Existing Environment

Soils and Sediments

With reference to the Gosford – Lake Macquarie 1:100, 000 Geological Series Map (9131, 9231) the lithology underlying the Investigation Area is divided into two units:

- Qa, *Quaternary sediments, undifferentiated alluvial deposits; sand, silt, clay and gravel; some residual and colluvial deposits. Includes some channel, levee, lacustrine, floodplain and swamp deposits of the Cainozoic age.*
- "Rn" *Sandstone, interbedded sandstone and siltstone, claystone. conglomerate and sandstone (Widden Brook conglomerate) of the Narrabeen Group (Clifton Subgroup) of the Mesozoic age.* If present acid, sulfate soils are

The site is understood to be underlain by unconsolidated quaternary Alluvium. The DLCA (**Appendix 2**) provides an inferred subsurface model of the encountered subsurface conditions, summarised as follows:

Geotechnical Unit	Approximate Depth to Top of Unit (m)	Approximate Thickness (m)	Typical Description
Unit 1 – Fill	0.0	~0.0 – 3.7	Silty, clayey, SAND: fine to medium grained, medium plasticity, with gravels, organic material, some aggregate, no odours or staining, brown/grey Sandy CLAY: low plasticity, brown SAND: fine grained, beige
Unit 2 – Natural	0.0 – 3.7	Unknown	Silty, clayey, SAND: fine to medium grained, with organic material, some siltstone gravels, white/light brown/grey Silty, sandy CLAY: high plasticity, with organic material, dark grey CLAY: moderate plasticity, dark grey CLAY: medium plasticity, shale fragments and ironstone gravels, no odours or staining, grey/red/yellow/orange, dry

The DCLA also found that sediments located at the base of the former quarry inundated area generally consisted of Silty CLAY: with minor sand and gravels, high plasticity, dark grey/yellow/brown.

Hydrogeology

The relevant hydrogeology of the site consists of a shallow unconfined aquifer, which is likely to have a relatively high permeability due to the formation consisting of sands, silts, and clays. Previous investigations carried out by CES at the Site indicated that groundwater is likely to be approximately at surface (for the inundated quarry to 1.86m below ground level (across the remaining portion of the site, dependant on the topographical elevation) in the study area. The shallow aquifer underlying the study area is expected to discharge to Grahamstown Drain and Windeyers Creek which meet on the south-western portion of the site. Windeyers Creek is a tributary of the Hunter River. Based on the previous investigation data, the shallow aquifer is flows from east to west.

Hydrology

The existing quarry void acts as the principal storage of surface water for the site. Subsurface and surface water within the site are expected to discharge either the manmade Grahamstown Drain in the north or Windeyers Creek in the south, which eventuates to a confluence in the south-west before flowing further to the broader Hunter River system.

Contamination

The previous land use of the site as a quarry must be investigated to determine whether historic uses have led to land contamination activities and the movement of acid sulfate soils throughout the site.

6.4.2. Potential Impacts

The proposed backfilling of the quarry will result in the further disturbance of soils throughout the site. Each report's potential impacts to the soil and geology of the site are summarised below.

Contaminated Land Assessment

A Conceptual Site Model has been developed and provided within the DCLA (**Appendix 2**), which provides the following:

- Potential on-site sources of contamination include:
    - Previous industrial quarry activities resulted in the use of petroleum products such as fuels, oils, and hydraulic oils, as well as the use of processing machinery. The contaminants of potential concern (COPC) include: Heavy Metals (cadmium, chromium, copper, lead, nickel and zinc)
    - Uncontrolled fill was found on the site as embankments and levees. The COPC include heavy metals (cadmium, chromium, copper, lead, nickel and zinc)
- Potential off-site sources of contamination include:
    - Raymond Terrace Wastewater Treatment Works, whereby treated effluent is discharged to Windeyers Creek via Grahamstown Drain. The COPC associated with domestic wastewater and domestic wastewater treatment includes heavy metals, cations and anions, pH and EC.
    - Grahamstown Drain, as previously stated, received surface water run-off from the greater Raymond Terrace area prior to reaching the site as well as treated effluent discharge from the Raymond Terrace Wastewater Treatment Works. Therefore COPC include heavy metals (cadmium, chromium, copper, lead, nickel and zinc)
- Potential pathways through which contaminants may reach receptors (while in part dependent on the nature and behaviour of the contaminant) includes ingestion/dermal contact during construction (acute risks); indoor and outdoor inhalation of vapours; and outdoor dermal contact and incidental ingestion of contaminants in the particulate form (dust).
- Potential sensitive receptors (on and off-site) include future construction workers during the construction of the proposed redevelopment (acute only), future employees and site visitors, groundwater beneath the site, surface water and neighbouring waterbodies.

Notwithstanding, detailed site investigation including laboratory analysis has determined that the site has not been contaminated by the historic or current usage of the site. The proposed backfilling will restore the site closer to the natural ecosystem by the removal of a man made ecosystem which may not represent a high value ecosystem. The proposed filling works will provide a buffer between the impacted materials through the reduction in opportunities for biota to encounter the identified contaminants. Importantly, the DCLA finds the site suitable for the proposed use as previously discussed.

Acid sulfate soils

The Acid Sulfate Soils Investigation Report (**Appendix 4**) states that no development plans indicative of soil disturbance was provided by the proponent and that the NSW ASSMAC (1998) *Acid Sulfate Soils Assessment Guidelines* are only applicable when soil is to be disturbed. The report further states that there are also no plans to reduce the groundwater level since the proposed development comprises backfilling of a former quarry void. Therefore, it is anticipated that the groundwater level will remain the same during construction and operation. It is also noted that the vast majority of the site is currently inundated and large portions of the site are not accessible. As a result, there are unknown Acid sulfate soils conditions across the site – however, given the proposed development, these areas of unknown status are not considered to represent a risk to the backfilling of the former quarry void. In the event that excavation works or dewatering works are proposed, then a more comprehensive acid sulfate soils assessment is recommended activities.

The Beresfield 1:25,000 *Acid Sulfate Soils Risk Map* (Department of Land and Conservation, 1997) indicates that the majority portion of the Site is classified as High *Probability of occurrence of Acid Sulfate Soil in the soil profile, Ap1 (Alluvial, Plain, elevation between 1-2m). The environment of deposition has been suitable for the formation of acid sulfate soil materials. Acid sulfate soil materials are widespread or sporadic and may be buried by alluvium or windblown sediments.* The Port Stephens *Acid Sulfate Soils Map ASS_002* (Port Stephens Local Environmental Plan 2013 [Amendment No 22]) denotes the Site is classified as Class 2 Land indicating "*A person must not, without development consent, carry out works below more than 1 metres below the natural ground surface and/or works likely to lower the water table."*

The Acid Sulfate Soils Investigatino Report (**Appendix 4**) assumes (based on information provided by the proponent) that there are no plans for the disturbance of any soils during the proposed backfilling of the former quarry void, therefore there is no risk of disturbance of acid sulfate soils. based on the results of the fieldwork, although there are acidic soils (NB. The acidic soils were only identified through laboratory analysis, but there was no physical evidence or field screening evidence) on site, it is unlikely that the acidic soils present on the site are acid sulfate soils. With respect to groundwater and surface water investigated, the following should be noted:

- Acidified groundwater (pH<6.5) was identified during the investigation in the groundwater monitoring wells. pH was observed to return to neutral conditions in all the surface water locations (down-gradient location SW13). Therefore, the acidic conditions are being naturally ameliorated and there is no risk to down-gradient receptors.

Based on the above the acidified groundwater and surface water are considered to present a low risk to the environment through migration or discharge. Based on the investigation, it is unlikely that conditions with respect to acid generation will deteriorate in the site.

6.4.3. Environmental Management Measures

Environmental management measures to minimise impact on soils and geology:

- Oils, fuels and chemicals used during construction will be stored in a locked bund capable of holding 110% of the capacity of the containers within;
- Equipment will be serviced and maintained to minimise potential for loss of fluids;
- Implement Erosion and Sediment Control Plans in accordance with the Managing Urban Stormwater: Soils and Construction "The Blue Book" (4th edition, Landcom 2004);
- Utilise existing cleared areas of the site as the construction compound and stockpile area(s);
- The CEMP will include details on waste management and provide a spill management procedure;
- In the event that soil is taken off site it must be tested in accordance with Waste Classification Guidelines (NSW EPA, 2014) (Note that currently no soil is proposed to be taken offsite);
- During construction continue to monitor the groundwater for the specific purpose of the site water balance; and
- It is recommended that systems be put in place on site to facilitate accurate monitoring of outflow and inflow water volumes throughout the filling operations (for site water balance).

6.5. AIR QUALITY & DUST

6.5.1. Existing Environment

Table 6.1 below is a summary of the rainfall collected by the Bureau of Meteorology for Raymond Terrace (Kinross) and temperatures collected for Williamtown RAAF (approximately 10.2km away). In summer the mean daily temperatures average around 28˚C. In winter mean daily temperatures average around 18.5˚C. Rainfall is generally higher in summer and spring.

Table 6.5.1: Summary of the climate in Raymond Terrace (2020-2021) (Bureau of Meteorology (accessed 23/02/2021))

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Rainfall (mm)												
Mean	9.7	12.1	5.5	5.2	5.8	7.44	14	5.0	4.7	11.3	5.9	12.6
Temperature (˚C)												
Mean	28	28.1	26.1	24.9	19.7	18.5	17.7	18.9	23.2	24.8	27.0	26.5

Urban activities in the local area affect air quality, generally through use of vehicles and power tools all year and wood fires utilised during winter months. The site is surrounded by local roads where public transport and traffic on these roads affect air quality through vehicle emissions.

6.5.2. Potential Impacts

The proposed filling of the decommissioned quarry has the potential to create dust from the importation of the fill and the storage of fill on-site. It is considered that the potential for dust generation will be for limited time and is considered to be short-term in nature. Reviewing the proposal, it is considered that the following activities are likely to generate dust emissions:

- Haulage of materials (sand/gravel/rock) to the site using trucks and tippers
- Filling of voids by tipping materials into voids
- Handling of spoil and structural fill material.
- Earthworks to divert surface stormwater.
- Levelling or site using bull dozers and excavator.
- Wind erosion from temporary exposed areas and stockpiles.

The filling will be undertaken into two stages the first stage will see heavy vehicles tipping fill into the quarry. The second stage will see machinery required to level the site whilst being filled. The use of diesel and fuel machinery may generate emissions of particulate matter. Based on the proposed vehicles movements it is considered that the emissions from the machinery are unlikely to have adverse impacts on surrounding developments.

The proposal will not impact on climate. Climate change has potential to result in warmer temperatures, increased sea level and increased storm intensity

6.5.3. Environmental Management Measures

Environmental management measures to minimise impact on air quality, climate and climate change are:

- Maintain vehicles and machinery to minimise emissions
- General mitigation measures
  - Identify dust-generating activities and inform site personnel about location
  - Identify adverse weather conditions (dry and high wind blowing from dust source to sensitive receptors) and halt dust emitting activities if visible dust impacts are identified at sensitive receptors.
- Handling of soil and structural fill material
  - Minimise drop height for material handling equipment.
- Wind generated dust from temporary stockpiles and exposed areas
  - Apply watering through water trucks or sprinklers.
  - Progressive staging of dust generating activities throughout the day to avoid concurrent dust emissions.
  - Minimise exposed area if possible.
  - Minimise amount of temporary material stockpiled if possible.
- Wheel generated dust during hauling

- Restrict vehicle movement to haul routes that are watered regularly.
- Cleaning of haul roads.
- Speed restrictions.

6.6. HYDROLOGY

6.6.1. Existing Environment

The subject site is located on the Windeyers Creek low-lying floodplain, which is upstream of the Hunter River. The adjoining sewage treatment is east of the subject site and was constructed to be above the Windeyers Creek Floodplain. The Hunter River floodplain has a levee to protect the flood plains from flood events.

The site is located within the low-lying floodplain area bounded by Adelaide Street and the Pacific Highway and provides a storage area for flooding of both Windeyers Creek and the Hunter River. Windeyers Creek is characterised by wide, low-lying swamp areas where ground levels are typically 1.0-1.5 m AHD. Windeyers Creek separates into two branches. The northern creek branch has been realigned into a well-defined channel (Grahamstown Drain) running along the north and west boundaries of the site.

6.6.2. Potential Impacts

Hydrological modelling and design flood simulations for the proposed filling of the decommissioned quarry are provided in **Appendix 6**. The Hydrological Model was prepared to predict the amount of rainfall runoff and the attenuation of the flood wave through the catchment. The modelling found that there was an initial loss of 20mm and a continuing loss of 2.5mm/h were adopted and are within the limits recommended by the Australian rainfall and runoff guidelines for eastern NSW catchments. The Hydraulic Model was prepared to simulate flood depths, extents and velocities. The design flood simulations were undertaken for the 10% AEP (2m AHD peak flood level) and 1% AEP (2.2m AHD peak flood level) events, whilst taking into consideration the site conditions and existing levels.

The flood impact assessment includes flood modelling to establish concept earthworks that would both minimise the flooding impacts from the development whilst maximising the filling potential of the quarry void. The conceptual plan suggests that the finished surface level be at 1.1m AHD to align with the broader levels throughout the Windeyers Creek floodplain and that this will maintain the current water flows back towards Adelaide Street. Furthermore the Adelaide Street area can be filled to an appropriate level to ensure safety for future usage.

It is considered that the proposed filling is likely to have negligible impact on the Windeyers Creek Catchment and the backwater storage areas of the Hunter River.

6.6.3. Environmental Management Measures

Environmental management measures to minimise impact on water quality and flooding:

- Oils, fuels and chemicals will be stored in a locked bund within the construction compound capable of holding 110% of the capacity of the containers within;
- Equipment will be serviced and maintained to minimise potential for loss of fluids;
- Implement Erosion and Sediment Control Plans in accordance with the Managing Urban Stormwater: Soils and Construction “The Blue Book” (4th edition, Landcom 2004);
- Utilise existing cleared areas of the site as the construction compound and stockpile area(s);
- Filling of the site is to be undertaken in accordance with the concept fill plan as prepared by BMT.

6.7. FLORA AND FAUNA AND BUSHFIRE

6.7.1. Existing Environment

Of the land that is suitable for vegetation within the study area, approximately 30.15% is occupied by native vegetation. Lower Hunter Vegetation Mapping (Cockerill et al. 2013) indicated that there were a number of vegetation communities within the study area and its immediate boundaries. The proposed filling of the decommissioned quarry relates primarily to areas that are void of vegetation and where land has been cleared to allow vehicle access to the quarry void. Power lines travelling through the

north and western parts of the study area have cleared land around them. Cleared areas within the study area and buffer area include waterbodies, roads, car parks, built up areas and other infrastructure.

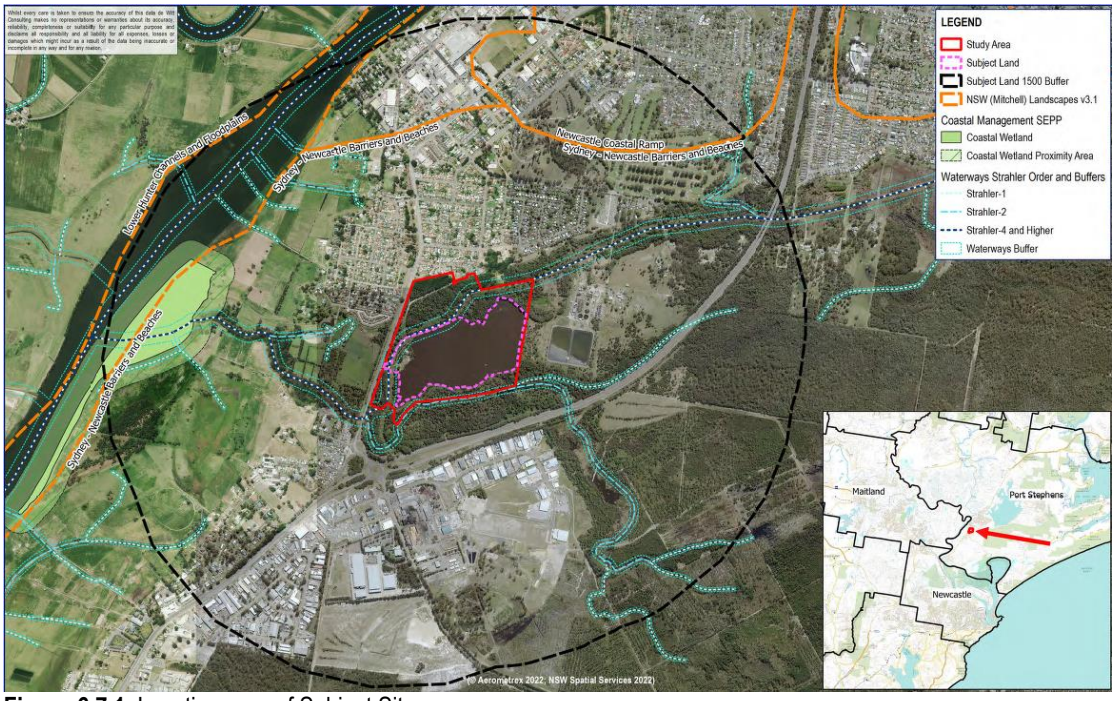


Figure 6.7.1: Location map of Subject Site

Two PCTs are present within the study area: PCT 1717 Broad-leaved Paperbark - Swamp mahogany - Swamp Oak - Saw Sedge swamp forest of the Central Coast and Lower North Coast; and exotic / slashed vegetation.

Two TECs are present within the study area: following Threatened Ecological Communities (TEC): Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (listed as Endangered under the BC Act); and Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland (listed as Endangered under the EPBC Act).

The site was found to provide potential habitat for a range of common, vulnerable, threatened, endangered and critically endangered species, however a number of these were excluded from further assessment due to the lack of suitable habitat.

There are no areas of outstanding biodiversity value (under the BC Act) within the study area.

The site is partially affected by Bushfire Prone Land with the centre of the quarry void not being identified as bushfire prone land. The proposed filling works are located partially within the bushfire prone land. The proposed activity is not a special fire protection purpose pursuant to the *Rural Fires Act 1997* or Rural Fires Regulation 2013 and does not require a bushfire safety authority.

6.7.2. Potential Impacts

The proposal will result in the removal of 1.04 hectares of exotic / slashed vegetation which is heavily disturbed, not consistent with any threatened ecological communities and provides limited foraging resources for threatened fauna species. The proposal will also result in the removal of 0.72 hectares of low-moderate condition PCT 1717 Broad-leaved Paperbark – Swamp mahogany - Swamp Oak - Saw Sedge swamp forest of the Central Coast and Lower North Coast nearby to better condition Swamp Sclerophyll Forest EEC.

In accordance with the BC Act, an assessment of the proposed development was performed in line with the NSW Biodiversity Assessment Method (BAM) and documented in the BDAR (**Appendix 7**). The BDAR also addresses the assessment requirements of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), specifically, consideration of potential impacts to Matters of NES.

Actions to avoid and minimise impacts on biodiversity values within the study area have been documented in the BDAR (**Appendix 7**). Key design elements were altered in the early design phase to reduce direct impacts to threatened ecological communities and native vegetation, focusing on impacts within the part of the study area containing non-native vegetation, previously disturbed areas and an existing post-quarry void.

The proposed development has been able to restrict direct impacts to:

- The importation of Excavated Natural Material (ENM), Resource Recovered Exempt Material (RRE). Acid Sulfate soils (PASS), Virgin Excavated Natural Material (VENM) and other EPA approved waste materials; to fill the existing quarry void (21.96 hectares), currently filled with water, and subsequent reshaping of the site; and
- Vegetation removal described above.

The unavoidable impacts will be managed through offsetting and the additional measures outlined in Section 6.7.3.

6.7.3. Environmental Management Measures

The mitigation and management measures identified in the BDAR are to be implemented in order to mitigate and manage potential direct and indirect impacts during construction. These have been reproduced from the BDAR and presented in the table below:

Impact	Mitigation	Timing	Responsibility
General	All workers are to be provided with an environmental induction prior to starting work on site. This would include information on the ecological values of the site, protection measures to be implemented to protect biodiversity and penalties for breaches.	Prior to clearing/construction works.	Construction contractor
	Prepare a flora and fauna management sub-plan as part of the CEMP, incorporating recommendations below, and expanding on specific details where necessary.	Prior to clearing/construction works.	Construction contractor
	A Vegetation Management Plan (VMP) will be required in order to guide the restoration or rehabilitation of the riparian corridor established by way of the retained VRZ extending 40 metres from the top of bank from Grahamstown Drain. Alternatively, vegetation to be retained within the study area (i.e. Lot 232 DP593512), that is not subject to any future proposed developments, may potentially be established as a future Biodiversity Stewardship Site for the purposes of offsetting the loss of native vegetation from the project. Establishment as a Biodiversity Stewardship Site effectively conserves this retained native vegetation in perpetuity, with future potential to improve vegetation integrity.	Prior to clearing/construction works.	Qualified ecologist
	Measures to suppress dust and water sedimentation implemented during clearing and construction including the favouring of conveyor delivery system or long reach excavator to place fill directly to the specified location below the water surface and installation of a dust suppression system.	Throughout clearing and construction phases.	Construction contractor
Vegetation clearing	Limit disturbance of vegetation to the minimum necessary to undertake the proposal.	Prior to works commencing.	Construction contractor
	Prior to the commencement of any work in or adjoining areas of native vegetation, a survey would be carried out to mark the construction impact boundary. The perimeter of this area will be fenced using high visibility fencing and clearly marked as the limits of clearing. All vegetation outside this fence line will be clearly delineated as an exclusion zone to avoid unnecessary vegetation and habitat removal. Fencing and signage must be maintained for the duration of the construction period. Fencing should be designed to allow fauna to exit the site during clearing activities. Native trees and vegetation to be retained on site is to be protected in accordance with *Development Control Plan 2014 Guidelines – Tree Preservation and Native Vegetation Management Guidelines (Section 6)* and the *Australian Standard AS4970-2009 – Protection of Trees on Development Sites*	Prior to clearing / Daily inspections of exclusion zones during works in area.	Construction contractor and qualified ecologist
	Stockpiles of fill or vegetation should be placed within existing cleared areas (and not within areas of adjoining native vegetation).	Prior to clearing/ construction works.	Construction contractor

Impact	Mitigation	Timing	Responsibility
	Sedimentation and erosion control measures including silt fencing, sediment traps, etc. to prevent sediment-laden stormwater exiting the construction areas and to prevent scouring and erosion of land beyond the development footprint. All erosion and sediment control measures are to be constructed and installed in accordance with relevant guidelines, are to be regularly maintained for the duration of the construction period and are to be carefully removed at completion of works. Sediment and erosion control measures should follow recommendations of The Blue Book – Managing Urban Stormwater: Soils and Construction (Landcom 2004). Dust suppression measures to ensure dust deposition beyond the construction area is minimised.	Prior to clearing/ construction works.	Construction contractor
Introduction of Weeds and Pathogens	Develop a weed and pest species management sub-plan as part of project CEMP to manage weeds and pathogens during the construction and operational phase of the proposal.	Prior to clearing/ construction works.	Construction contractor
	The location and extent of any priority and/or high threat environmental weeds within the site will be identified by a suitably qualified ecologist during pre-clearance surveys. The introduction and spread of weed species will be minimised by restricting access to areas of native vegetation and communicating the responsibilities of all Project personnel at site inductions and during regular toolbox meetings. All priority weeds identified on the site will be controlled and removed in accordance with the requirements of the *Biosecurity Act 2016* and Council's relevant Weed Control Manuals. Appropriate pesticides will be applied if required and a record of such application made in the pesticide application register. All priority and environmental weeds will be cleared and stockpiled separately to all other vegetation, removed from site and disposed of at an appropriately licenced disposal facility. When transporting weed waste from the site to the waste facility, trucks must be covered to avoid the spread of weed-contaminated material. Disposal must be documented, and evidence of appropriate disposal must be kept.	Prior to clearing/ construction works.	Construction contractor and qualified ecologist
	All machinery entering the site must be appropriately washed down and disinfected prior to work on site to prevent the potential spread of weeds, Cinnamon Fungus (*Phytophthora cinnamomi*) and Myrtle Rust (*Pucciniales fungi*) in accordance with the national best practice guidelines for Phytophthora (O'Gara et al., 2005) and the Myrtle Rust factsheet (DPI, 2015) for hygiene control.	Prior to any plant or machinery being brought onto the site.	Construction contractor
	Incorporate control measures in the design of the proposal to limit the spread of weed propagules downstream of subject land. Sediment control devices, such as silt fences, would assist in reducing the potential for spreading weeds.	Prior to clearing/ throughout construction works.	Construction contractor
Removal of fauna habitat	Protocols to prevent introduction or spread of chytrid fungus should be implemented following Office of Environment and Heritage Hygiene protocol for the control of disease in frogs (DECC, 2008b).	Prior to clearing throughout construction works.	Construction contractor
	A suitably qualified ecologist should be present during the clearing of native vegetation or removal of potential fauna habitat to avoid impacts on resident fauna and to salvage habitat resources for relocating in the adjoining habitat as far as is practicable. Clearing surveys should include the following:	Prior to and during clearing works.	Qualified ecologist

Impact	Mitigation	Timing	Responsibility
	Staged vegetation clearing, commencing with the exotic dominated vegetation to increase the opportunity for fauna to vacate the site and disperse into areas of adjoining habitat to evade injury. Where appropriate native vegetation cleared from the study area should be mulched for re-use on the site, to stabilise bare ground. Soil stockpiles are to be placed away from, and ideally downslope of, receiving water bodies and drainage lines. Security lighting within the construction site is to be minimised and where required, is to be oriented such that light spill beyond the subject land and into patches of retained vegetation is minimised.	During clearing phase.	Construction contractor
	Pre-clearance fauna surveys, undertaken in accordance with the following procedure: Prior to the commencement of any clearing activities, an initial pre-clearance survey of the site will be undertaken by a suitably qualified ecologist inclusive of a search for any Koalas or Swift Parrots. A pre-demolition microbat survey of the abandoned building to be removed and the existing bridge to be retained should also be performed. Relevant protocols for the pre-clearance fauna surveys will need to be developed as part of a Flora and Fauna sub-plan for the CEMP. The location of significant environmental or priority weed infestations would also be identified and communicated to the contractor.	Prior to and during clearing works.	Qualified ecologist
	A suitably qualified and appropriately licenced ecologist is to be present during clearing of all native vegetation to ensure felling of trees is carried out in an appropriate manner, and that any fauna present can be rescued and relocated. Appropriate fauna 'capture and release' techniques will be implemented. During the removal of any identified sensitive habitat, a suitably qualified and experienced ecologist will be present, with appropriate animal-handling equipment and holding containers.	During clearing phase.	Qualified ecologist
	A suitably qualified and appropriately licenced ecologist will be present during the clearance of all native vegetation and/or fauna habitats. Animals that require handling must not be approached or handled until the ecologist is present, unless in an emergency (e.g. when there are both no authorised persons present and where the failure to immediately intervene would place the animal at significant risk). In such an emergency, the site manager may obtain over the phone instructions from the project ecologist to ameliorate the situation. A wildlife rescue organisation (e.g. WIRES or Sydney Wildlife) should be made aware of operations in case any injured fauna are found.	During clearing phase.	Qualified ecologist
	All animals encountered will be treated humanely, ethically, and in accordance with relevant codes under the *NSW Prevention of Cruelty to Animals Act 1979*, including: • Australian code of practice for the care of animals for scientific purposes (NHMRC, 2013). • Code of practice for the welfare of wildlife during rehabilitation (Victoria, 2001). • Animal ethics considerations and protocols outlined in this document. • If the project ecologist considers an animal is at risk of injury or undue stress, it is to be gently directed into secure adjoining habitat. Where deemed necessary by the project ecologist, the animal may be required to be captured and released. Capture and release operations will proceed via the following protocols:	During clearing phase.	Qualified ecologist

Impact	Mitigation	Timing	Responsibility
	• All construction activities that are considered by the project ecologist be likely to increase the risk of injury, mortality or stress to the animal will be halted until the animal has been removed, which will be enforced with the co-operation of the Contractor. Construction activities that do not contribute to the risk of injury, mortality or stress to the animal can continue (as determined by the project ecologist). • Only qualified ecologists or wildlife carers are authorised to handle animals. • Animals will be captured (if required) by the project ecologist using a safe and ethical technique, as is appropriate for the particular species (see below). Native animals that are unable to depart of their own accord will be captured and held in a receptacle appropriate for that species until release. All captive-held animals will be provided with food, water and warmth as is appropriate for the species. Each receptacle will only hold one animal at a time and will be cleaned and disinfected between use to avoid the spread of disease. • Any fauna relocated from trees, shrubs or other areas would be recorded.		
	The construction contractor is to contact the Project ecologist for advice if any unexpected fauna is found during the construction period (i.e. following clearing of native vegetation when the Project ecologist is no longer on site).	During clearing phase.	Construction contractor
	A post-clearing report will be prepared documenting all animals that are handled, or otherwise managed, within the site. Data to be recorded includes: • Date and time of the sighting and details of the observer • Species • Number of individuals recorded • Adult/juvenile • Condition of the animal (living/dead/injured/sick) • Management action undertaken (e.g. captured, handled, taken to vet) • Results of any management actions (e.g. released, placed in a nest box, euthanised, placed with carer)	Post-clearing phase.	Construction contractor/ Qualified ecologist
Water Quality and aquatic habitats	Erosion and sediment control plans should be prepared in accordance with The Blue Book – Managing Urban Stormwater: Soils and Construction (Landcom 2004). The erosion and sediment control plans would be established prior to the commencement of construction and be updated and managed throughout as relevant to the activities during the construction phase.	Prior to construction commencing.	Construction contractor
	Erosion and sediment control controls would be regularly inspected, particularly following rainfall events, to ensure their ongoing functionality.	Weekly during construction phase or after any significant rainfall event.	Construction contractor
	Stabilised surfaces should be reinstated as quickly as practicable after construction.	Immediately following clearing.	Construction contractor
	Appropriate speeds are to be enforced to limit dust generation and minimise chances of fauna mortality through vehicle strike.	During construction.	Construction contractor

Impact	Mitigation	Timing	Responsibility
	All stockpiled material should be stored in bunded areas and, where practicable, kept away from waterways to avoid sediment or contaminants entering the waterway.	During construction.	Construction contractor
	Spill kits would be made available to construction vehicles. A management protocol for accidental spills would be put in place.	During construction.	Construction contractor
	Silt curtains should be installed and regularly monitored and maintained to ensure that any water which ultimately mixes with Grahamstown Drain and Windeyers Creek is of a satisfactory quality i.e. contains the least amount of sediment practicable.	During construction.	Construction contractor

6.8. HERITAGE – ABORIGINAL

6.8.1. Existing Environment

A search of the Aboriginal Heritage Information Management System (AHIMS) was conducted on 9 April 2020 (**Appendix 8**). No Aboriginal sites were recorded in or near the study area and no Aboriginal places have been declared in or near the above location (50m buffer). The activity site is substantially cleared and disturbed having regard to its historical use.

6.8.2. Potential Impacts

An assessment was carried in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW, 2010).

Table 6.8.2: Due Diligence Assessment

Question	Response
1. Will the activity disturb the ground surface or any culturally modified trees?	Yes, ground will be disturbed. However, the site has been substantially disturbed as a result of previous use and disturbance relates to filling and levelling.
2. Are there any: a) relevant confirmed site records or other associated landscape feature information on AHIMS? b) any other sources of information of which a person is already aware? c) landscape features that are likely to indicate presence of Aboriginal objects?	No, a search of the AHIMS register returned no records of Aboriginal sites within 50m of the site area (refer to **Appendix 8**).
Conclusion	Proceed with caution. If any Aboriginal objects are found, stop work and notify NSW Ministry of Health and OEH.

6.8.3. Environmental Management Measures

Environmental management measure to minimise impact on Aboriginal heritage are:

- Any works proposed outside the activity site (such as drainage works and creek rehabilitation / stabilisation) are to be subject of a separate assessment,
- Proceed with caution. In the event that an Aboriginal object or objects are uncovered during the proposed construction works, ground disturbance works should cease within 20 metres of the object and an archaeologist, OEH and the local Aboriginal parties should be contacted to determine an appropriate management strategy,
- Contractors are aware that it is an offence under Section 86 of the *National Parks and Wildlife Act 1974* to harm or desecrate an Aboriginal object unless that harm or desecration is the subject of an Aboriginal Heritage Impact Permit,
- The works may be undertaken at the specified locations provided that the proposed activities remain as discussed in this document,
- In the unlikely event that human skeletal material is uncovered during the proposed construction works, all works should cease within 20 metres of the skeletal remains. Should the remains be verified as human, the NSW Police and OEH will be contacted immediately. No works will proceed within the vicinity of the skeletal remains until an appropriate course of action has been determined in consultation with NSW Police, OEH and Aboriginal parties (if the remains are identified as Aboriginal).

6.9. HERITAGE – NON-ABORIGINAL

6.9.1. Existing Environment

The State Heritage Inventory was searched on 24 February 2021. The site is not listed as an item of State Significance on the State Heritage Register. In additional to State Heritage Items, local heritage registers were searched and found various heritage items within Raymond Terrace. There are two local

heritage items in close proximity to the subject site. The first is the item is "Kia-ora", including the mulberry tree beside the driveway and is approximately 300m north of the subject site. The second item is "Kinross," including stone shed and landscaping setting.

6.9.2. Potential Impacts

The proposed activity is contained wholly within the site and does not impact either local heritage item due to the distance between the subject site. There are no impacts to non-Aboriginal heritage as a result of the proposed activity.

6.9.3. Environmental Management Measures

Environmental management measures to minimise impact on non-Aboriginal items are:

- If during the course of proposed works previously unknown historical archaeological material or heritage items are discovered, all work in the area of the item(s) shall cease immediately and Heritage Division, OEH and a qualified heritage consultant will be consulted, in accordance with Section 146 of the *Heritage Act 1977*, to determine an appropriate course of action prior to the recommencement of work in the area of the item.

6.10. VISUAL IMPACTS

6.10.1. Existing Environment

The proposed activity involves the filling of the decommissioned quarry that has become flooded since the decommissioning of the site. The site is buffered from public view through the existing vegetation and setbacks from the Adelaide Street frontage.

The proposed filling of the quarry will occur over a maximum ten-year period and will have up to 50 heavy vehicles attend the site per day and additional machinery for site levelling once the quarry has been filled to a suitable level.

6.10.2. Potential Impacts

The proposed activity will occur within the existing cleared and disturbed areas of the site. The works will be partially visible from Adelaide Street. The nature of the proposal is such that the improved land form and associated works will have a positive visual impact on the site. There will be short term adverse visual impact during construction as a result of construction equipment and vehicles.

A desktop visual impact assessment has been prepared and considered below. The sensitivity of the viewpoint will be assessed and the magnitude of the proposed development for the viewpoint.

Viewpoint	Assessment	Visual Impact
Adelaide Street	Sensitivity is considered to be low. The visual landscape is not going to significantly alter the existing streetscape. Short-term construction vehicles movements are considered to be negligible. The retention of vegetation on-site will continue to provide a visual buffer. The magnitude of the development is considered to be negligible as the works are primarily below ground level and set back from the Adelaide Street Frontage.	Low Impact
Meredith Crescent Residencies	Sensitivity is considered to be low. The visual landscape is not going to significantly alter the existing streetscape. Short-term construction vehicles movements are considered to be negligible. The retention of vegetation on-site will continue to provide a visual buffer. The magnitude of the development is considered to be negligible as the works are primarily below ground level and set back from the Adelaide Street Frontage.	Low Impact
Waste Water treatment plant	Sensitivity is considered to be negligible to the waste water treatment plant. The usage of the site is limited to Hunter Water technicians and similar works. The magnitude of the development is moderate due to the change of the quarry formation and potential site usage.	Moderate – Low Impact

Pacific Highway	Sensitivity is considered to be low. The visual landscape is not going to significantly alter the existing streetscape. Short-term construction vehicles movements are considered to be negligible. The retention of vegetation on-site will continue to provide a visual buffer. The magnitude of the development is considered to be negligible as the works are primarily below ground level and set back from the Adelaide Street Frontage.	Low Impact

6.10.3. Environmental Management Measures

Environmental management measures to minimise impact on the visual environment are:

- Maintain the construction site by removing waste materials, parking in designated areas and storing construction equipment appropriately,
- Remove all waste and material once construction is complete,

6.11. SOCIAL AND ECONOMIC

6.11.1. Existing Environment

Australian Bureau of Statistics website www.stat.abs.gov.au (accessed 24 February 2021) indicates Raymond Terrace has a population of 12,820 being 48.7% male and 51.3% female. The median age of residents is 36 and the median weekly household income is $1,102.

6.11.2. Potential Impact

The proposed filling will have short term impacts on traffic along Adelaide Street during the construction phase. A traffic assessment was undertaken and found that the impact to Adelaide Street would be negligible with the signage recommendations and the current traffic counts.

The amenity and environmental considerations associated with the social effects of the proposed filling have been discussed in section 6 of this report, this includes the visual, traffic, noise and air quality impacts.

The economic effects are identified in three main categories. Direct employment could be an economic impact through the project management and construction vehicle drivers. The contractors of the site will make contributions into the local economy through services and hiring equipment. Lastly is the long-term business investment as the project is expected to continue over a ten year period resulting in employment and suppliers contracts as a result of the proposal.

6.11.3. Environmental Management Measures

Environmental management measures to minimise impact on social and economic factors are:

- Preparation of a project consultation and or notification strategy prior to construction.
- Contact details of the site supervisor to be on site at all times.

6.12. WASTE

6.12.1. Existing Environment

Waste generation at the subject site is limited due to the site no longer being utilised as a quarry and only on-site monitoring occurring on the site.

6.12.2. Potential Impacts

The proposed vehicles and contractors on-site could increase waste generation throughout the site.

Inadequate treatment of waste generated during construction of the facility has the potential to impact the environment through the contamination of soils (contamination from spills), water (sedimentation, spills) and air (emissions, dust).

6.12.3. Environmental Management Measures

Environmental management measures to minimise impact on waste are:

- All construction waste generated by the proposal will be classified in accordance with *Waste Classification Guidelines Part 1: Classifying Wastes* (NSW EPA, 2014),
- Construction waste material is not to be left on site once the works have been completed by a licensed contractor,
- Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day, and
- Provide waste bins in suitable areas that are managed and emptied regularly

6.13. MANAGEMENT PLANS

A CEMP will be prepared by the preferred contractor that incorporates the mitigation measures identified in this EIS. The CEMP will include a stormwater management plan, groundwater management plan, erosion and sediment control plan, construction traffic management plan and waste management plan. The CEMP will also identify measures to engage and maintain communication with those who may be affected by construction activities and to manage any complaints that are received.

An Operational Management Plan will be prepared and include a Waste Management Plan and relevant operational measures identified in this EIS, in particular those relating to the minimisation of contamination, waste, noise, traffic impacts and dust.

6.14. CUMULATIVE ISSUES

The filling of the decommissioned quarry will not occur at the same time as any other known major developments in the area and as such there is unlikely to be cumulative impact of several major constructions at the same time.

Traffic and access impact will be minor as the sequence of construction over 10 years spreads out the vehicle movements on a road that is capable of supporting the additional vehicle movements with some upgrades to the Adelaide Street accessway and vehicle turning signs.

Soils and dust will be managed in the site through the monitoring of movements throughout the site. Given the construction time period the increase of soils through the site will increase at a manageable rate and is unlikely to cause cumulative issues during the construction phase. Leading into flooding and stormwater impacts which when filled in accordance with the conceptual plan will negate adverse flooding impacts both for the site and surrounding floodplains and catchments.

Noise and vibrations during filling may impact on surrounding residents, however noise can be managed with appropriate management measures.

Waste management will be required during construction and operation and can be appropriately managed.

There is unlikely to be significant cumulative issues as a result of the proposed development.

6.15. OBJECTS OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT 1979

The objects of the EP&A Act have been considered throughout the EIS and are addressed in Table 6.15 below:

Table 6.15: Objects of EP&A Act

Object	Response
(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources.	The site is currently unusable due to the flooding of the decommissioned quarry. The filling of the site will enable utilisation of site that through future developments can serve the community as recreational land including relevant land management plans.
(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.	The EIS presents potential environmental impact of the proposal and concludes the impact will not be significant. The proposal will have a positive social and economic impact through additional recreational land.
(c) to promote the orderly and economic use and development of land.	The proposed development is for the filling of a decommissioned quarry that is appropriate for the site and surrounds.

(d) to promote the delivery and maintenance of affordable housing.	N/A
(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats.	The proposed development will not have a significant impact on threatened and other species of native animals and plants, ecological communities and their habitats.
(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage).	The proposed development will not have a significant impact on Aboriginal and non-Aboriginal heritage.
(g) to promote good design and amenity of the built environment.	The development will include a revised driveway entrance into the site which will provide safe passage into the site.
(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants.	N/A.
(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State.	Noted.
(j) to provide increased opportunity for community participation in environmental planning and assessment.	The EIS will be exhibited with opportunity for community to comment on the proposal.

6.16. ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The principles of Ecologically Sustainable Development (ESD) are defined in Section 6(2) of the *Protection of the Environment Administration Act 1991*. ESD and how it has been considered in this EIS is presented in Table 6.16.

Table 6.16: Ecologically Sustainable Development Principles

ESD Principle and Programme	Comment
the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by: (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and (ii) an assessment of the risk-weighted consequences of various options	The proposed development has sought necessary information, including specialist advice, to have an understanding of potential environmental impacts. Environmental mitigation measures have been proposed to ameliorate potential impacts to the environment.
inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations	Positive impacts of the filling of the decommissioned quarry are expected where the additional land can be utilised for recreational purposes on appropriately zoned land will be a benefit to future generations. Environmental impacts of the development have been minimised through appropriate design and environmental mitigation measures.
conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration	Impacts associated with the proposed development including vegetation removal have been assessed and documents in the BDAR. Offsetting and additional mitigation measures are recommended to minimise impacts to the biological diversity and ecological integrity of the site.
improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as: (i) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods	Environmental attributes of the site have been identified throughout this EIS. Impact to the environment has been avoided, where practicable, and environmental mitigation measures are identified to ameliorate environmental impact.

ESD Principle and Programme	Comment
and services, including the use of natural resources and assets and the ultimate disposal of any waste (iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.	

6.17. ENVIRONMENTAL RISK ASSESSMENT

Environmental risks have been considered based on specialist investigations, findings of this EIS and proposed environmental mitigation measures and are summarised in Table 6.17. The EIS found that environmental risks can be appropriately managed through the environmental mitigation measures and is unlikely to have a significant impact on the environment.

Table 6.17: Environmental Risk Rating Following Implementation of Environmental Mitigation Measures

Environmental Issue	Risk	Comment
Traffic and Transport	Low	Access to the site is provided from Adelaide Street, minor upgrades are proposed to the accessway that will enable safer vehicle ingress and egress. The Traffic assessment found the proposed development will have negligible impacts on the road conditions.
Soils, Geology and Contamination	Low	The site is not contaminated by previous activities. It is likely that testing results identifying contaminates onsite is a result of activities or sources from upstream. The proposed does not include excavation of soil rather the filling over the existing quarry void.
Water Quality and Flooding	Low	The site is considered flood prone due to the low-lying nature of the site and the catchment of the Hunter River. Appropriate stormwater management will maintain water quality.
Air Quality	Low	Dust (airborne particulate matter) during construction is identified as being the key air quality issue to be assessed. Appropriate dust control during construction will ameliorate potential off site dust emission.
Noise	Low	Noise and vibration impacts may be present with the filling works proposed. It is considered that the vibration would be felt by close receivers and would only occur during the daytime construction hours. Noise during construction and operation is unlikely to create an adverse impact.
Flora, Fauna and Bushfire	Low	Impact to flora and fauna has been avoided and minimised to the greatest possible extent. Residual impacts will be managed through offsetting and additional mitigation measures recommended in this report. The site is classed as bushfire prone land map.
Heritage	Low	The site is not located in a heritage precinct and does not contain any known non-Indigenous heritage item.
Visual	Low	The filling of the flooded quarry is unlikely to impact on the visual amenity of the site, due to the nature of the site and proposed works. The construction vehicles will be a short-term visual impact.
Social and Economic	Low	The proposal will result in positive social impacts through re-development of a vacant site that could be used for recreational purposes.
Waste Management	Low	All waste generated by the proposal will be classified prior to disposal to a licenced facility through an approved Waste Management Plan.
Hazards	Low	Hazards associated with the site and its related activities are not likely to significantly impact the external environment or residences in the vicinity of the site

7. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a national framework for environmental protection and management of nationally and internationally important flora, fauna, ecological communities and heritage places. Part 3 of the EPBC Act lists nine matters of National Environmental Significance (NES) that may require approval from the Commonwealth Minister for the Environment. An action taken by any person on Commonwealth land that is likely to have a significant impact on the environment (Section 26(1)) or an action taken by any person outside of Commonwealth land that is likely to have a significant impact on Commonwealth land (Section 26(2)) may require approval from the Commonwealth Minister for the Environment.

An EPBC Act Protected Matters Report (24 February 2021) (**Appendix 15**) identified the following matters of NES that may occur within 10 kilometres of, or may relate to, the site as presented in Table 7.1. Refer to Section 6.7 for discussion on flora and fauna.

Table 7.1: Matters of NES

Matters of NES	Occurrence in or near the site (10km buffer)
World Heritage Properties	None
National Heritage Places	None
Wetlands of International Importance	1
Great Barrier Reef Marine Park	None
Commonwealth Marine Areas	None
Threatened Ecological Communities	5
Threatened Species	75
Migratory Species	63

An action taken by any person on Commonwealth land that is likely to have a significant impact on the environment (Section 26(1)) or an action taken by any person outside of Commonwealth land that is likely to have a significant impact on Commonwealth land (Section 26(2)) may require approval from the Commonwealth Minister for the Environment. Other matters protected by the EPBC Act, including Commonwealth land, identified in the search is presented in Table 7.2.

Table 7.2: Other Matters Protected by the EPBC Act

Other Matters Protected by the EPBC Act	Occurrence in or near the site (10km buffer)
Commonwealth Land	8
Commonwealth Heritage Places	1
Listed Marine Species	71
Whales and Other Cetaceans	1
Critical Habitats	None
Commonwealth Reserves Terrestrial	None
Australian Marine Parks	None

Commonwealth land will not be affected by the Proposal. Other relevant issues have been considered throughout this EIS.

Table 7.3 provides an assessment of the proposed development against each matter of NES applicable to the site.

Table 7.3: Matters of NES Assessment

Matters of NES	Comment	Likely Impact
Wetlands of International Importance (Ramsar)	The site is within the Hunter estuary wetlands (Ramsar site). The proposal will not significantly impact a wetland of international importance.	Nil
Listed Threatened Ecological Communities	The Flora and Fauna and Offset Assessment Report found no significant impacts on any of the potential matters of NES identified were considered likely to be triggered by the proposal.	Nil
Listed Threatened Species	As above.	Nil

Matters of NES	Comment	Likely Impact
Listed Migratory Species	As above.	Nil

Table 7.4 provides an assessment of the proposed development against other matters protected by the EPBC Act.

Table 7.: Matters of NES Assessment

Other matters protected by the EPBC Act	Comment	Likely Impact
Commonwealth Land	The proposal does not involve Commonwealth land and the site does not adjoin Commonwealth land. The proposed works are not of a nature or scale that will affect Commonwealth land within the local area.	Nil
Commonwealth Heritage Places	The site is within 10km of Williamtown RAAF Base Group. The proposed works are not of a scale or nature to affect the heritage of this place.	Nil
National Heritage Places	No national heritage places will be significantly affected by the proposal.	Nil
Listed Marine Species	The proposed works are not considered to adversely affect any listed marine species.	Nil

Referral under the EPBC Act is not considered to be required for the proposed works.

8. LIST OF APPROVALS AND LICENCES

8.1. ENVIRONMENTAL PROTECTION LICENCE

As provided in Section 4.3, it is understood that the proposed fill will include PASS and therefore the proposed works cannot meet the conditions of the exemption under the POEO (Waste) Regulations 2014 and the works are considered a scheduled activity requiring an EPL pursuant to Section 48 of the POEO Act.

Further, for the purpose of Section 50 of the POEO Act the proposed works are also considered to be a controlled development. Section 50 of the POEO Act stipulates that an EPL (under Section 48 of the POEO Act) can only be granted once development consent (under Part 4 of the EP&A Act) has been granted.

Accordingly, the proponent will be required to seek an EPL from the NSW EPA prior to importing any fill material onsite.

The project does not meet the definition of any other scheduled activity within Schedule 1 of the POEO Act. However, Clause 120 of the POEO Act states that it is an offence to pollute water, if not regulated under an EPL. The need for an EPL would be confirmed with the EPA during the detailed design stage.

It is understood that there is no existing groundwater licence and that a licence will be required. Any water discharged to the existing discharge point at Windeyers Creek would be managed in accordance with the erosion and sediment control plan and to meet the discharge criteria in that licence for the duration of the works. It is also anticipated that the existing active groundwater monitoring wells on site would continue to be monitored during the project and at post-project completion, with groundwater results reported as required. The groundwater licence would cease at the completion of the project.

8.2. CONTROLLED ACTIVITY APPROVAL

The proposed works are within 40m of a watercourse and will therefore involve a controlled activity. The proposal will subject to a controlled activity approval from NRAR in accordance with the *Water Management Act 2000.*

9. CLAUSE 171 FACTORS

Factors required to be taken into account under Clause 171 of the EP&A Regulation 2021 are presented in Table 9.1.

Table 9.1: Consideration of Environmental Assessment

Factor		Potential Impact on the Environment
a)	The environmental impact on a community	The proposed works are for environmental protection works and will rehabilitate a disused quarry for future recreation opportunities. The proposal will not result in a significant environmental impact on a community.
b)	The transformation of a locality	Permanent transformation of the locality will be positive as the site is currently inaccessible and largely uncontrolled.
c)	The environmental impact on the ecosystems of the locality	The site has been assessed as not containing any significant ecosystems and the works will result in an improved relationship between the site and locality. It is unlikely the proposal will have a significant impact on any threatened species, populations and/or ecological communities.
d)	Reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality	The proposal will have a positive visual impact on the locality through rehabilitating a disused quarry and providing for future potential recreation opportunities, not reduce environmental quality or value of the locality.
e)	The effect on a locality, place or building that has – i. aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or ii. other special value for present or future generations	There are no known heritage or archaeological sites that will be impacted by the proposal.
f)	The impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act 1974*)	It is unlikely that the proposal will have a significant impact on any threatened species, populations and/or ecological communities.
g)	The endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air	As above.
h)	Long-term effects on the environment	The proposed works are for environmental protection works and will rehabilitate a disused quarry for future recreation opportunities. The proposed filling of the site has been designed to improve flood regimes on the site and in the surrounding area. Long-term effects will be positive.
i)	Degradation of the quality of the environment	As above.
j)	Risk to the safety of the environment	Environmental mitigation measures will minimise risk to the safety of the environment during construction.
k)	Reduction in the range of beneficial uses of the environment	The proposal will result in an improvement to the beneficial use of the environment.
l)	Pollution of the environment	Environmental mitigation measures will ameliorate potential for pollution of the environment.
m)	Environmental problems associated with the disposal of waste	Wastes generated will be classified and removed from site for disposal at an appropriate waste facility. Any fill material brought onto site will be VENM, ENM and other approved material. Any other material may be subject to

Factor		Potential Impact on the Environment
		an EPL, which will provide requirements for the mitigation of environmental problems associated with the fill.
n)	Increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply.	The proposal will utilise resources that are not in short supply.
o)	Cumulative environmental effect with other existing or likely future activities	The proposal is unlikely to have a significant cumulative impact on the environment.
p)	The impact on coastal processes and coastal hazards, including those under projected climate change conditions	None.
q)	Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	Strategic need is addressed in Section 4.9 of this EIS.
r)	Other relevant environmental factors	No other considerations identified.

10. ENVIRONMENTAL MANAGEMENT MEASURES

10.1. CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

A construction environment management plan (CEMP) or equivalent will be prepared for the proposed works prior to commencement of works. The CEMP will be prepared in accordance with the *Guideline for the Preparation of Environmental Management Plans* (Department of Infrastructure, Planning and Natural Resources, 2004). Figure 4.1 of the guideline outlines information to be included in a CEMP including:

- Users of the EMP document (background, environmental management, implementation and monitor and review)
- Background (introduction, project description, EMP context, EMP objectives and environmental policy)
- Environmental Management (environmental management structure and responsibility, approval and licensing requirements, reporting, environmental training and emergency contacts and response)
- Implementation (risk assessment, environmental management activities and controls, environmental management plans or maps and environmental schedules)
- Monitor and Review (environmental monitoring, environmental auditing, correction action and EMP review).

The CEMP or equivalent will include any licences and permits that may be required, environmental management measures outlined in Section 6 of this EIS and additional site-specific measures that may be required as part of establishing the construction site or construction methodology.

An Operational Management Plan and Infrastructure Management Plan will also be prepared as part of detailed design in consultation with relevant stakeholders.

10.2. TRAFFIC AND TRANSPORT

- Provide signage along Adelaide Street warning of turning trucks
- Prepare a drivers code of conduct that include the following instructions
    - Ensure that heavy vehicles do not enter Raymond Terrace or transit through
    - Approach the site from the south and depart to south and do not travel north
    - Provide standard construction hours or vehicle movements to abide by
- Regular vegetation trimming along Adelaide Street at the site access and sight triangles
- Increase width of Adelaide Street accessway

10.3. SOILS, GEOLOGY AND CONTAMINATION

- Oils, fuels and chemicals used during construction will be stored in a locked bund capable of holding 110% of the capacity of the containers within;
- Equipment will be serviced and maintained to minimise potential for loss of fluids;
- Implement Erosion and Sediment Control Plans in accordance with the Managing Urban Stormwater: Soils and Construction “The Blue Book” (4th edition, Landcom 2004);
- Utilise existing cleared areas of the site as the construction compound and stockpile area(s);
- The CEMP will include details on waste management and provide a spill management procedure;
- Soil taken off site must be tested in accordance with Waste Classification Guidelines (NSW EPA, 2014);
- For any excess spoil where potentially contaminating activities have been identified on site (including Acid Sulfate Soils) this material will be tested and classified prior to leaving site. For any excess spoil material classified as contaminated, disposal of this material will be at an appropriately licences landfill in accordance with the EPA (2014) Waste Classification Guidelines;
- During construction continue to monitor the groundwater for the specific purpose of the site water balance;

- It is recommended that systems be put in place on site to facilitate accurate monitoring of outflow and inflow water volumes throughout the filling operations (for site water balance);

10.4. WATER QUALITY AND FLOODING

- Oils, fuels and chemicals will be stored in a locked bund within the construction compound capable of holding 110% of the capacity of the containers within;
- Equipment will be serviced and maintained to minimise potential for loss of fluids;
- Implement Erosion and Sediment Control Plans in accordance with the Managing Urban Stormwater: Soils and Construction "The Blue Book" (4th edition, Landcom 2004);
- Utilise existing cleared areas of the site as the construction compound and stockpile area(s);
- Filling of the site is to be undertaken in accordance with the Appendix 12 and Appendix 6.

10.5. AIR QUALITY

- Maintain vehicles and machinery to minimise emissions
- General mitigation measures
    - Identify dust-generating activities and inform site personnel about location
    - Identify adverse weather conditions (dry and high wind blowing from dust source to sensitive receptors) and halt dust emitting activities if visible dust impacts are identified at sensitive receptors.
- Handling of soil and structural fill material
    - Minimise drop height for material handling equipment.
- Wind generated dust from temporary stockpiles and exposed areas
    - Apply watering through water trucks or sprinklers.
    - Progressive staging of dust generating activities throughout the day to avoid concurrent dust emissions.
    - Minimise exposed area if possible.
    - Minimise amount of temporary material stockpiled if possible.
- Wheel generated dust during hauling
    - Restrict vehicle movement to haul routes that are watered regularly.
    - Cleaning of haul roads.
    - Speed restrictions

10.6. NOISE AND VIBRATION

- Consult with surrounding residents and other stakeholders
- Toolbox and induction of personnel prior to shift to discuss noise control measures that may be implemented to reduce noise emissions to the community
- Contact details of the site supervisor to be on site at all times
- Establish a complaint register and deal with all complaints within 24 hours, where practicable
- Regularly inspect and maintain equipment
- Work will occur during standard construction hours (7am to 6pm Monday to Friday, 8am to 1pm Saturday and no work on Sundays or public holidays). Where work occurs outside these hours consultation will be required with adjoining residences depending on the nature of the work
- Notify the community of the nature and timing of construction activity and provide contact details of the site supervisor
- Consider noise screens or similar noise dampening options where numerous complaints are received.

10.7. FLORA, FAUNA AND BUSHFIRE

- Existing good/moderate condition swamp sclerophyll forest EEC to be retained and protected,
- The works area will be visually inspected at the commencement of work each day for any fauna,
- Check tyres and equipment for weeds prior to entering or leaving the site,
- If injured wildlife are found cease work and contact a local wildlife carer,

- Manage weeds in accordance with council's obligations under the Biosecurity Act 2015 and the Hunter Regional Strategic Weed Management Plan 2017 - 2022

10.8. HERITAGE (ABORIGINAL)

- Any works proposed outside the activity site (such as drainage works and creek rehabilitation / stabilisation) are to be subject of a separate assessment,
- Proceed with caution. In the event that an Aboriginal object or objects are uncovered during the proposed construction works, ground disturbance works should cease within 20 metres of the object and an archaeologist, OEH and the local Aboriginal parties should be contacted to determine an appropriate management strategy,
- Contractors are aware that it is an offence under Section 86 of the *National Parks And Wildlife Act 1974* to harm or desecrate an Aboriginal object unless that harm or desecration is the subject of an Aboriginal Heritage Impact Permit,
- The works may be undertaken at the specified locations provided that the proposed activities remain as discussed in this document,
- In the unlikely event that human skeletal material is uncovered during the proposed construction works, all works should cease within 20 metres of the skeletal remains. Should the remains be verified as human, the NSW Police and OEH will be contacted immediately. No works will proceed within the vicinity of the skeletal remains until an appropriate course of action has been determined in consultation with NSW Police, OEH and Aboriginal parties (if the remains are identified as Aboriginal).,

10.9. HERITAGE (NON-ABORIGINAL)

- If during the course of proposed works previously unknown historical archaeological material or heritage items are discovered, all work in the area of the item(s) shall cease immediately and Heritage Division, OEH and a qualified heritage consultant will be consulted, in accordance with Section 146 of the *Heritage Act 1977*, to determine an appropriate course of action prior to the recommencement of work in the area of the item

10.10. VISUAL IMPACT

- Maintain the construction site by removing waste materials, parking in designated areas and storing construction equipment appropriately,
- Remove all waste and material once construction is complete

10.11. SOCIAL AND ECONOMIC

- Preparation of a project consultation and or notification strategy prior to construction.
- Contact details of the site supervisor to be on site at all times

10.12. WASTE MANAGEMENT

- Prepare a Construction Waste Management Plan,
- All construction waste generated by the proposal will be classified in accordance with the *Waste Classification Guidelines Part 1: Classifying Wastes* (NSW EPA, 2014),
- Construction waste material is not to be left on site once the works have been completed by a licensed contractor,
- Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day, and
- Provide waste bins in suitable areas that are managed and emptied regularly

10.13. CHEMICAL STORAGE (IF RELEVANT)

- Prepare a Response and Incident Plan
- Oils, fuels and chemicals will be stored in a locked bund capable of holding 110% of the capacity of the containers within
- Oils, fuels and chemicals will be stored in accordance with manufacturers requirements and relevant Australian Standard

- A spill kit will be located at each chemical and fuel storage location appropriate to the volume and nature of the material
- Safety Data Sheets will be kept on site for all oils, fuels and chemicals stored.

10.14. PRELIMINARY HAZARD ANALYSIS

- Safety Data Sheets to be on site at all times.
- All safety systems and safeguards to comply with the relevant standards and regulations.

11. CONCLUSION AND JUSTIFICATION FOR THE PROPOSAL

Raymond Terrace Parklands currently own the site and are seeking to rehabilitate a disused quarry to enable future development of a golf course. The proposal will ensure that an underutilised site can be restored to a use that is appropriate for the land use needs of a growing population in the Port Stephens LGA. The proposal seeks to promote employment through rehabilitation and construction phases as well as ongoing future use.

The option of not proceeding with the proposed works has been considered; however, not proceeding with the proposed works will result in the site remaining underutilised and not feasible to maintain for its current use as a disused quarry.

The development is adequately consistent with the principles of ecologically sustainable development. There is unlikely to be significant impact on the environment as a result of the proposed works provided environmental mitigation measures proposed in Section 10 of this EIS are adopted. The proposal is found to not have a significant impact on the environment, including threatened species, populations or ecological communities, or their habitats. Approval is not required under the EPBC Act.

12. REFERENCES

AHIMS Web Services Search (conducted 09 April 2020)

Australian Bureau of Statistics www.abs.gov.au, (accessed 25 February 2021)

Biosis, 2016, Flora and fauna and offsets assessment: Proposed rezoning at Adelaide Street, Raymond Terrrace. Report for de Witt Consulting. Authors: S. Rose & A. Rowles, Biosis Pty Ltd, Newcastle. Project no. 23223

BMT, 2019, Earthworks Flood Impact Assessment, 251 Adelaide Street, Raymond Terrace, Prepared for Phoenix Builders, BMT Document Reference: DXW: L.N21195.003.docx

Consulting Earth Scientists, 2021, Acid Sulfate Soils Investigation Report, 251 Adelaide Street, Raymond Terrace, New South Wales, Prepared for Raymond Terrace Parklands CES Document Reference: CES200502-PHB-AG

Consulting Earth Scientists, 2021, Detailed Contaminated Land Assessment Report, 251 Adelaide Street, Raymond Terrace, New South Wales, Prepared for Raymond Terrace Parklands CES Document Reference: CES200502-PHB-AE.

Consulting Earth Scientists, 2021, Site Water Balance Report, 251 Adelaide Street, Raymond Terrace, New South Wales, Prepared for Raymond Terrace Parklands CES Document Reference: CES200502-PHB-AF

Consulting Earth Scientists, 2021, Backfill Management Plan, 251 Adelaide Street, Raymond Terrace, New South Wales, Prepared for Raymond Terrace Parklands CES Document Reference: CES200502-PHB-AL

Department of Environment, Climate Change & Water, 2010, *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*

De Witt Ecology, 2022, Biodiversity Development Assessment Report. Authors: Alan Midgley and Robert Scanlon, de Witt Ecology, Charlestown. Project no. 9739.

Environmental Planning and Assessment Act 1979 No 203 (accessed 24-25 February 2020)

Environmental Protection and Biodiversity Conservation Act Protected Matters Search (conducted 24 February 2021)

Environmental Resources Management (ERM), 2011, Phase 1 Environmental Site Assessment and Development Constraints Assessment Summary Report, 251 Adelaide Street, Raymond Terrace, Prepared for Rocla Quarry Products C/O International Property Group, ERM Reference: 0137317RP01

Hunter Regional Strategic Weed Management Plan 2017 - 2022

Hunter Water, 2015, *Grahamstown Dam Fact Sheet*

Intergovernmental Panel on Climate Change (IPCC), 2007, *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)].

NSW EPA, Register of Contaminated Sites Notified to the EPA (accessed 24 February 2021) http://www.epa.nsw.gov.au/clm/publiclist.htm

NSW Federal Register of Legislation (accessed 24-25 February 2021)

NSW Planning Portal ePlanning Spatial Viewer (accessed 24-25 February 2021)

Office of Environment & Heritage eSPADE Spatial Viewer (accessed 24 February 2021)

Office of Environment & Heritage State Heritage Register (accessed 24 February 2021)

APPENDICES

APPENDIX 1

Secretary's Environmental Assessment Requirements 1409

APPENDIX 2

Detailed Contaminated Land Assessment Report prepared by Consulting Earth Scientists

APPENDIX 3

Phase 1 Environmental Site Assessment and Development Constraints Assessment Summary Report prepared by Environmental Resources Management

APPENDIX 4

Acid Sulfate Soils Investigation Report prepared by Consulting Earth Scientists

APPENDIX 5

Site Water Balance Report prepared by Consulting Earth Scientists

APPENDIX 6

Earthworks Flood Impact Assessment prepared by BMT

APPENDIX 7

Biodiversity Development Assessment Report prepared by de Witt Ecology

APPENDIX 8

Aboriginal Heritage Information Management System Search Result

APPENDIX 9

Noise Assessment for Proposal to Rehabilitate Disused Mine for Recreational Use prepared by Acouras Consultancy

APPENDIX 10

Detail Survey prepared by Pulver Cooper & Blackley

APPENDIX 11

Dust Management Plan prepared by Airlabs Environmental

APPENDIX 12

Backfill Management Plan prepared by Consulting Earth Scientists

APPENDIX 13

Traffic Impact Assessment prepared by SECA Solution

APPENDIX 14

National Parks and Wildlife Services Consultation

APPENDIX 15

EPBC Act Protected Matters Report

APPENDIX 16

Flora and Fauna and Offsets Assessment: Proposed rezoning at Adelaide Street, Raymond Terrace prepared by Biosis