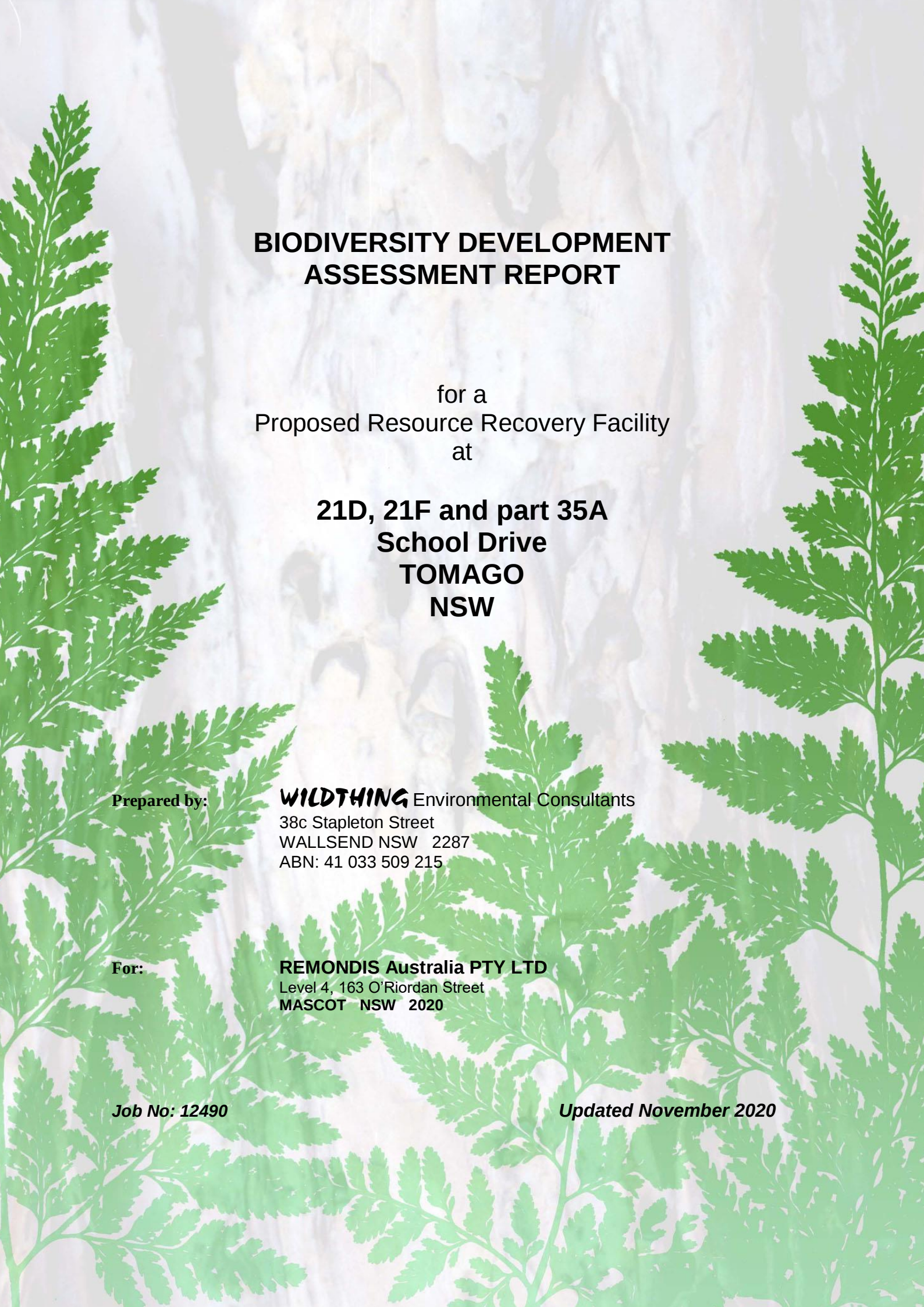




BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

for a
Proposed Resource Recovery Facility
at

**21D, 21F and part 35A
School Drive
TOMAGO
NSW**

Prepared by:

WILDTHING Environmental Consultants
38c Stapleton Street
WALLSEND NSW 2287
ABN: 41 033 509 215

For:

REMONDIS Australia PTY LTD
Level 4, 163 O'Riordan Street
MASCOT NSW 2020

Job No: 12490

Updated November 2020

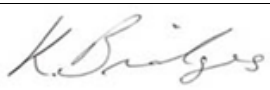


38c Stapleton Street, Wallsend NSW 2287 Phone: 02 4951 3311 Fax: 02 4951 3399

Email: admin@wildthing.com.au www.wildthing.com.au

A division of Tattersall Lander Pty Ltd

ABN: 41 003 509 215

Project Name	Biodiversity Development Assessment Report for a proposed Resource Recovery Facility at 21D, 21F and part 35A School Drive, Tomago NSW.	
Project Number	12490	
Prepared By	Dr Kylie Bridges BEnvSc Hons PhD BAAS20005	
Reviewed By	Daryl Harman Senior Ecologist BAAS17074	
Status	17 November 2020	
Version Number	3	

Disclaimer

This report has been prepared in accordance with the proposal provided by the Client and outlined within this report. All findings, conclusions or recommendations contained within this report are based upon the data and results collected under the times and conditions specified in the report and are only applicable for the proposal considered within this report. This report has been prepared for use exclusively by the Client. No responsibility for its use by any other party is accepted by WILDTHING Environmental Consultants.

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Acronyms and Abbreviations used in this report

AOBV	Area of outstanding Biodiversity Value
BAM	Biodiversity Assessment Method
BC Act	Biodiversity Conservation Act 2016
BAR	Biodiversity Assessment Report
BCAR	Biodiversity Certification Assessment Report
BDAR	Biodiversity Development Assessment Report
BCT	Biodiversity Conservation Trust
BSA	Biodiversity Stewardship Site Agreement
BOAMS	Biodiversity offsets and Agreement Management System
BOPC	Biodiversity Offsets Payment Calculator
BOS	Biodiversity Offset Scheme
BOSET	Biodiversity Offsets Scheme Entry Tool
CEEC	Critically Endangered Ecological Community
CKPoM	Comprehensive Koala Plan of Management
DAWE	Department of Agriculture, Water and Environment
DNG	Derived Native Grassland
DPIE	Department of Planning, Industry and Environment
DoEE	Department of Environment and Energy
EEC	Endangered Ecological Community
EPBC Act	Environmental Protection & Biodiversity Conservation Act 1999
EP&A Act	Environmental Planning & Assessment Act 1979
IBRA	Interim Biogeographic Regionalisation for Australia
KPoM	Koala Plan of Management
LLS Act	Local Land Services Act 2013
NOW	NSW Office of Water
NPW Act	National Parks & Wildlife Act 1974
OEH	Office of Environment & Heritage (now DPIE)
PCT	Plant Community Type
REF	Review of Environmental Factors
SAII	Serious and Irreversible Impacts
SEPP	State Environmental Planning Policy
TEC	Threatened Ecological Community
VIS	Vegetation Information System

1.0 INTRODUCTION

This Biodiversity Development Assessment Report (BDAR) has been prepared for the proponent to address requirement No. 10 of the Secretary's Environmental Assessment Requirements (SEARs) for a proposed Resource Recovery Facility at 21D, 21F and part 35A School Drive, Tomago NSW (Application No. SSD-10447). A location map of the study area has been provided in Figures 1.1 and 1.2.

1.1 OBJECTIVE

This BDAR has been prepared in accordance with the Biodiversity Assessment Methodology (BAM) (OEH 2017) by Wildthing Environmental Consultants. The primary objective of this BDAR is to use the guidelines and methodology provided in the BAM to determine the impact the project would have on biodiversity, avoid and mitigate these impacts and then calculate the project's biodiversity offset requirement.

This BDAR has two broad stages consistent with the BAM methodology:

Stage 1 – Biodiversity Assessment

- assessment of site context features,
- assessment of native vegetation; and
- assessment of threatened species and populations

Stage 2 – Impact Assessment

- avoid and minimise impacts on biodiversity values,
- consider impact and offset thresholds; and
- determine and calculate offset requirements

Assessment was also undertaken having regard to Matters of National Environmental Significance (MNES) listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), the NSW Biosecurity Act 2015 and relevant State Environmental Planning Policies.

All aspects of this biodiversity assessment have been undertaken in accordance with the BAM. This BDAR has been prepared by Accredited Assessor Kylie Bridges (BAAS20005) and reviewed by Accredited Assessor Daryl Harman (BAAS17074).

1.2 THE PROPOSAL

It is proposed a Resource Recovery Facility be established within existing buildings on 21D School Drive, with a processing capacity of 98,200 tonnes per annum of solid and liquid waste. As part of the proposal, a paved overnight truck parking area and Onsite Stormwater Detention area is proposed to be constructed on 21F School Drive. A parking and turning bay are also proposed for part 35A School Drive, Tomago. A plan of the proposal is shown in Figures 1.3 and 1.4.



Job Ref	12490
A4 Scale	1:20000
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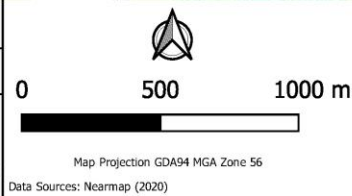


Figure 1.1.

Location Map

21D & 21F School Road
TOMAGO, NSW
July 2020

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Job Ref	12490
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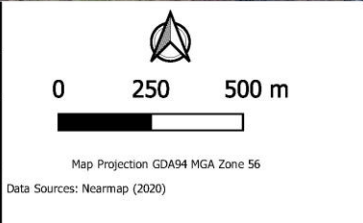


Figure 1.2.
Aerial Photo - Location Map

21D & 21F School Drive
TOMAGO, NSW

July 2020

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Environmental Consultants

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ABN 41 003 509 215

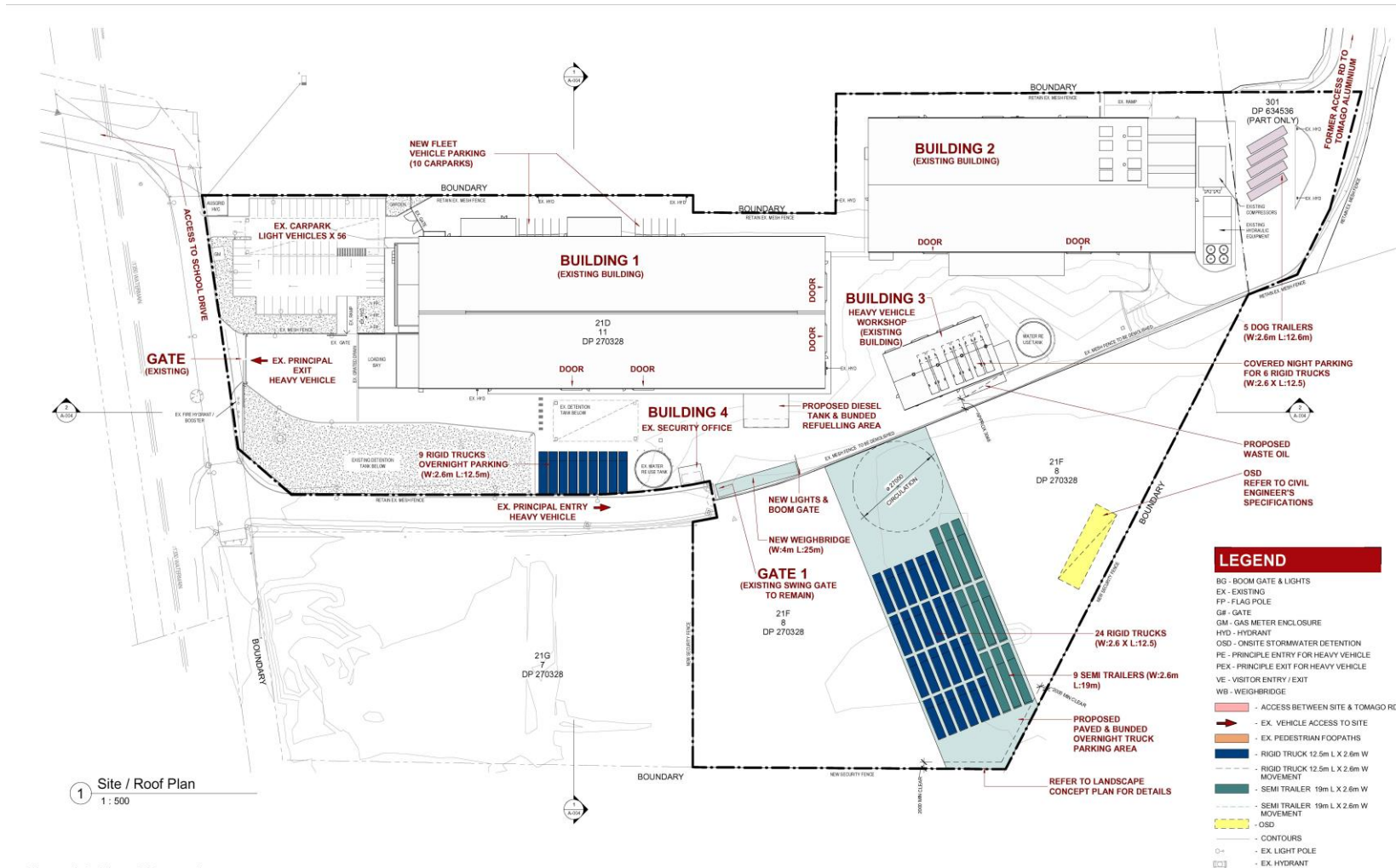


Figure 1.3: Plan of Proposal.

EJE ARCHITECTURE

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B	08/05/2021	REVISIONS FOR CLIENT REVIEW
C	08/05/2021	ISSUE FOR CLIENT REVIEW
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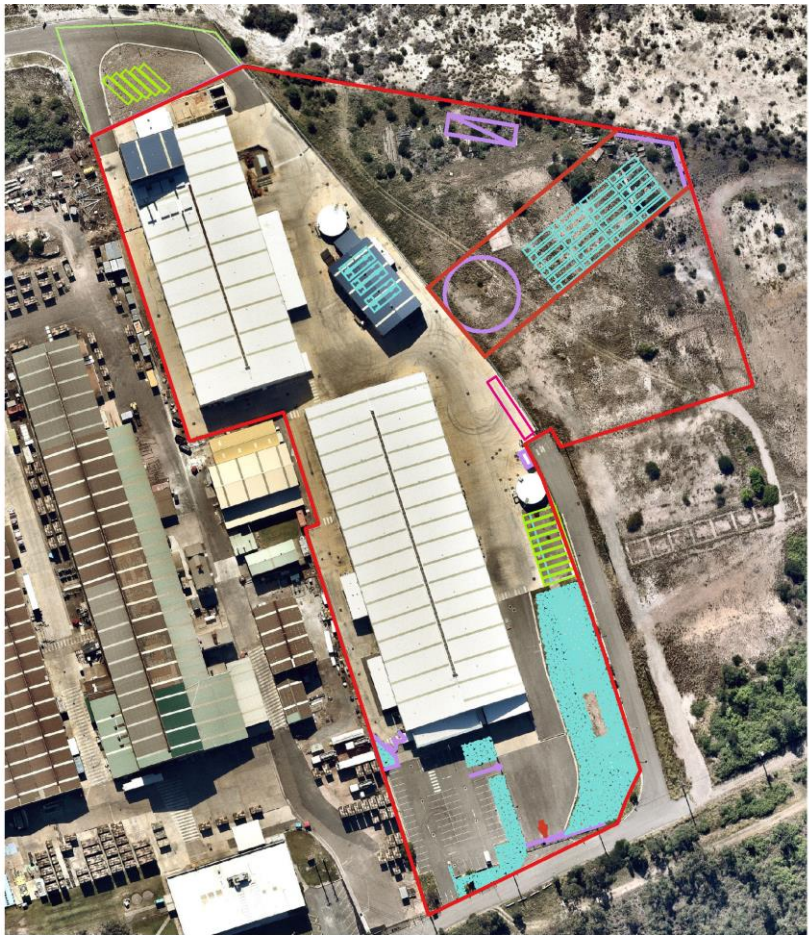
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K	08/05/2021	REVISIONS FOR CLIENT REVIEW

Remondis Resource Recovery Facility & Truck Parking Depot
REMONDIS
WORKING FOR THE FUTURE

Tomago NSW Australia
SITE / ROOF PLAN
PROJECT NO: 13026 DA A-001 K
DATE: 08/05/2021
SCALE: As indicated
EJE architecture



Legend

- Lot Boundary
- Stormwater Detention
- Truck Parks
- Parking
- Truck Parking Area
- Part Lot 301 DP 634536
- New weighbridge, lights and boom gate



Job Ref	12490
A4 Scale	1:2000
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Map Projection GDA94 MGA Zone 56
Data Sources: Neamap (2019),

Figure 1.4.

Proposal - Aerial Photo

21D & 21H School Drive
TOMAGO, NSW
July 2020

WILDTHING
Environmental Consultants
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ABN 41 003 509 215

1.3 DEFINITION OF THE STUDY AREA AND DEVELOPMENT AREA

1.3.1 STUDY AREA

The 4.09 ha study area comprised of Lot 11 DP 270328, Lot 8 DP 270328 and a portion of Lot 301 DP 634536 (21D, 21F and 35A School Drive, Tomago). The study area is located on the northern side of School Drive, Tomago within the Port Stephens LGA (Figure 1.1). No prescribed streams or waterbodies are present within the study area. Large sheds and associated infrastructure built in the mid 2010's for the business Midal Cables is located within 21D.

A history of the site has been compiled by JME Environmental (2020). A brief summary compiled from historical records and photography show that in 1954 the site was covered by thick native vegetation. By 1974 the site had been cleared for likely sand mining. By 1987 Allco Steel was constructed within the site. By 2007 materials appear to have been removed from the site. Between June 2011 and July 2014 Nearmap images show large sheds for Midal Cables were erected within 21D and are still currently standing. Presently, 21F has been used to stockpile concrete beams and concrete-tilled tires along the northern boundary. A soil stockpile with native and non-native vegetation growing on it was observed near the northern boundary and a small concrete pad is positioned off centre to the west within 21F. The northern boundary of 21F is marked by a deteriorating chain link fence.

The northern portion of 21F contained a disturbed example of the vegetation community Red Bloodwood – Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast. This vegetated area lacked tree species. The majority of the Lot contained introduced vegetation.

1.3.2 THE DEVELOPMENT AREA

In accordance with Section 3.1.1.1 of the BAM assessment of biodiversity values will be confined to impacted areas within the study area, known as the development area. The development area requiring vegetation removal is located within 21F and is defined as the total area of disturbance; including a paved and bunded overnight truck parking area and Onsite Stormwater Detention area. An aerial photo showing the location of the study and development areas is shown in Figure 1.2.

Zoning of the study area

The study area is zoned IN1: General Industrial under the Port Stephens LEP (Port Stephens, 2013).

Area Clearing Threshold

The area clearing threshold is 0.5ha.

Land Tenure Information

The study area consists of two parcels of land which is wholly owned by Tomago Aluminium Company Pty Ltd.

1.4 INFORMATION SOURCES

A list of the resources used to inform this BDAR, the date they were accessed and the spatial extent captured, where relevant, is provided in Table 1.1.

Table 1.1: Desktop Resources

Resource	Date Reviewed	Spatial Extent
Zoning and Regulatory Maps		
Port Stephens Council Local Environment Plan 2013	June 2020	Entire study area
Port Stephens Council DCP 2004	June 2020	Entire study area
Biodiversity Values and Landscape Maps		
NSW Biodiversity Values Map (DPIE, 2020)	18 May 2020	Entire study area
Nearmap 2020 (Most recent aerial image available (15 June 2020) was used for the purposes of this report)	July 2020	Entire study area Partial 1500m metre buffer from the edge of the study area
SIX Maps -Base Map - LPI 1:25,000 digital topographic databases (DTDB) (LPI 2020) -Cadastral data LPI digital cadastral database (DCDB) (LPI 2020)	July 2020	Entire study area Partial 1500m metre buffer from the edge of the study area
NSW SEED Mapping (NSW Gov, 2020)	July 2020	Entire study area
BioNet NSW (Mitchell) Landscapes – Version 3.1 (DPIE, 2020)	June 2020	Entire study area
NSW Interim Biogeographic Regions of Australia (IBRA region and sub-regions) – Version 7 (DPIE 2020)	June 2020	Entire study area
Soil Landscapes of the Newcastle 1:100 000 Sheet Map. (Matthei, 1995).	June 2020	Entire study area
Threatened Species, Vegetation and Landscape Databases		
BioNet Atlas of NSW Wildlife (BioNet) (DPIE, 2020)	2 July 2020	10x10km radius of study area
Commonwealth Protected Matters Search Tool (PMST) (DAWE 2020a)	2 July 2020	10x10km radius of study area
Commonwealth species profiles and threats database (SPRAT) (DAWE, 2020)	July 2020	-
OEH Profiles of threatened species, population, and ecological communities (OEH 2020c)	July 2020	-
OEH BioNet Threatened Biodiversity Data Collection (TBDC) (OEH 2020d)	July 2020	-
OEH BioNet vegetation classification database (OEH 2020e)	July 2020	-
PlantNet NSW (The Royal Botanic Gardens and Domain Trust 2018).	July 2020	-
Directory of Important Wetlands in Australia (DIWA) (DoEE 2020c)	July 2020	-
Geological sites of NSW (Cartoscope 2018)	July 2020	-
OEH BioNet Vegetation Classification Database (VIS) (OEH 2018h)	July 2020	-
Survey and Reporting Methodology		
Biodiversity Assessment Method (BAM) (OEH 2017)	Various dates	-
Biodiversity Assessment Method Operational Manual – Stage 1 (OEH 2018f)	Various dates	-
Biodiversity Assessment Method – Operational Manual – Stage 2 (DPIE, 2019)	Various dates	-
Threatened species survey and assessment guidelines: field survey methods for fauna – amphibians (OEH 2009)	Various dates	-
NSW Guide to Surveying Threatened Plants (OEH 2016)	Various dates	-

Resource	Date Reviewed	Spatial Extent
OEH Threatened Biodiversity Survey and Assessment Guidelines. Guidelines for Developments and Activities (OEH 2004)	Various dates	-
Biodiversity Assessment Method Credit Calculator (BAM-CC) (DPIE, 2020)	August 2020	-
Climactic Data		
Station 061390 Newcastle University (BoM 2020)	Various dates	-
Development Footprint Design		
Proposed Development Plan (EJE Architecture, 2020)	July 2020	Entire development footprint
Preliminary Contamination Assessment (JM Environmental, 2020)	July 2020	Entire development footprint

2.0 LEGISLATIVE CONTEXT

This chapter provides a brief outline of the key biodiversity legislation and government policy considered in this assessment.

2.1 NSW ENVIRONMENTAL PLANNING AND ASSESSMENT AMENDMENT ACT 2017

The Environmental Planning & Assessment Act 1979 (EP&A Act) was legislated to require the consideration and management of impacts of proposed development and land use change on the environment and the community.

- Part 1 Section 1.7 of the EP&A Act requires consideration of the proposed development under Part 7 of the Biodiversity Conservation Act 2016 (BC Act).
- The EP&A Act is also supported by other statutory environmental planning instruments, including State Environmental Planning Policies (SEPPs).

2.1.1 NSW BIODIVERSITY CONSERVATION (BC) ACT 2016

The purpose of the BC Act is “to establish a pathway to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity and to establish a scientific method for assessing the likely impacts on biodiversity values of proposed development and land use change, for calculating measures to offset those impacts and for assessing improvements in biodiversity values”.

In accordance with the BC Act, the Biodiversity Assessment Method (BAM) (OEH 2017c) and entry into the Biodiversity Offsets Scheme (BOS) is applicable to certain development activities based on specific criteria. Preparation of a Biodiversity Development Assessment Report (BDAR) is required for a development application that meets any of the following criteria:

- Part 4 development activities deemed to be ‘State Significant’ under the NSW Environmental Planning and Assessment Act 1979 (NSW EP&A Act);
- Development activities that have the potential to impact Areas of Outstanding Biodiversity Value (AOBV) as listed under Part 3 of the BC Act;
- Development activities that have the potential to cause a significant impact on a threatened species, population or ecological community, listed under Schedules 1 and 2 of the BC Act, as determined by application of a five-part-test of significance in accordance with Section 7.3 of the BC Act;
- Development activities that have the potential to impact areas mapped as having ‘high biodiversity value’ as indicated by the NSW Biodiversity Values Map (BV Map); and
- Development activities that involve clearing of native vegetation that exceeds the Biodiversity Offset Scheme thresholds (BOS thresholds) as determined by the NSW BC regulation.

According to requirement No. 10 of the Secretary’s Environmental Assessment Requirements (SEARs) for the proposed Resource Recovery Facility, a BDAR is required to support a development application for the proposed development (Figure 1.3). This report has been prepared according to the methodology detailed within the BAM.

2.1.2 PORT STEPHENS COMPREHENSIVE KOALA PLAN OF MANAGEMENT (CKPOM)

A Comprehensive Koala Plan of Management (CKPoM) was adopted by Port Stephens Council and ratified by the Department of Urban Affairs and Planning; taking effect from June 2002. The plan was prepared consistent with the requirements of SEPP (Koala Habitat Protection) 2019 for preparation of plans of management; its principal aims are consistent with that of SEPP (Koala Habitat Protection) 2019. Compliance with the Port Stephens Council CKPoM constitutes compliance with SEPP (Koala Habitat Protection) 2019 for relevant matters in the Port Stephens LGA (Port Stephens Council 2002).

2.2 NSW BIOSECURITY ACT 2015

The NSW Biosecurity Act 2015 (BS Act), amongst other considerations, provides regulatory controls and powers to manage noxious weeds in NSW. For weed management, this Act divides NSW into regions based on combined LGAs and priority weeds for a region are listed. Some weeds are managed at a state level as they form part of a broader containment strategy. The legislation compliments listed Weeds of National Significance (WoNS). Further information on this matter is provided in Section 12 of this report.

2.3 COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The purpose of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is to ensure that actions likely to cause a significant impact on Matters of National Environmental Significance (MNES) undergo a process of assessment. Under the EPBC Act, an action includes a project, undertaking, development or activity that may impact MNES. An action that 'has, will have or is likely to have a significant impact on a MNES' is deemed to be a 'controlled action' and may not be undertaken without prior approval from the Commonwealth Minister for the Department of Agriculture, Water and the Environment (DAWE). MNES categories listed under the EPBC Act are:

- world heritage properties;
- national heritage places;
- wetlands of international importance (Ramsar wetlands);
- threatened species and ecological communities (Section 18 and 18A);
- migratory species;
- commonwealth marine areas;
- nuclear actions (including uranium mining); and
- a water resource, in relation to coal seam gas development and large coal mining development.

Initially, MNES protected under the EPBC Act are assessed in accordance with the Significant Impact Guidelines 1.1 - Matters of National Environmental Significance (DoE 2013). This is performed to determine if there is likelihood for an action to have a significant impact on MNES. An action will require referral to, and may require the approval of, the Commonwealth Minister for the Environment (in addition to any local or state government consent or approval) if that action will have, or is likely to have, a significant impact on the environment or on a MNES.

The project is unlikely to have a significant impact on MNES and is, therefore, not required to be referred to DAWE for consideration. Further information on this matter is provided in Section 12.0 of this report.

2.4 LICENCING

Fieldwork undertaken by Wildthing Environmental Consultants was carried out under the NPWS Scientific Investigation Licence SL 100345 and under Animal Care and Ethics Approval: Animal Research Authority Issue by the Director General of NSW Agriculture (File No. TRIM 13/251) for the Fauna Survey for Biodiversity and Impact Assessment.

STAGE 1 - BIODIVERSITY ASSESSMENT

3.0 LANDSCAPE CONTEXT

This Section of the report describes the landscape context, including the landscape features present within the study area and a 1500 metre buffer from the edge of the study area, as required by the BAM (OEH 2017).

3.1 IBRA BIOREGION & SUBREGION

Interim Biogeographic Regionalisation for Australia (IBRA) Bioregions are large, geographically distinct areas of land with common characteristics such as geology, landform patterns, climate, ecological features, and flora and fauna communities. The majority of the study area is located within the NSW North Coast IBRA Bioregion and the Karuah Manning IBRA Subregion (OEH 2016b) (Figure 3.1).

3.2 NSW LANDSCAPE REGION

The study area falls within the Sydney - Newcastle Barriers and Beachers BioNet Landscape (formerly Mitchell Landscapes) (OEH 2016a).

3.3 RIVERS AND STREAMS

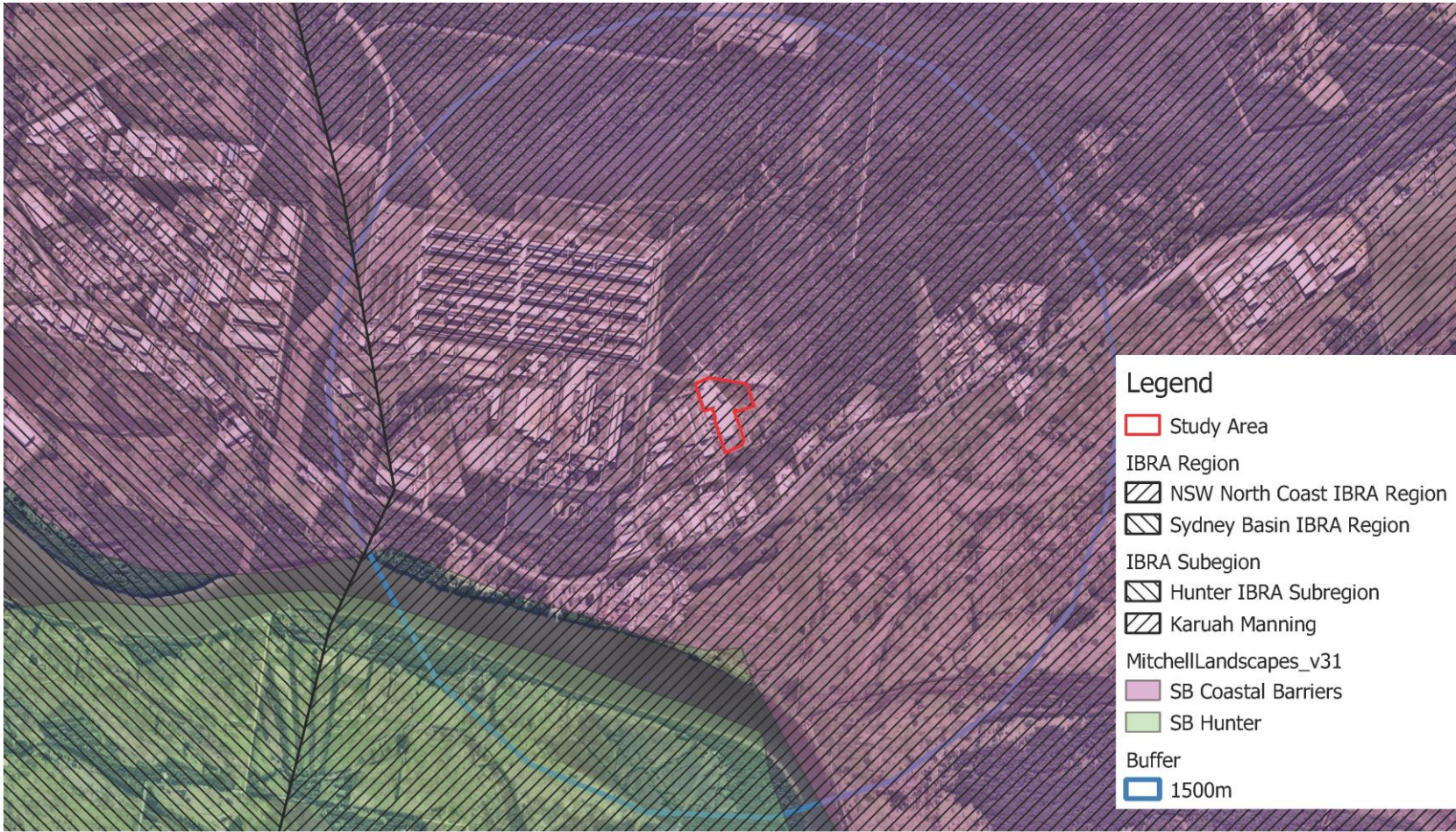
The study area is located within the Hunter Central Rivers Catchment. According to the NSW Government SEED mapping there are no prescribed streams, rivers or dams within the study area.

3.4 WETLANDS

No important wetlands as defined in the Biodiversity Assessment Method Operational Manual – Stage 1 (OEH 2018f) were found to be present within the study area or occur downstream/adjacent to the study area. No RAMSAR listed wetlands were present within the vicinity of the study area.

3.5 CONNECTIVITY FEATURES

The site is connected to a large area of disturbed and intact vegetation surrounded by industrial development. The area of vegetation is bounded by the Pacific Highway in the west and north connecting to the township of Heatherbrae in the far north, Masonite Road in the east and Tomago Road in the south. Tilligerry State Conservation Area is located on the eastern side of Masonite Road. The area of vegetation has many interconnecting tracks traversing the vegetation as part of the industrial development. The site is on the southern fringe of this large area of vegetation and had previously been bounded by a security mesh wire fence. The fence is currently in a degraded condition, with evidence of smaller macropods entering the site under and between the wire.



Job Ref	12490
A4 Scale	1:20000

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. In addition the spatial accuracy of the map is wholly dependant on source data. Please verify the accuracy of all information prior to use. Development footprint areas should be used for indicative areas only.

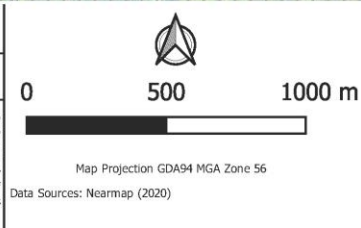


Figure 3.1.
**IBRA & IBRA Subregions
BioNet Landscapes**

21D & 21F School Drive
Site Suburb, NSW

July 2020

3.6 GEOLOGY TOPOGRAPHY AND SOILS

According to the Soil Landscapes of the Newcastle 1:100000 Sheet (Matthei, 1995) the majority of the study area occurs on Disturbed Terrain (xx) which consists of level plain to hummocky terrain, extensively disturbed by human activity, including complete disturbance, removal or burial of soil. The north western and north eastern corners of the site occur on Tea Gardens Variant a (tna) Pleistocene sandsheets with wet heath forest. This soil landscape consists of Pleistocene beach ridges and sandsheets consisting of marine and aeolian quartz sands on the Tomago Coastal Plain. Soils consist of deep, well drained Humus Podzols on ridges with deep, poorly drained Peaty/Humus Podzols in swales and deep, very poorly drained Acid Peats in swamps (Matthei, 1995).

3.7 HIGH AND OUTSTANDING BIODIVERSITY AREAS

The NSW Biodiversity Values Map was consulted on 18 May 2020, at this time it was observed that the site does not contain areas of biodiversity value within the development area (Figure 3.2). There are currently no declared areas of Outstanding Biodiversity Value under the NSW Biodiversity Conservation Regulation 2017 associated with the site.

3.8 NATIVE VEGETATION EXTENT IN THE BUFFER AREA

The Biodiversity Assessment Method Operational Manual Stage 1 (OEH 2018f) defines 'Native Vegetation Cover' as:

The amount of native vegetation (woody and non-woody vegetation including regrowth and plantations comprised of plants native to New South Wales) that is estimated to remain in the landscape proximal to the assessment area. It is used:

- *as a filter by the Calculator to predict threatened species likely to occur or use habitat on a site; and*
- *to define the intrinsic rate of increase in species richness and plant cover as part of the assessment of future vegetation condition on a biodiversity stewardship site*

Native vegetation extent within a 1500m buffer from the edge of the site was estimated from review of aerial mapping interpretation utilising Nearmap aerial imagery (Nearmap 2020).

Native vegetation cover within the buffer area (including the survey area) was determined as the sum of all areas of mapped native vegetation that are likely to be derived from the mapped woodland communities. Approximately 316.66ha of native vegetation was mapped within the 828.88ha buffer area. Native vegetation cover within the buffer area is approximately 38.2%.

Native vegetation contained within a 1500m buffer of the site is shown in Figure 3.3.

3.9 CLEARED AREAS

Areas not containing native vegetation within the landscape buffer include roads, agricultural lands, existing development, and waterbodies and waterways (natural and man-made).

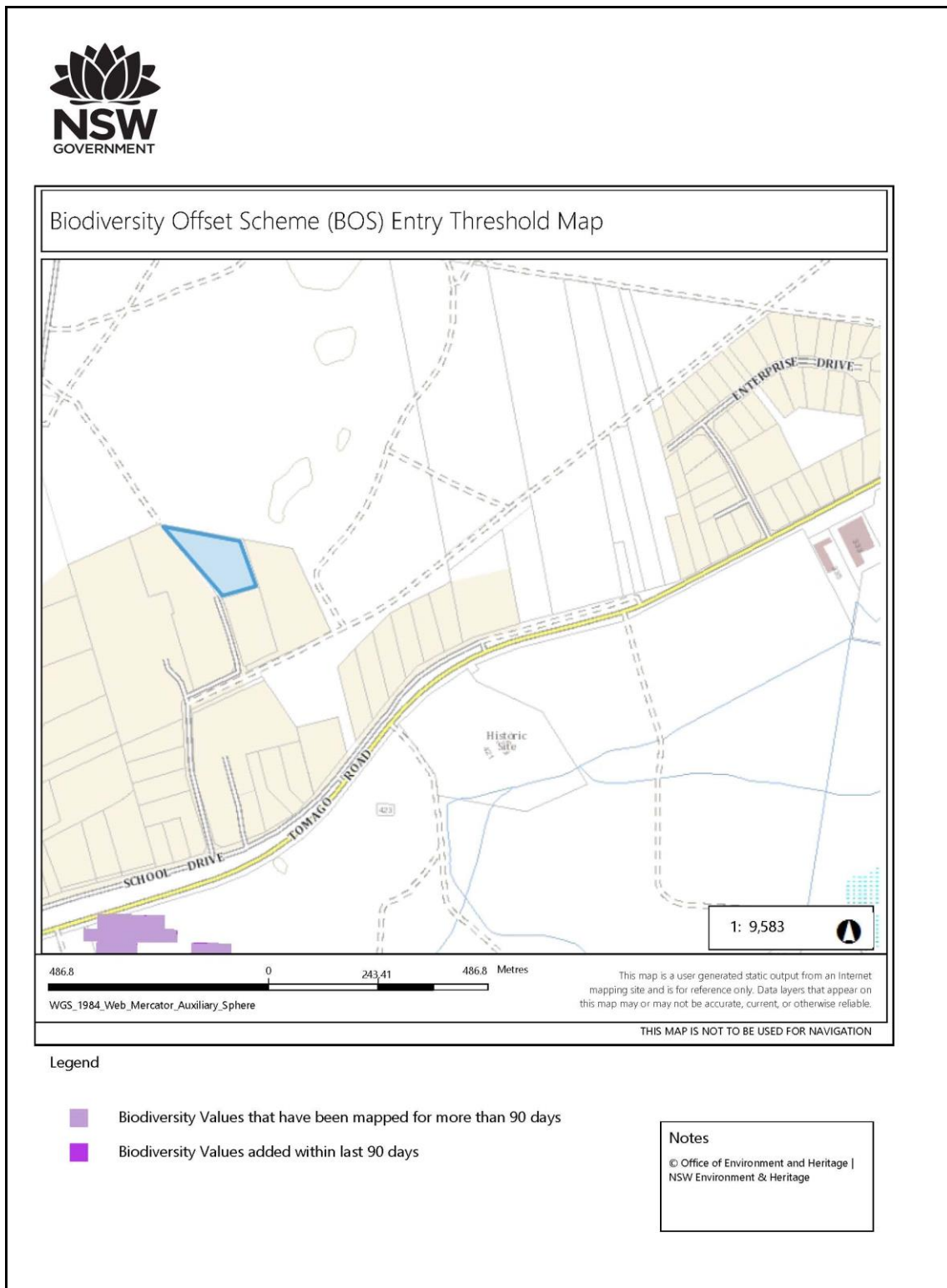


Figure 3.2 Biodiversity Values Mapping of 21F School Drive, Tomago NSW.

3.10 DIFFERENCES BETWEEN MAPPED VEGETATION EXTENT AND AERIAL IMAGERY

There were no significant differences between the mapped vegetation extent and that present within recent available aerial imagery dated 15 June 2020 (Nearmap, 2020).



Job Ref	12490
A4 Scale	1:20000

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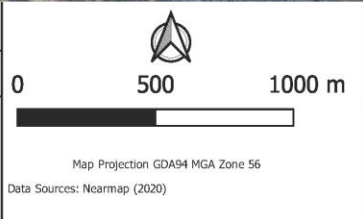


Figure 3.3.
**Native Vegetation
1500m Buffer**

21D & 21F School Drive
TOMAGO, NSW

July 2020

WILDTHING
Environmental Consultants
(a Division of Tattersall Lander Pty Ltd)
ABN 41 003 509 215

4.0 SUBJECT SITE CONTEXT

This section describes the vegetation extent present within the subject site, as required by the BAM (OEH, 2019). The habitats and vegetation within the subject site are a small subset of the wider landscape. A full inventory of the flora and fauna species identified within the subject site has been provided in Appendix A and B respectively.

4.1 NATIVE VEGETATION EXTENT IN THE SUBJECT SITE

It was determined that the study area was composed of 7.82 % of native vegetation.

Area of study area: 4.09 ha

Native vegetation extent: 0.32 ha

Non-native vegetation: 0.96 ha

Planted gardens: 0.17 ha

Figure 4.1 provides a map of the native vegetation extent recorded within the study area and proposed development impact area, as assessed during field investigations undertaken in June and July 2020. The figure includes all areas of native vegetation (native ground cover and areas with canopy). Areas not shown as native vegetation cover within Figure 4.1 are not included for further assessment in accordance with Section 5.1.1.5 of the BAM unless they are determined within Section 8 of this report to be consistent with habitat for candidate species credit species as detailed within Section 6.4.1.37 of the BAM.

4.2 CLEARED AREAS AND NATIVE VEGETATION

The property 21D contained two large sheds and one smaller shed with associated infrastructure, including storage tanks. The majority of the groundcover consisted of concrete, hardstand and a tarred parking area. Gardens and maintained introduced vegetated groundcover were located within the southern portion of the Lot. Property 21F was mostly vegetated with a small concrete pad in the centre of the Lot. Large cinder blocks, poles, tyres and other debris was scattered within the northern portion of the Lot.

4.3 DIFFERENCES BETWEEN MAPPED VEGETATION EXTENT AND AERIAL IMAGERY

Aerial imagery used within this report was taken on 15 June 2020 (Nearmap, 2020). During the survey period of June and July 2020 native vegetation extent and internal ecotone boundaries between communities were 'ground truthed' and mapped during fieldwork using a handheld Geographic Positioning System (GPS). Given the recent aerial imagery available, there were no notable differences between vegetation extent displayed in the aerial imagery and the vegetation extent found when ground trothed during surveys.



Legend

Study Area

Native Vegetation

Job Ref	12490
A4 Scale	1:2000

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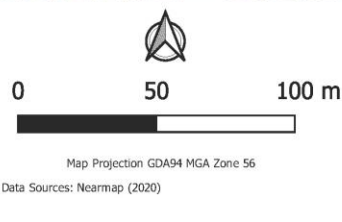


Figure 4.1.

Native Vegetation

21D & 21F
TOMAGO, NSW
July 2020

WILDTHING
Environmental Consultants
(a Division of Tattersall Lander Pty Ltd)
ABN 41 003 509 215

5.0 PLANT COMMUNITY TYPES

This Section describes the attribution of vegetation community profile descriptors to vegetation surveyed within the study area in accordance the NSW Plant Community Types (PCTs) held within the NSW BioNet Vegetation Information System (BioNet VIS) database.

5.1 PLANT COMMUNITY TYPE (PCT) ASSESSMENT METHOD

Past surveys conducted within the locality as well as database searches (See Section 1.4) were reviewed to inform the vegetation investigations. In addition, a search was undertaken of the BioNet VIS Database (OEH 2019h) and NSW SEED mapping to access existing vegetation mapping information within the subject site. Based on the results of the background review and the requirements of the BAM with respect to this BDAR, appropriate surveys were designed for the subject site. The vegetation base map was used to guide a floristic assessment of the subject site. Supplementary iterations and amendments were made to the base map throughout the fieldwork period, in accordance with Section 5.2 of the BAM, via hand-held GPS units and aerial photo interpretation. Iterations to the base map were based on observation of broad vegetation composition, landform, physiography and on quantitative data collection through identification of all plants encountered to the species level.

The vegetation types observed were compared to the base map and cross-referenced with the community profile descriptors (and diagnostic species tests) held within the BioNet VIS Database (OEH 2018h) with an assessment of consistency being conducted. Details of the most consistent PCTs selected are detailed in Section 5.2 below.

5.2 PCT'S IDENTIFIED WITHIN THE SITE

With the exception of a small amount of landscaping within the vicinity of the car park in the south of 21D, vegetation within the study area was confined to the 1.28ha 21F within the north-east. This area of vegetation has been subject to a high degree of disturbance. Historical photography shows that in 1954 the entire study area was covered by thick native vegetation (JME Environmental, 2020). By 1974 the site had been cleared for sand mining (JME Environmental, 2020). Post sand mining the site has been used by Allco Steel then has also been used for storage of materials. The majority of this area was composed of introduced species, however native vegetation in the form of shrubs and ground covers was present along the north-west and western boundary.

Taking into consideration the native species composition within the site and that occurring within the locality One Plant Community Type (PCT) was determined to be present, being PCT 1647 – Red Bloodwood – Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast. This PCT was uniform in condition within the site and did not require further stratification into vegetation zones.

A comprehensive description of the PCT 1647 present within the site is provided within Table 5.1. A description of the non-native vegetation present is contained within Tables 5.2 & 5.2. A vegetation map of the study area is shown in Figure 5.1. A full list of the flora species recorded during the fieldwork is listed in Appendix A.

Table 5.1: Details of PCT 1647

PCT 1647 - Red Bloodwood – Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast	
PCT Name	Red Bloodwood – Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast
Vegetation Formation	Dry Sclerophyll Forests (Shrub/grass sub-formation);
Vegetation Class	Coastal Dune Dry Sclerophyll Forests
Extent within study area	0.32 ha
Extent within Development Area (impact area)	0.10ha
Associated Species* *The associated species which occurred within the subject site and informed assignment of this PCT have been made bold.	<i>Corymbia gummifera</i> , <i>Angophora costata</i> , <i>Leptospermum trinervium</i> , <i>Leptospermum polygalifolium</i> , <i>Dillwynia retorta</i> , <i>Xanthorrhoea latifolia</i> , <i>Persoonia levis</i> , <i>Billardiera scandens</i> , <i>Themeda australis</i> , <i>Dianella caerulea</i> , <i>Pteridium esculentum</i> , <i>Lomandra longifolia</i> , <i>Entolasia stricta</i> .
Description of PCT on site	PCT 1647 occurring within 21F was found to be highly disturbed and consisted of a few native shrubs with a largely introduced groundcover. No upper stratum was present. The most common native shrub was <i>Acacia longifolia</i> (Sydney Golden Wattle). Other native shrubs included <i>Acacia suaveolens</i> (Sweet Wattle) and <i>Acacia ulicifolia</i> (Prickly Moses). One specimen of <i>Leptospermum laevigatum</i> (Coast Teatree) was also present. <i>Acacia saligna</i> (Golden Wreath Wattle) which is endemic to Western Australia and introduced to NSW was common within 21F. The few native groundcovers occurred sporadically over the area and included <i>Lomandra glauca</i> (Pale Mat Rush), <i>Lomandra longifolia</i> (Spiny Mat Rush), <i>Dianella caerulea producta</i> (Blue Flax Lily) and <i>Billardiera scandens</i> (Apple Dumplings). The majority of the groundcover was composed of introduced grass species such as <i>Eragrostis curvula</i> (African Lovegrass), <i>Melinis repens</i> (Red Natal Grass), <i>Cenchrus clandestinus</i> (Kikuyu), <i>Hyparrhenia hirta</i> (Coolatai Grass), <i>Chloris gayana</i> (Rhodes Grass) and <i>Andropogon virginicus</i> (Whisky Grass). Other introduced species were <i>Plantago lanceolata</i> (Plantain), <i>Lysimachia arvensis</i> (Scarlet Pimpernel), <i>Ambrosia artemisiifolia</i> (Annual Ragweed), <i>Lantana camara</i> (Lantana), <i>Juncus acutus</i> (Spike Rush) and <i>Verbena bonariensis</i> (Purple Top).
Justification of PCT	The PCT assigned to this assemblage was initially determined by entering dominant canopy species and the IBRA bioregion into the BioNet vegetation classification database, a shortlist of PCTs was collected that were considered to have potential to occur within the locality, these were: - PCT 1646 - Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast - PCT 1647 - Red Bloodwood – Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast The vegetation within 21F was most consistent with PCT 1647. The PCT was ascertained by native species present within the site and occurring nearby on similar sandy soil types. The area of native vegetation that bordered the study area to the north although disturbed contained the ground species <i>Lomandra longifolia</i> (Spiny Mat Rush), <i>Dianella caerulea producta</i> (Blue Flax Lily) and <i>Billardiera scandens</i> (Apple Dumplings). More intact native vegetation to the south contained the canopy species <i>Angophora costata</i> (Smooth-barked Apple) and the shrub species <i>Leptospermum trinervium</i> (Paperbark Teatree).
TEC Status	Not consistent with any TEC
Photos	Plates 5.1 & 5.2.



Plate 5.1: PCT 1647 Within the area of impact.



Plate 5.2: PCT 1647 Within the area of impact.



Legend

- Study_Area
- Site Plan
- On site Stormwater Detention Area
- Truck Parking Area
- LOT
- New weighbridge, lights and boom gate

Vegetation

- Plant Community Type (PCT) 1647
- Introduced Grassland
- Planted Gardens



Job Ref	12490
A4 Scale	1:2000

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Map Projection GDA94 MGA Zone 56

Data Sources: Nearmap (2020)

Figure 5.1.

Vegetation Map

21D & 21F School Drive
TOMAGO, NSW

July 2020

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5.3.1 OTHER VEGETATION FOUND WITHIN THE DEVELOPMENT AREA

The remainder of vegetation within the development area could not be assigned a PCT as they largely consisted of introduced flora species. These vegetation areas were grassland and planted gardens. A description of these two vegetated areas are shown in Tables 5.2.

Table 5.2: Details of other vegetation found within the study area.

Introduced Grassland	
PCT No.	Could not be assigned a PCT
Name	Introduced Grassland
Extent within study area	0.96ha
Extent within Development Area (impact area)	0.24ha
Description Area of vegetation dominated by introduced grasses particularly species such as <i>Eragrostis curvula</i> (African Lovegrass), <i>Melinis repens</i> (Red Natal Grass), <i>Cynodon dactylon</i> (Couch), <i>Hyparrhenia hirta</i> (Coolatai Grass), <i>Chloris gayana</i> (Rhodes Grass) and <i>Andropogon virginicus</i> (Whisky Grass). Other introduced species were <i>Ambrosia artemisiifolia</i> (Annual Ragweed), <i>Plantago lanceolata</i> (Plantain), <i>Lysimachia arvensis</i> (Scarlet Pimpernel), <i>Lantana camara</i> (Lantana), <i>Heterotheca grandiflora</i> (Telegraph Weed) and <i>Verbena bonariensis</i> (Purple Top).	
TEC Status	Not consistent with any TEC
Photos	5.3, 5.4 & 5.5.



Plate 5.3: Introduced Grassland within impact area.



Plate 5.4: Introduced Grassland within impact area.



Plate 5.5: Introduced Grassland within impact area.

Planted Gardens	
PCT No.	Could not be assigned a PCT
Name	Planted Gardens
Extent within study area	Small gardens and lawn within south of 21D.
Extent within Development Area (impact area)	0.15ha
<u>Description</u> Landscape planting including species <i>Westringia fruticosa</i> (Westringia), <i>Banksia</i> sp. cv. <i>Cupaniopsis</i> sp. Lawns were largely composed of <i>Cenchrus clandestinus</i> (Kikuyu).	
TEC Status	Not consistent with any TEC
Photos	5.6 & 5.7.



Plate 5.6: Planted Gardens.



Plate 5.7: Planted Gardens

6.0 VEGETATION ZONES

This Section describes the attribution of vegetation zones to the PCT identified within Section 5.0 of this report. Designation of vegetation zones was undertaken accordance with the methodology for vegetation integrity assessment outlined within Section 5.3 of the BAM (OEH, 2017).

6.1 VEGETATION ZONES ASSESSMENT METHOD

Detailed floristic surveys were undertaken in July 2020. These surveys included the establishment of a vegetation integrity plot. The survey effort (number of vegetation integrity plots established, per vegetation zone) was undertaken in accordance with Table 2 in the BAM (OEH, 2017). Data on the composition, structure and function of the vegetation was collected utilising the methodology presented in the (BAM, 2017) by persons trained in the BAM and under the direction of persons accredited under the BAM. The field data collected during the vegetation integrity assessment can be found in Appendix C and photos of the BAM plots are located in Appendix D.

One PCT was identified within the subject site:

- PCT 1647 – Red Bloodwood – Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast.

This PCT was further stratified into separate vegetation zones bases on current condition state or other environmental variables. The random meander, overview inspection and detailed floristic plot have been used to inform the stratification of this PCT into vegetation zones. PCT1647 was stratified on the basis of the broad presence/absence of key strata over the study area. One vegetation zone was present and attributed with a vegetation zone ID, which is:

- PCT 1647 – Disturbed

An aerial photo showing the extent of the Vegetation Zone and location of the vegetation integrity plot is shown in Figure 6.1. Table 6.1 provides details of the vegetation zones within the development area. The plot data from the vegetation integrity survey plot was entered into the BAM credit calculator (BAM-CC). The results from the vegetation integrity assessment are provided in Table 6.2.

Table 6.1: Details of the vegetation zones within the development area.

Vegetation Zone ID/Condition	Area Total (ha)	No. of Vegetation Integrity Plots Established	Patch Size (ha)	Photo example of Vegetation Zone within the development area
PCT 1647 – Red Bloodwood – Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast_Disturbed PCT_1647_Disturbed	0.1	1	>100	 Plate 6.1: PCT 1647_Disturbed

Table 6.2: Current vegetation integrity scores for the vegetation zone.

Zone No.	PCT ID	Condition	Impact area (ha)	Composition Score	Structure Score	Function Score	Vegetation Integrity Score
1	1647	Disturbed	0.1	9.9	13.5	13.4	12.1

6.2 PATCH SIZE

Patch size is defined in the BAM (OEH, 2017) as an area of intact native vegetation that:

- *occurs on the study area or biodiversity stewardship site, and*
- *includes native vegetation that has a gap of less than 100m from the next area of moderate to good condition vegetation (or $\leq 30\text{m}$ for non woody ecosystems). Patch size may extend into adjoining land that is not part of the study area or biodiversity stewardship site.*

The BAM (OEH, 2017) defines 'intact native vegetation' as:

- *Intact vegetation: vegetation where all tree, shrub, grass and/or forb structural growth form groups expected for a plant community type are present.*

Native vegetation within the site is connected to a large area of disturbed and intact vegetation surrounded by industrial development. The area of vegetation is bounded by the Pacific Highway in the west and north connecting to the township of Heatherbrae in the far north, Masonite Road in the east and Tomago Road in the south. Tilligerry State Conservation Area is located on the eastern side of Masonite Road. Therefore, the Vegetation Zone located within the site has been associated with a patch size class of $\geq 100\text{ha}$.

6.3 EXCLUSION OF VEGETATION ZONES FROM FURTHER ASSESSMENT

As outlined in Section 3.1.1.3 of the BAM if a vegetation zone has a vegetation integrity score of:

- *<15 where the PCT is representative of an endangered or critically endangered ecological community, or*
- *<17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits), or is representative of a vulnerable ecological community.*
- *<20 where the PCT is not representative of a TEC or associated with threatened species habitat.*

then for that vegetation zone

- *assessment of native vegetation is not required beyond Section 5.4 (determining vegetation integrity score), and*
- *an assessment of threatened species habitat according to Section 6.2 and Paragraph 6.2.1.4 (Assessing habitat suitability for species that can be predicted by habitat surrogates (ecosystem credits)) is not required.*

Vegetation zone 1649 - Disturbed is not a TEC, however it is associated with some threatened species habitat. As such, with a vegetation integrity score of 12.1 (i.e. ≤ 17), further assessment of habitat suitability for ecosystem credit species associated with this vegetation zone within Section 7.0 of this report is **not required**.

7.0 ECOSYSTEM CREDIT SPECIES

This Section identifies and assesses the suitability of habitat constraints within the development area site for ecosystem credit species. Ecosystem credit species are threatened species where the likelihood of occurrence of a species or elements of the species' habitat can be predicted by habitat surrogates and landscape features, or for which targeted survey has a low probability of detection. Targeted survey is not required for these species.

The BAM methodology defines a two-step process of habitat suitability assessment for ecosystem credit species, these are:

- 1) identify ecosystem credit species for assessment; and
- 2) assessment the habitat constraints and vagrant species on the subject land

These steps have been carried out in the following Sections.

No further assessment is required given the vegetation community zone within the impact area has a vegetation integrity score of 12.1, which is ≤ 17 .

8.0 SPECIES CREDIT SPECIES

This Section identifies and assesses the suitability of habitat present within the subject site for species credit species. Species credit species are threatened species where the likelihood of occurrence of a species or elements of suitable habitat for the species cannot be confidently predicted by vegetation surrogates and landscape features and can be reliably detected by survey. Targeted survey is required for these species which are not excluded from assessment in Section 8.2.

Species credit species are pre-determined by the BAM-CC based on the data collected and displayed in Sections 3.0, 4.0 and 5.0 of this report. The residual impact on the species' habitat from development, clearing is measured in biodiversity credits using the vegetation integrity score for each vegetation zone.

The BAM assessment defines a six-step process for identifying habitat suitability for species credit species, this is:

- 1) identify species credit species for assessment,
- 2) assess the habitat constraints for species credit species on the Subject land,
- 3) identify candidate species credit species for further assessment,
- 4) determine presence or absence of a candidate species credit species,
- 5) determine the area or count, and location of suitable habitat for a species credit species; and
- 6) determine the habitat condition within the species polygon for species assessed by area.

Species credit species predicted to occur at the subject site, their associated habitat constraints, geographic limitations (if applicable) and habitat description is included in Table 8.1 (Step 1 & 2). An assessment of whether suitable habitat occurred within the study area and therefore whether a species was to be considered a candidate species credit species is also provided in Table 8.1 (Step 3). The remaining candidate species required targeted survey to confirm their presence/absence (Step 4) are shown in Table 8.2 and those located within the site have been assessed further within Table 8.3 (Step 5 & 6).

8.1 SPECIES CREDIT SPECIES FOR ASSESSMENT (STEP 1)

A total of 39 species credit species have been generated from the BAM-CC (DPIE, 2020) as requiring assessment and are listed in Table 8.1.

8.2 ASSESSMENT OF HABITAT CONSTRAINTS FOR SPECIES CREDIT SPECIES (STEP 2)

For the species credit species predicted to occur in Step 1, for which habitat constraints are listed, an assessment was undertaken for the presence of the habitat constraints within the study area. Habitat constraints for species credit species are identified in the BAM-CC and the Threatened Species Biodiversity Data Collection. The absence of habitat constraints for species credit species precludes the species from requiring further assessment in Steps 3-6. This assessment is not applicable to a species where no habitat constraints are listed in the BAM-CC and TBDC, e.g. threatened flora.

The methodology for the habitat constraints survey is provided in Section 8.5. The results of the habitat constraints survey and an evaluation of species credit species for further assessment is provided in Table 8.21.

8.3 IDENTIFY CANDIDATE SPECIES CREDIT SPECIES FOR FURTHER ASSESSMENT (STEP 3)

After the habitat constraints assessment within Step 2, a list of candidate species credit species has been refined for further assessment. These candidate species credit species required targeted survey to confirm their presence/absence within the study area. Candidate species for further assessment are listed in Table 8.1.

Table 8.1: Species Credit Species for Assessment

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
<i>Allocasuarina defungens</i> Dwarf Heath Casuarina	E	E	N/A	Yes	North of Bulahdelah	Grows mainly in tall heath on sand, but can also occur on clay soils and sandstone	No	Site is not north of Bulahdelah
<i>Angophora inopina</i> Charmhaven Apple	V	V	N/A		South of Wootton	Occurs most frequently in four main vegetation communities: (i) <i>Eucalyptus haemastoma</i> – <i>Corymbia gummifera</i> – <i>Angophora inopina</i> woodland/forest; (ii) <i>Hakea teretifolia</i> – <i>Banksia oblongifolia</i> wet heath; (iii) <i>Eucalyptus resinifera</i> – <i>Melaleuca sieberi</i> – <i>Angophora inopina</i> sedge woodland; (iv) <i>Eucalyptus capitellata</i> – <i>Corymbia gummifera</i> – <i>Angophora inopina</i> woodland/forest.	Yes	
<i>Asperula asthenes</i> Trailing Woodruff	V	V	N/A	Yes	N/A	Occurs in damp sites, often along river banks.	No	The study area was considered to be too degraded for this species to occur.
<i>Burhinus grallarius</i> Bush Stone-curlew	E		Fallen/standing dead timber including logs		N/A	Inhabits open forests and woodlands with a sparse grassy ground layer and	Yes	

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
						fallen timber.		
<i>Callistemon linearifolius</i> Netted Bottle Brush	V		N/A	Yes	N/A	Grows in dry sclerophyll forest on the coast and adjacent ranges.	No	The study area was considered to be too degraded for this species to occur. No <i>Callistemon</i> species were located within the study area.
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo (Breeding)	V		Hollow bearing trees Eucalypt tree species with hollows greater than 9 cm diameter		N/A	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests.	No	No hollow-bearing trees or Eucalypt tree species were located within the study area.
<i>Calyptorhynchus lathamii</i> Glossy Black-Cockatoo (Breeding)	V		Hollow bearing trees Living or dead tree with hollows greater than 15cm diameter and greater than 5m above ground		N/A	Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (<i>Allocasuarina littoralis</i>) and Forest Sheoak (<i>A. torulosa</i>) are important foods.	No	No hollow-bearing trees were located within the study area
<i>Cercartetus nanus</i> Eastern Pygmy-possum	V		N/A	Yes	N/A	Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in	No	The study area was considered to be too degraded for this species to occur

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
						most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest.		
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	V	V	Cliffs Within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels		N/A	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (<i>Petrochelidon ariel</i>), frequenting low to mid-elevation dry open forest and woodland close to these features.	No	No cliffs were located within the study area, nor was the site located within 2km containing caves or old mine tunnels
<i>Crinia tinnula</i> Wallum Froglet	V		N/A	Yes	N/A	Found in a wide range of habitats, usually associated with acidic swamps on coastal sand plains. They typically occur in sedgeland and wet heathlands.	No	The study area was considered to be too degraded for this species to occur
<i>Cryptostylis hunteriana</i> Leafless Tongue Orchid	V	V	N/A	Yes	N/A	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland.	No	The study area was considered to be too degraded for this species to occur

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
<i>Diuris praecox</i> Rough Doubletail	V	V	N/A		Within the Parish boundaries of Forster, Eurunderee, Fens, Tomaree, Stowell and Stockton	Grows on hills and slopes of near-coastal districts in open forests which have a grassy to fairly dense understorey.	Yes	The site is located within the Stockton Parish. This species is known to occur within degraded environments, e.g. electrical easements.
<i>Dromaius novaehollandiae</i> - endangered population Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	E2		N/A		N/A	On the NSW north coast, Emus occur in a range of predominantly open lowland habitats, including grasslands, heathland, shrubland, open and shrubby woodlands, forest, and swamp and sedgeland communities, as well as the ecotones between these habitats.	Yes	
<i>Grevillea parviflora</i> subsp. <i>parviflora</i> Small-flower Grevillea	E		N/A	Yes	N/A	Occurs in heathy woodland associations on skeletal sandy soils over massive sandstones.	No	The study area was considered to be too degraded for this species to occur. No Grevillea species were located within the study area.
<i>Haliaeetus leucogaster</i>	V		Other Living or dead mature trees		N/A	Sites near the sea or sea-shore, such as around bays	No	No species located within the vegetation

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
White-bellied Sea-Eagle (Breeding)			within suitable vegetation within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines			and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh.		community present within the study area are considered a 'Tree' under the Native species growth form list available on the BAMCC website (BioNet, 2020).
<i>Hieraaetus morphnoides</i> Little Eagle (Breeding)	V		Other Nest trees - live (occasionally dead) large old trees within vegetation)		N/A	Occupies open eucalypt forest, woodland or open woodland. Sheoak or woodlands and riparian woodlands of interior NSW are also used.; Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	No	No nests were located within the study area. No species located within the vegetation community present within the study area are considered a 'Tree' under the Native species growth form list available on the BAMCC website (Bionet, 2020)
<i>Hoplocephalus bitorquatus</i> Pale-headed Snake	V		N/A	Yes	N/A	Found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest.	No	The study area was considered to be too degraded for this species to occur.
<i>Lathamus discolor</i> Swift Parrot (Breeding)	E4A	CE	Other As per mapped areas		N/A		No	No breeding habitat was mapped within the study area
<i>Litoria aurea</i> Green and Golden	E	V	Semi-permanent/ephemeral wet areas		N/A	Inhabits marshes, dams and stream-sides, particularly	No	This study area was not located within 1km of a

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
Bell Frog			Within 1km of wet areas Swamps Within 1km of swamp Waterbodies Within 1km of waterbody			those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.).		suitable waterbody and did not contain permanent/ephemeral wet areas.
<i>Litoria brevipalmata</i> Green-thighed Frog	V		N/A	Yes	N/A	Occurs in a range of habitats from rainforest and moist eucalypt forest to dry eucalypt forest and heath, typically in areas where surface water gathers after rain.	No	The study area was considered to be too degraded for this species to occur.
<i>Lophoictinia isura</i> Square-tailed Kite (Breeding)	V		Other Nest trees		N/A	In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland.	No	No nests were located within the study area. No species located within the vegetation community present within the study area are considered a 'Tree' under the Native species growth form list available on the BAMCC website (Bionet, 2020)
<i>Melaleuca groveana</i> Grove's Paperbark	V		N/A		N/A	Grows in heath and shrubland, often in exposed sites, in low coastal hills, escarpment ranges and tablelands on outcopping	Yes	

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
						granite, rhyolite and sandstone on rocky outcrops and cliffs.		
<i>Miniopterus australis</i> Little Bentwing-bat (Breeding)	V		Caves Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave' observation type code 'E nest-roost' with numbers of individuals >500 or from the scientific literature		N/A	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas.	No	The study area did not contain caves or any other structure which was likely to provide breeding habitat.
<i>Miniopterus orianae oceanensis</i> Eastern Bentwing-bat (Breeding)	V		Caves Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave" observation type code "E nest-roost" with numbers of individuals >500		N/A	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.	No	The study area did not contain caves or any other structure which was likely to provide breeding habitat.

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
<i>Myotis macropus</i> Southern Myotis	V		Hollow bearing trees Within 200 m of riparian zone Other Bridges, caves or artificial structures within 200 m of riparian zone Waterbodies This include rivers, creeks, billabongs, lagoons, dams and other waterbodies on or within 200m of the site		N/A	Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.	No	No hollow-bearing trees were located within the study area. No waterbodies, bridges or riparian zone were within 200m of the study area.
<i>Ninox connivens</i> Barking Owl (Breeding)	V		Hollow bearing trees Living or dead trees with hollows greater than 20 cm diameter and greater than 4m above the ground		N/A	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage. During nesting season, the male perches in a nearby tree overlooking the hollow entrance. Nesting occurs during mid-winter and spring, being variable between pairs and among years. As a rule of thumb,	No	No hollow bearing trees were present within the study area

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
						laying occurs during August and fledging in November.		
<i>Ninox strenua</i> Powerful Owl (Breeding)	V		Hollow bearing trees Living or dead trees with hollow greater than 20cm diameter		N/A	Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest.	No	No hollow bearing trees were present within the study area
<i>Pandion cristatus</i> Eastern Osprey (Breeding)	V		Other Presence of stick-nests in living and dead trees (>15m) or artificial structures within 100m of a floodplain for nesting)		N/A	Coastal areas, especially the mouths of large rivers, lagoons and lakes.	No	No stick nests were located within the study area and the site was not located within 100m of floodplain for nesting.
<i>Petaurus norfolcensis</i> Squirrel Glider	V		N/A		N/A	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas.	No	No species located within the vegetation community present within the study area are considered a 'Tree' under the Native species growth form list available on the BAMCC website (Bionet, 2020)
<i>Petrogale penicillata</i> Brush-tailed Rock-wallaby			N/A Other Land within 1 km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or cliffines		N/A	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north.	No	The study area was not located within 1km of suitable habitat for this species.

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
<i>Phascogale tapoatafa</i> Brush-tailed Phascogale	V		N/A		N/A	Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest. Agile climber foraging preferentially in rough barked trees of 25 cm DBH or greater. Nest and shelter in tree hollows with entrances 2.5 - 4 cm wide and use many different hollows over a short time span.	No	No species located within the vegetation community present within the study area are considered a 'Tree' under the Native species growth form list available on the BAMCC website (Bionet, 2020)
<i>Phascolarctos cinereus</i> Koala (Breeding)	V	V	Other Areas identified via survey as important habitat (see comments))		N/A	Inhabit eucalypt woodlands and forests.	No	No Eucalypt tree species were located within the study area.
<i>Phascolarctos cinereus</i> - endangered population Koala, Hawks Nest and Tea Gardens population	E2		N/A		N/A	Swamp Mahogany and Tallowwood are of primary importance to this Koala population.	No	No Eucalypt tree species were located within the study area. The site is outside of the distribution for this population.
<i>Planigale maculata</i> Common Planigale	V		N/A	Yes	N/A	Inhabit rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas	No	The study area was considered to be too degraded for this

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
						where there is surface cover, and usually close to water.		species to occur.
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox (Breeding)	V	V	Other Breeding camps		N/A	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	No	The study area did not contain any breeding camps of this species or any vegetation suitable for supporting a breeding camp of this species.
<i>Tetralthea juncea</i> Black-eyed Susan	V	V	N/A	Yes	N/A	Found in low open forest/woodland with a mixed shrub understorey and grassy groundcover. However, it has also been recorded in heathland and moist forest.	No	The study area was considered to be too degraded for this species to occur.
<i>Thesium australe</i> Austral Toadflax	V	V	N/A	Yes	N/A	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast.	No	The study area was considered to be too degraded for this species to occur.

STEP 1			STEP 2				STEP 3	
Species	BC Act	EPB C Act	Habitat type (Breeding/ Foraging) Habitat Constraints	Habitat Degraded	Geographic Limitations	Habitat Description (Threatened Biodiversity Data Collection)	Candidate Species Credit Species (SCS)	Justification if species was considered not to be a SCS
<i>Tyto novaehollandiae</i> Masked Owl (Breeding)	V		Hollow bearing trees Living or dead trees with hollows greater than 20cm diameter		N/A	Lives in dry eucalypt forests and woodlands from sea level to 1100 m.	No	No hollow bearing trees were present within the study area
<i>Uperoleia mahonyi</i> Mahony's Toadlet	E		N/A		N/A	Inhabits ephemeral and semi-permanent swamps and swales on the coastal fringe of its range.	Yes	Little is known on the habitat of this species.

8.4 DETERMINE PRESENCE OR ABSENCE OF A CANDIDATE SPECIES CREDIT SPECIES (STEP 4)

Species identified as candidate species within Table 8.1 required targeted survey to confirm presence or absence.

Targeted surveys campaigns were undertaken on the period of July and August 2020 for the candidate species credit species. Surveys were conducted as per the optimum survey months defined within the BAM-CC (DPIE, 2020). Where relevant guidelines were available, targeted surveys were conducted according to taxa-specific guidelines. For all other species, targeted survey was conducted in accordance with OEH Threatened Species Survey and Assessment Guidelines.

The survey effort and timing are summarised in Table 8.2. Details of the survey methodology used and results for each surveyed species are provided in Section 8.5. Survey methodologies for candidate species credit species have been grouped where survey effort has captured multiple species.

Table 8.2: Targeted Survey Effort for species credit species.

Species	BC Act	EPBC Act	SAIL Entity	Habitat Constraint	Survey Period	Targeted Surveys within the Study Area	Survey Method	Present within Study Area
<i>Angophora inopina</i> Charmhaven Apple	V	V			Jan-Dec	9 July 2020 6 August 2020	No species located within the vegetation community present within the study area are considered a 'Tree' under the Native species growth form list available on the BAMCC website (Bionet, 2020).	No
<i>Burhinus grallarius</i> Bush Stone-curlew	E			Fallen/standing dead timber including logs	Jan-Dec	9 July 2020 29 July 2020 6 August 2020	Searches for suitable habitat was undertaken on the 9 July 2020. No fallen logs or timber was located within the study area. Spotlighting surveys undertaken on 29 July 2020 did not locate any evidence of this species occurring on site.	No
<i>Crinia tinnula</i> Wallum Froglet	V				Jan-Dec	9 July 2020 29 July 2020 6 August 2020	Amphibian surveys were undertaken on 9 and 29 July 2020. No suitable habitat was located within the study area. This species was heard calling in swamp forest over 200m to the east of the site.	No
<i>Diuris praecox</i> Rough Doubletail	V	V			Aug	6 August 2020	Parallel field traverse survey technique	No
<i>Dromaius novaehollandiae</i> - endangered population Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	E2				Jan-Dec	9 July 2020 29 July 2020 6 August 2020	Designated searches for this species were undertaken on the 9 and 29 July 2020. No evidence of this species was observed within the study area.	No
<i>Melaleuca groveana</i> Grove's Paperbark	V				Jan-Dec	9 July 2020 6 August 2020	A tree inventory was undertaken cataloguing all trees located within the study area. No species located within the vegetation community present within the study area are considered a 'Tree' under the Native species growth form list available on the BAMCC website (Bionet, 2020)	No
<i>Myotis macropus</i>	V			Hollow bearing trees	Oct-Mar	9 July 2020 29 July 2020	No hollow-bearing trees were located on site during the tree inventory undertaken on 9 July 2020. No waterbodies	No

Species	BC Act	EPBC Act	SAIL Entity	Habitat Constraint	Survey Period	Targeted Surveys within the Study Area	Survey Method	Present within Study Area
Southern Myotis				Within 200 m of riparian zone Other Bridges, caves or artificial structures within 200 m of riparian zone Waterbodies This include rivers, creeks, billabongs, lagoons, dams and other waterbodies on or within 200m of the site			or riparian zones were located within 200m of the study area.	
<i>Petaurus norfolcensis</i> Squirrel Glider	V				Jan-Dec	9 July 2020 29 July 2020	A tree inventory was undertaken cataloguing all trees located within the study area. No species located within the vegetation community present within the study area are considered a 'Tree' under the Native species growth form list available on the BAMCC website (Bionet, 2020). Spotlighting surveys undertaken within the study area did not find any evidence of this species within the study area.	No
<i>Phascolarctos cinereus</i> - endangered population Koala, Hawks Nest and Tea Gardens population	E2				Jan-Dec	9 July 2020 29 July 2020	A tree inventory was undertaken cataloguing all trees located within the study area. No species located within the vegetation community present within the study area are considered a 'Tree' under the Native species growth form list available on the BAMCC website (Bionet, 2020). Spotlighting surveys undertaken within the study area did not find any evidence of this species within the study area.	No
<i>Planigale maculata</i> Common Planigale	V				Jan-Dec	9 July 2020 29 July 2020	Spotlighting surveys undertaken within the study area did not find any evidence of this species within the study area.	No
<i>Uperoleia</i>	V				Oct-Mar	-	-	Assumed

Species	BC Act	EPBC Act	SAIL Entity	Habitat Constraint	Survey Period	Targeted Surveys within the Study Area	Survey Method	Present within Study Area
<i>mahonyi</i> Mahony's Toadlet								present

8.5 SURVEY METHODOLOGY

The survey effort and times and weather conditions are shown in Appendix E of this report.

8.5.1 METHODOLOGY FOR DETERMINING HABITAT CONSTRAINTS

Significant Tree Inventory

A significant tree inventory was conducted by Wildthing Environmental Consultants over the entire study area. If a significant tree was located, the tree species, height, diameter at breast height (dbh) and location (taken on a handheld GPS) was recorded. The survey identified the presence of any significant habitat attributes or characteristics within all trees present within the study area, this included the following:

- the size and number of any hollows, woodland bird nests or eyries present*,
- the presence or evidence of any breeding camps of megachiropteran bats,
- the presence of scansorial (climbing) mammal evidence in the form of scratches, scats on the trunks of trees and scats around the base; and
- the presence of any resting arboreal mammals, i.e. Koala

No significant trees under the above criteria were located within the study area.

Searches for Fallen/Standing Dead Timber

The presence of fallen and standing dead timber within each vegetation zone was qualitatively assessed for its potential to provide significant refuge resources to ground dwelling mammals, birds amphibians and reptiles.

Searches for Significant Geological Features and Suitable Artificial Structures

The presence of significant geological features and/or suitable artificial structures within each vegetation zone was qualitatively assessed for its potential to provide significant refuge resources to saxicolous (rock dwelling) and cave dwelling fauna such as microchiropteran bats, reptiles and some marsupials.

Searches for Habitat Constraints within the Landscape

The occurrence of some species credit species can be defined by the presence of specific habitat constraints within the greater landscape outside of the confines of the study area. These species credit species are generally highly mobile species with a large range/territory i.e. Microchiropteran bats (microbats), woodland birds and some terrestrial mammals.

Information collected in Sections 3.0 - 6.0 has been used to inform the likely presence/absence of habitat constraints within the landscape, with justification of the determination reached provided in Table 8.1. Where the presence/absence of habitat features within the locality could not be determined with a high level of confidence or justified from desktop assessment resources a conservative approach has been used and the habitat constraint has been assumed present within the landscape.

Mapped Breeding Habitat

For a small number of species, a habitat constraint may refer to a mapped location. Mapped locations identify areas that are considered important for the species (e.g. breeding areas or sites where multiple records have been located over multiple years). As defined in Section 6.4 of the BAM, if the study area is in a mapped location for a species, no targeted survey or further assessment is required (unless otherwise indicated in the TBDC); the species is considered to be present and the area of the subject land within the mapped location forms the species polygon used to generate species credits. Any remaining habitat on the subject land (e.g. foraging, unmapped locations) used by these species is assessed for ecosystem credits.

8.5.2 FLORA SURVEY METHODOLOGY

Targeted surveys were used in accordance with the NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft) (Department of Environment and Conservation 2004), NSW Guide to Surveying Threatened Plants State of New South Wales (OEH, 2016a) and the Draft survey guidelines for Australia's threatened orchids (DoEE, 2013). Each target threatened flora species was allocated areas of potential habitat. All vegetation communities considered to be habitat for the target species, such as *Callistemon linearifolia* (Netted Bottlebrush) were searched. A parallel field traverse (i.e. parallel transects, as used by Cropper 1993) was undertaken within the study area. Surveys were conducted along parallel line transects approximately 5 metres apart. Transects were conducted along a straight path using the tracks on a GPS to guide the surveyors. Required survey times were stated in the BAM Candidate species report. An aerial photo showing the location of survey tracks is shown in Figure 8.1 & .8.2.

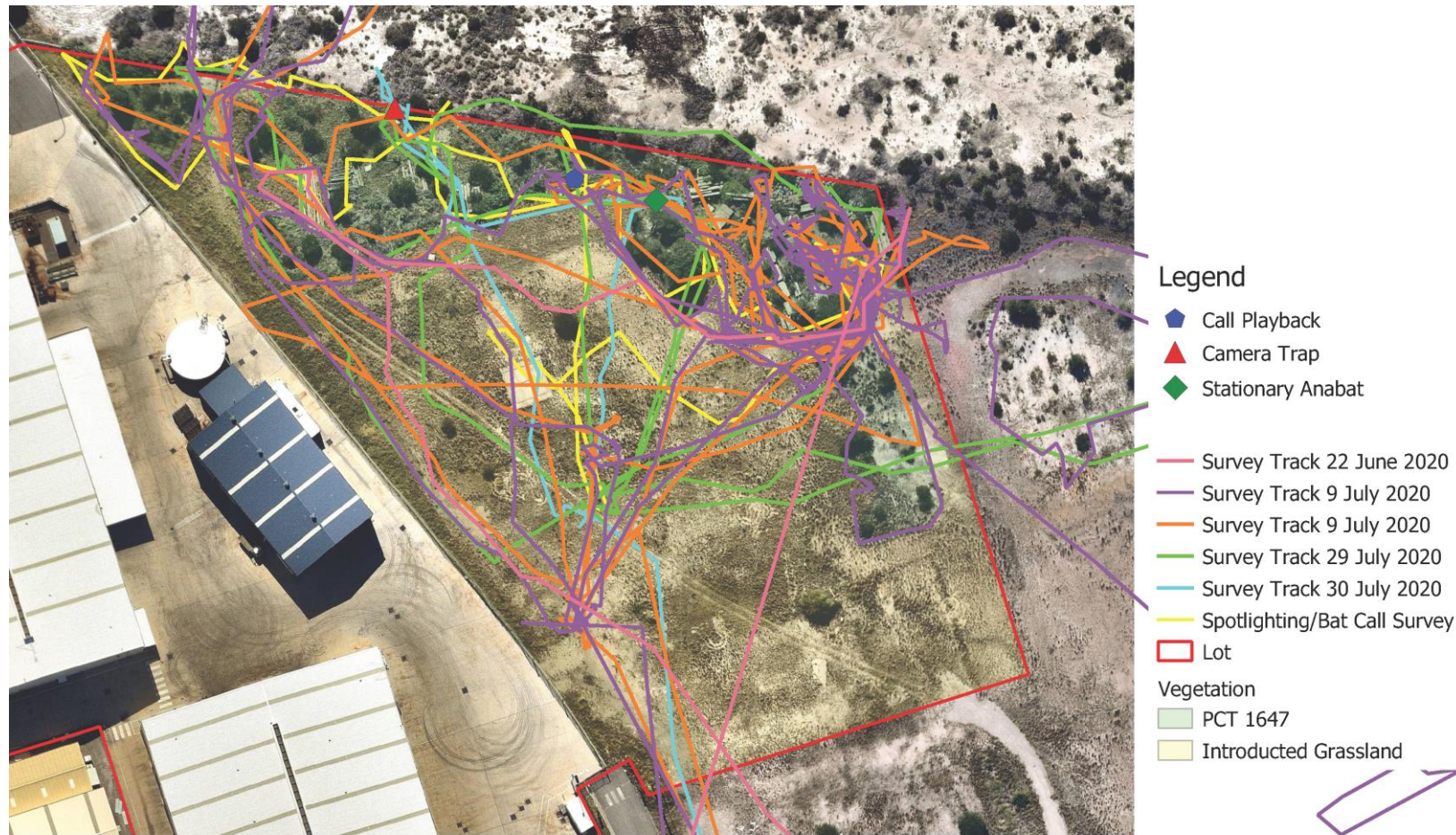
8.5.3 FAUNA SURVEY METHODOLOGY

The fauna survey was initiated with an assessment of the potential use of the study area by any species credit species. Subsequently, the confirmation of the fauna species list, by way of on-site observation and recording, was carried out as described below. The survey was carried out using the Department of Environment and Conservation's (NSW) Threatened Biodiversity Survey and Assessment Guidelines – Working Draft (Department of Environment and Conservation, 2004).

Amphibian Survey

Amphibian surveys included a combination of diurnal and nocturnal census methods. Diurnal searches involved systematic searches within appropriate habitat for basking or sheltering individuals. Any appropriate cover such as logs were turned over for resting individuals.

Nocturnal surveys were undertaken within the study area and involved listening for the characteristic call of male frogs.



Job Ref	12490
A4 Scale	1:900

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. In addition the spatial accuracy of the map is wholly dependant on source data. Please verify the accuracy of all information prior to use. Development footprint areas should be used for indicative areas only.

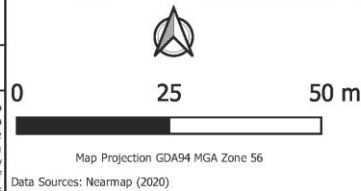


Figure 8.1.

Targeted Surveys

21D & 21F School Drive
TOMAGO, NSW

July 2020



Legend

Targeted Flora Searches_6 August 2020

Search Track

Lot Boundary

Entities

Stormwater Detention

Truck Parks

Truck Parking Area

C-PROP-LINE

New weighbridge, lights and boom gate

Job Ref	12490
A4 Scale	1:1000

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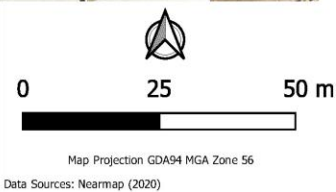


Figure 8.2.

Targeted Flora Survey 6 August 2020

21D & 21F School Drive
TOMAGO, NSW

August 2020

WILDTHING
Environmental Consultants

(a Division of Tattersall Lander Pty Ltd)

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Reptile Survey

Searches for reptiles involved a combination of diurnal and nocturnal searches. Diurnal searches for reptiles involved searching in likely habitat (i.e. leaf litter, dead logs and long grass) during the morning and afternoon survey period. Nocturnal searches were conducted for reptile species active at night such as geckos and some species of snakes and involved searching in likely habitats with the aid of a spotlight. The location of the reptile surveys is shown in Figure 8.1.

Diurnal Avifaunal Survey

The diurnal avifauna survey involved walking along a pre-determined 100m transect for 30 minutes. Every 20m a point survey was undertaken which involved observation and listening for calls. Surveys were conducted at peak activity periods (i.e. dawn and dusk). A number of incidental observations of avifauna were also made during other surveys. Observations were also made of secondary indications (i.e. distinctive feathers and nests) of avifauna were also recorded. The location of the diurnal avifauna surveys are shown in Figure 8.1.

Microchiropteran Bat Call Survey

Bat echo-location calls were recorded using an Anabat detector in areas which were considered likely to be used by bats. The position was selected to sample potential hunting sites for bats. Echolocation surveys used a combination of stationary and hand-held mobile surveys. Hand-held surveys were undertaken during spotlighting. Stationary call activated microchiropteran bat detection was undertaken from dawn to dusk for one night. The bat calls recorded by Wildthing Environmental Consultants were analysed in-house by Mungo Worth. The locations of the bat call surveys are shown in Figure 8.1.

Nocturnal Avifaunal and Mammal Call Playback Survey

During the nocturnal avifauna and mammal survey pre-recorded calls of *Ninox connivens* (Barking Owl), *Ninox strenua* (Powerful Owl), *Tyto novaehollandiae* (Masked Owl), and *Phascogale carolinensis* (Koala) were broadcast through an amplification system designed to project the sound for at least 1km under still night conditions. An initial listening period of 10 minutes was undertaken, followed by 5 minutes of calls (repeated in four different directions). A period of two minutes of quiet listening was then employed after each 5-minute bracket of calls. At the conclusion of the call playback survey, spotlighting was carried out in the vicinity of the call playback site. The locations of the call playback are shown in Figure 8.1.

Spotlighting Survey

Spotlighting was undertaken on foot using 100watt hand-held spotlights. The spotlighting involved walking at a slow pace around the study area and stopping every 2 minutes, allowing the observer to hear movements of animals. A total of 2-person hours of spotlighting was conducted during the survey (Figure 8.1).

Camera Trapping Survey

A Camera trap (Reconyx Hyperfire 2) was set up within the study area from 29 July 2020 to 30 July 2020. The location of the camera traps within the study area are shown in Figure 8.1.

Incidental Observations and Secondary Indications

All incidental observations and secondary indications such as the presence of scats were recorded.

8.6 SURVEY RESULTS

8.6.1 FLORA SURVEY RESULTS

The field survey including past surveys have identified approximately 94 plant species occurring within the Study Area.

No species credit species or any other listed threatened flora species was recorded within the study area during the survey. A full list of flora species observed during the survey is contained in Appendix A.

8.6.2 FAUNA SURVEY RESULTS

A full list of fauna species observed during the survey is contained in Appendix B.

Amphibian Survey

No amphibian species were recorded on site during surveys.

Although no suitable habitat for Amphibians was located within the site, calls associated with *Crinia signifera* (Common Eastern Froglet), *Limnodynastes peronii* (Striped Marsh Frog) and the threatened *Crinia tinnula* (Wallum Froglet) was heard calling approximately just over 200m east of the study area.

Reptile Survey

One species of reptile, *Ctenotus robustus* (Striped Skink) was observed within 21F.

This species is not listed as threatened under State or National legislation.

Diurnal Avifaunal Survey

The site was found to contain limited habitat for a number of avifauna species. Species recorded included *Corvus coronoides* (Australian Raven), *Neochmia temporalis* (Red-browed Finch), *Rhipidura leucophrys* (Willie Wagtail), and *Falco cenchroides* (Nankeen Kestrel).

No State or Nationally listed threatened avifauna species were found to be utilising the site during surveys.

Microchiropteran Bat Call Survey

Two species of microchiropteran bat, *Chalinolobus gouldii* (Gould's Wattled Bat) and *Vespadelus* sp. likely *vulturnus* were recorded within the study area.

Neither of these microchiropteran bat species are listed as threatened under State or National legislation.

Nocturnal Avifaunal and Mammal Call Playback Survey

There were no responses as a result of playback calls played during any surveys.

Spotlighting Survey

During July 2020 spotlighting surveys no fauna species were observed within the study area.

Camera Trapping Survey

No fauna species were recorded during the camera trap survey.

Incidental Observations and Secondary Indications

A number of incidental observations and secondary indications of fauna were observed during the survey and included:

- Scats and footprints consistent with that of a macropod were found near the northern boundary fence of 21F. These Scats and prints were most likely from *Macropus rufogriseus* (Red-necked Wallaby);
- Footprints consistent with the introduced *Vulpes vulpes* (European Red Fox) were observed within the study area.
- *Oryctolagus cuniculus* (European Rabbit) was observed within the during the August survey.

8.7 DETERMINE THE AREA OR COUNT, AND LOCATION OF SUITABLE HABITAT FOR A SPECIES CREDIT SPECIES (STEP 5)

Due to time constraints a total of one Species Credit Species was assumed present within the study area as fieldwork for this BDAR was undertaken outside of the survey period for these species. A description of the ecology of these species and the defined habitat constraint for these species has been provided in Table 8.3. The species polygon for these species is mapped in Figure 8.3.

8.8 DETERMINE THE HABITAT CONDITION WITHIN THE SPECIES POLYGON FOR SPECIES ASSESSED BY AREA (STEP 6)

In accordance with Section 6.4.1.35 of the BAM, the habitat condition of each species polygon by using the vegetation integrity score for each vegetation zone that is within the species polygon was determined to be a vegetation integrity score of 12.1 for each of the Species Credit Species assumed to be present within the vegetation zone PCT 1647_Derived.

Table 8.3: Species Credit Species located on site Ecology and Polygon within the site.

Species	BC Act	EPBC Act	SAII Entity	Description	Habitat Constraint	Biodiversity Concern/risk Weighting	Method used to Confirm Presence	Number and location of individuals recorded	Species Polygon Unit of Measure
<i>Uperoleia mahonyi</i> Mahony's Toadlet	V		No	It is a small (males 30 mm, female 32 mm) frog. This species is most easily distinguished from other <i>Uperoleia</i> species by a black and white belly pattern that appears marbled or blotched (rather than numerous small dots or specs) and the lack of colour patch below the knee. Groin and thigh colour patches are orange.	N/A	2	Assumed present	N/A	0.32



Legend

- Study Area
- Uperoleia mahonyi Species Polygon

Job Ref	12490
A4 Scale	1:2000

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. In addition the spatial accuracy of the map is wholly dependant on source data. Please verify the accuracy of all information prior to use. Development footprint areas should be used for indicative areas only.

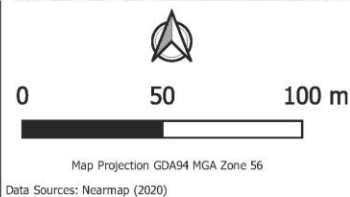


Figure 8.3.

Species Polygons

21D & 21F School Drive
TOMAGO, NSW

July 2020

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Environmental Consultants

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STAGE 2 – IMPACT ASSESSMENT

This Section identifies the potential impacts of the proposed development on the biodiversity values of the subject site, methods of avoidance and minimisation of impacts and a revaluation of potential impacts when considering avoidance and minimisation strategies.

9.0 ACTIONS TO AVOID/MINIMISE PROJECT IMPACTS

The principal means to reduce impacts on biodiversity within the study area has been to avoid and minimise removal of native vegetation and fauna habitat and to avoid the direct loss of significant biodiversity values and threatened matters. An Options Assessment for the consideration of alternative locations for the building enveloped and driveways was initially performed (Section 9.1). Subsequently, the potential impacts resulting from the proposed development have been broken down into two phases of activity: planning and detailed design and construction. Measures taken to date to avoid and minimise impacts have been summarised and recommendations to assist the proponent to design a development that further avoids and minimises are provided.

9.1 OPTIONS ASSESSMENT

Planning for the layout of the proposed development was guided by the Preliminary Contamination Assessment (JM Environmental, 2020). 21F contained highly disturbed vegetation and the location of the proposed plans was determined based on the combined findings of the Contamination Assessment, and in consultation with a civil engineer and Wildthing Environmental Consultants.

9.2 PLANNING AND DETAILED DESIGN

The proponent has considered biodiversity values present within the site in the planning and detailed design stages of the development layout to avoid, where possible, direct impacts to identified biodiversity values. The proposal has been positioned in consultation with Wildthing to avoid, where possible, biodiversity values. Native vegetation within the site has been subject to past disturbance and was found to be in a disturbed condition. The proposed layout was also drafted in consultation with the contamination assessment (JM Environmental, 2020) and civil engineer.

No further recommendations of avoidance/minimisation were relevant to this phase of the development. Assessment of the residual impact from the layout has been assessed within Section 10.

The final layout and location of the proposed development has not been able to completely avoid all biodiversity values. Biodiversity values which cannot be avoided within the scope of the development have been detailed within Section 10.

9.3 CONSTRUCTION

It is anticipated the proposed development will result in the construction of a paved and bunded overnight truck parking area and Onsite Stormwater Detention area within 21F. Construction of the

proposal will require removal of 0.1ha of native vegetation. No additional native vegetation is likely to be required to be removed within the development area.

Table 9.1 defines recommendations for further avoidance and minimisation strategies during the construction phase have been detailed below. The residual impact predicted to occur after considering the avoidance and minimisation strategy below has been detailed within Section 10.

Table 9.1: Further avoidance and minimisation strategies for the construction phase

Nature of Potential Impact	Avoidance/minimisation Strategy Proposed	Timing	Responsibility
Clearing of native vegetation	The clearing boundary should be clearly marked to avoid removal of additional native vegetation.	Prior to and during vegetation clearing	Construction site manager
Inadvertent impact to biodiversity values	Priority will be given during construction to avoid any inadvertent impact to significant biodiversity values within the study area. Avoidance measures should include the following: - all material stockpiles, vehicle parking and machinery storage will be located within cleared areas proposed for clearing, and not in areas of native vegetation that are to be retained; - implementation of temporary stormwater controls during construction and to ensure that discharges outside the development footprint are consistent with existing conditions and do not impact the stream located within the site.	Prior to and during vegetation clearing	Construction site manager
Clearing of fauna habitat, resulting in fauna injury and/or mortality	There are no habitat trees located within the site. Any animals injured during construction should be taken immediately to a Vet for treatment. Any animals suspected to require rehabilitation would be delivered post-veterinary care to an appropriate animal rehabilitator.	During vegetation clearing	Construction site manager
Salvage of significant habitat features	No significant habitat features, such as tree hollows and hollow logs were located within the development footprint.	N/A	N/A
Protection of natural water flow	No stream crossings are required.	N/A	N/A
Minimise weed infestations	The following measures should be implemented to prevent exotic plant material from entering/exiting the development area; - no imported/exported material to be permitted unless it has been inspected and confirmed to be free of dirt and mud which may contain weed seeds and vegetative material such as bulbs, root fragment, tubers or rhizomes; and - vehicles and machinery to be clean of soils, vegetation and seeds that have been brushed off or washed down prior to entering the study area - A clean down register to be maintained at the entry/exit of the study area	Prior to and during vegetation clearing	Site Manager

9.4 OPERATION

A table defining recommendations for further avoidance and minimisation strategies during the operation phase has been detailed below (Table 9.2). The residual impact predicted to occur after considering the avoidance and minimisation strategy above has been detailed within Section 10.

Table 9.2: Further avoidance and minimisation strategies for the operation phase

Nature of Potential Impact	Avoidance/minimisation Strategy Proposed	Timing	Responsibility
Avoiding operational impacts on flora and fauna	Vehicles should not drive off the designated parking area into vegetation within the study area to reduce impact to resident fauna and flora within the study area during the operations phase.	For life of operational phase	Site Manager
Assisting injured fauna	Any animals injured during operations should be taken immediately to the Motto Farm Veterinary Hospital for treatment. Any animals suspected to require rehabilitation would be delivered post-veterinary care to an appropriate animal rehabilitator associated with Wildlife in Need of Care Phone 1300 946 295).	For life of operational phase	Site Manager
Minimise weed infestations	The following measures should be implemented to prevent exotic plant material from entering/exiting the study area: - no imported/exported material to be permitted unless it has been inspected and confirmed to be free of dirt and mud which may contain weed seeds and vegetative material such as bulbs, root fragment, tubers or rhizomes; and - vehicles and machinery to be clean of soils, vegetation and seeds that have been brushed off or washed down prior to entering the study area A clean down register to be maintained at the entry of the study area - Trucks are not to drive off the designated parking area onto vegetation within the site	For life of operational phase	Site Manager
Treat existing weed infestations	As a part of maintenance within the study area any high threat weeds known to occur will be controlled in accordance with appropriate DPI guidelines. Guidelines for the treatment of high threat weeds can be sourced within the DPI website (DPI, 2018).	For life of operational phase	Site Manager
Reduce impacts of artificial lighting	Any artificial lighting used for security at night should be angled/directed downwards to avoid excessive light pollution affecting adjacent habitat.	For life of operational phase	Site Manager

9.5 MEASURES TO MAINTAIN OR IMPROVE HABITAT OF SPECIES CREDIT SPECIES THAT OCCUR ON SITE

Measures should be undertaken to improve vegetation within the study area, namely weed control targeting noxious weeds within the study area should be periodically undertaken.

10.0 ASSESSMENT OF RESIDUAL IMPACTS

In accordance with Section 9 of the BAM this section provides assessment of the extent of the residual impacts unable to be feasibly avoided and an assessment of the likelihood of residual indirect impacts which may occur after considering the avoidance and minimisation strategies proposed within Section 9.

10.1 DIRECT RESIDUAL IMPACTS

The construction phase of the proposed development has the potential to directly impact biodiversity values. This would occur through impacts such as vegetation clearance. These impacts will be permanent and will occur from the outset of the development works. Mitigation measures outlined in Section 9 above will help to minimise the potential impacts to biodiversity values that remain present within the study area.

The direct impacts arising from the project include:

- the removal of up to 0.1 ha of Vegetation Zone 1647_Disturbed;
- the removal of up to 0.1 ha of habitat assumed present for 1 Species Credit Species; *Uperoleia mahonyi*.

10.2 INDIRECT RESIDUAL IMPACTS

Indirect impacts occur when the proposal or activities relating to the construction or operation of the proposal affect native vegetation, threatened ecological communities and threatened species habitat beyond the development footprint. Impacts may also result from changes to land-use patterns. Table 10.1 provides an assessment of the potential indirect residual impacts on the study area and adjacent vegetation in accordance with Section 9.1.4.2 of the BAM.

Table 10.1: Indirect Impact Assessment

Indirect Impact	Assessment/ Likelihood of Occurrence
Inadvertent impacts on adjacent habitat or vegetation	The proposed development has the potential to result in inadvertent impacts on adjacent retained habitat or vegetation. However, the mitigation measures described above will minimise the likelihood of occurrence of this indirect impact during the construction phase of the project.
Reduced viability of adjacent habitat due to edge effects	The proposal will likely result in an increase in edge effects impacting upon retained vegetation patches as it will result in new environmental conditions to develop along the edges of cleared environments. It is considered that establishment of weeds and modification of habitat attributes (i.e. noise and water runoff) are the most likely tangible impacts that may arise from the proposal. Such conditions often result in the simplification of biodiversity values. Although native vegetation within the study area was in a disturbed condition, the proposed development has the potential to increase edge effects to surrounding native vegetation.
Reduced viability of adjacent habitat due to noise, dust or light spill	The proposal has the potential to result in impact to fauna habitat due to noise and light spill from the

Indirect Impact	Assessment/ Likelihood of Occurrence
	proposal, however this is not expected to have a significant impact.
Transport of weeds and pathogens from the site to adjacent vegetation	The proposal has the potential to result in an increase of weed spread within the study area and adjacent vegetation. However, the mitigation measures described above will minimise the likelihood of occurrence of this indirect impact during the construction phase of the project.
Increased risk of starvation, exposure and loss of shade or shelter	This is unlikely to occur as the proposed development will not substantially modify vegetation within the study area or surrounding habitat such that a significant loss in foraging, hunting and shelter resources would occur.
Loss of breeding habitats	The proposal is not likely to result in the loss of breeding habitats.
Trampling of threatened flora species	Staff access to native vegetation located within 21F should be minimised. The proposal is unlikely to have a significant impact on threatened flora species from trampling.
Inhibition of nitrogen fixation and increased soil salinity	The proposal will not result in the removal of a substantial area of native vegetation, there are also large patches of vegetation, both within and adjacent to the study area, that will not be impacted. As such it is not considered likely that nitrogen fixation or soil salinity will be impacted.
Fertiliser drift	The proposal is unlikely to increase fertiliser drift within the study area.
Rubbish dumping	Appropriate waste disposal practices are to be observed during the construction and operational phases of the proposed development. Adequate waste disposal areas such as bins are to be provided for staff.
Wood collection	The proposal is unlikely to increase wood collection within the study area
Bush rock removal and disturbance	The proposal is unlikely to increase bush rock removal or disturbance within the study area.
Increase in predatory species populations	There is no proposed change to land use that will likely lead to an increase in predatory species populations.
Increase in pest animal populations	There is no proposed change to land use that will likely lead to an increase in pest animal populations.
Increased risk of fire	There is no proposed change to land use that will likely lead to an increased risk of fire.
Disturbance to specialist breeding and foraging habitat, e.g. Beach nesting for shorebirds	No specialist breeding habitat occurs within the development area.
Fragmentation of movement corridor.	It is recommended that no barbed-wire fencing be used as a result of the proposal.

10.3 PRESCRIBED IMPACTS

Prescribed impacts are the impacts on biodiversity values which are not related to, or are in addition to, native vegetation clearing and habitat loss (Section 6.7 of the BAM). In general, these types of impacts identify habitat or features of the environment that are irreplaceable. Assessment of prescribed biodiversity impacts are outlined and addressed in Table 10.2 below.

Table 10.2 Prescribed Impacts Assessment

Prescribed impact	Assessment / likelihood of occurrence
Impacts of development on the habitat of threatened species or ecological communities associated with karst, caves, crevices, cliffs and other features of geological significance.	No karst, caves, crevices, cliffs and other features of geological significance will be impacted by the proposed works.
Impacts of development on the habitat of threatened species or ecological communities associated with rocks.	The proposal is unlikely to increase rock removal or disturbance within the study area.
Impacts of development on the habitat of threatened species or ecological communities associated with human made structures.	No human made structures likely to provide habitat for threatened species will be impacted by the proposed development.
Impacts of development on the habitat of threatened species or ecological communities associated with non-native vegetation.	Non-native vegetation within the development area study area was composed primarily of weeds such as Coolatai Grass. This vegetation type is well represented within the wider landscape and is unlikely to provide significant habitat resources for a specific resident population of threatened fauna or flora.
Impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range.	As outlined in Table 10.1 the proposed development is unlikely to result in inducing vegetation fragmentation or impacting the connectivity of different areas of habitat.
Impacts of the development on movement of threatened species that maintains their life cycle	The movement of threatened species throughout the study area is not expected to be adversely affected given the recommendations of avoidance and minimisation of impacts within Section 9.
Impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities (including subsidence or upsidence resulting from underground mining or other development)	There are no waterbodies within the vicinity of the study area. The proposal is unlikely to impact water quality within the study area. An onsite stormwater detention area is proposed to be constructed within 21F to collect excess stormwater generated by the proposal.
Impacts of wind turbine strikes on protected animals	N/A
Impacts of vehicle strikes on threatened species of animals or on animals that are part of a TEC	Vehicle strikes on threatened species have the potential to occur from the increased amount of vehicle traffic which will arise within the study area.

10.4 IMPACTS TO GROUNDWATER DEPENDENT ECOSYSTEMS

The study area is not mapped as being a ground water dependant ecosystem (BoM 2020) or associated with a known aquifer.

The NSW DPI step by step guide for assessing a proposal against the NSW Aquifer Interference Policy states: *If an activity is not defined as an aquifer inference activity, then assessment is not required under the Aquifer Interference Policy.*

The Water Management Act defines an aquifer interference activity as an activity involving any of the following:

- The penetration of an aquifer.

- The interference with water in an aquifer.
- The obstruction of the flow of water in an aquifer.
- The taking of water from an aquifer in the course of carrying out mining, or any other activity prescribed by the regulations., and/or the disposal of that water.

The proposed development is not associated with any mapped Groundwater Dependent Ecosystems (GDEs), nor will it require significant subsurface penetration or aquifer interference activity and as such, will not impact upon GDEs.

10.5 SERIOUS AND IRREVERSIBLE IMPACTS (SAII)

The principles used to determine if a development will have serious and irreversible impacts, include impacts that:

- Will cause a further decline of the species or ecological community that is currently observed, estimated, inferred, or reasonably suspected to be in a rapid rate of decline, or
- Will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred, or reasonably suspected to have a very small population size;
- Impact on the habitat of a species or ecological community that is currently observed, estimated, inferred, or reasonably suspected to have a very limited geographic distribution, or
- Impact on a species or ecological community that is unlikely to respond to measures to improve habitat and vegetation integrity and is therefore irreplaceable.

No threatened matter consistent with a SAII candidate species identified as likely to occur or to contain significant habitat within the study area is likely to be impacted by the proposed development

10.6 ADAPTIVE MANAGEMENT STRATEGY

No adaptive management strategy is proposed for the development.

11.0 BIODIVERSITY CREDITS

This section outlines the thresholds for assessment and offsetting in accordance with Section 10 of the BAM.

11.1 IMPACTS ON VEGETATION ZONES NOT REQUIRING OFFSETS

A 0.1ha area of PCT 1647_Disturbed (Vegetation Integrity Score – 12.1) was present within the development area. As outlined in Section 10.3.1 of the BAM, offset credit value under the BOS is required to be determined for all impacts of development on vegetation zones that have a vegetation integrity score of:

- ≥ 15 where the PCT is representative of an endangered or critically endangered ecological community, or
- ≥ 17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits), or is representative of a vulnerable ecological community, or
- ≥ 20 where the PCT is not representative of a TEC or associated with threatened species habitat.

Vegetation zone 1647_Disturbed is not a TEC, however it is associated with some threatened species habitat. As stated in Section 6.3 of this report, with a vegetation integrity score of 12.1 (i.e. ≤ 17), offsetting for this vegetation zone is not required.

11.2 IMPACTS REQUIRING OFFSETS UNDER THE BIODIVERSITY OFFSETS SCHEME

The following Sections provide a breakdown of the credit requirement for the proposed development in accordance with Section 10 of the BAM.

11.2.1 ECOSYSTEM CREDITS

The PCTs and vegetation zones requiring offset credits and the ecosystem credits required are documented in Table 11.1. A copy of the BAM Credit Summary Report is contained in Appendix F.

Table 11.1: Summary of ecosystem credits required.

Zone	Vegetation Zone Name	Total Area Proposed for Removal (ha)	Vegetation Integrity loss/gain	Ecosystem Credits
1	1647_Disturbed	0.1	12.1	0

11.2.2 SPECIES CREDIT SPECIES CREDITS

An offset is required for the threatened species impacted by the development that require species credits. These species and the species credits required are documented in Table 11.2.

Table 11.2 Species credit species that require offsets

Species credit Species	Biodiversity Risk Weighting	Area of habitat or count of individuals lost	Species credits required
<i>Uperoleia mahonyi</i>	2	0.1 ha	1

A total of the offset credits required to be retired, as generated by the BAM-CC, has been provided in Appendix F of this report.

11.3 OFFSETTING OF BIODIVERSITY CREDITS

The credits will be offset by payment into the Biodiversity Conservation Fund (BCF) to satisfy an offset obligation.

12.0 ASSESSMENT OF OTHER BIODIVERSITY LEGISLATION

12.1 CONSIDERATIONS UNDER THE PORT STEPHENS COMPREHENSIVE KOALA PLAN OF MANAGEMENT

The Port Stephens Comprehensive Koala Plan of Management (CKPoM) has been prepared for the Port Stephens LGA in accordance with SEPP 44 – ‘Koala Habitat Protection’. The principle aim of the Port Stephens CKPoM is to encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas to ensure a permanent free-living population over their present range and to reverse the current trend of Koala population decline.

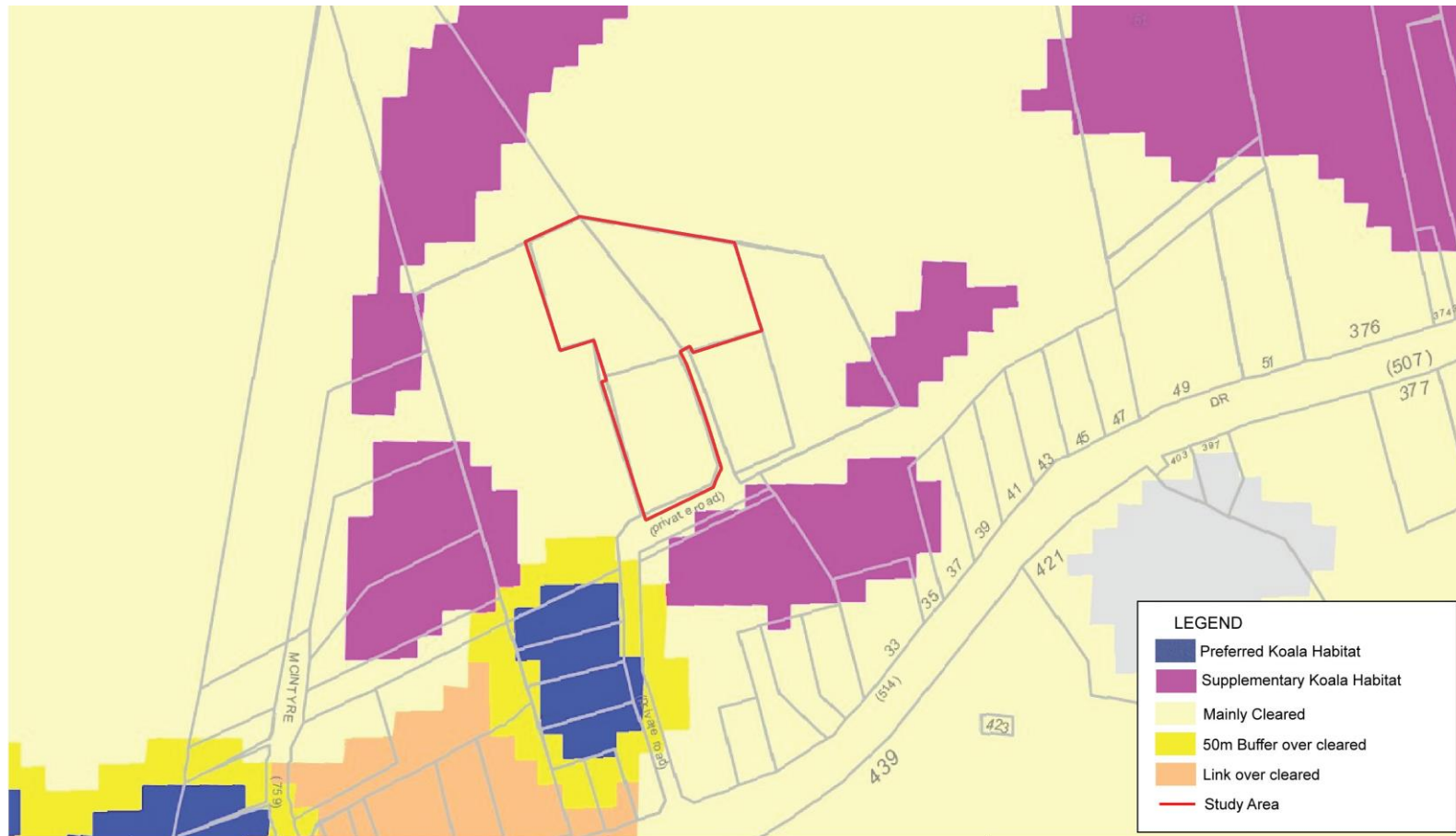
Koala Habitat Assessments under the Port Stephens CKPoM involve four stages: preliminary assessment, vegetation mapping, Koala habitat identification and assessment of the proposal. A Koala habitat assessment has been completed below specifically for the development of this site.

12.1.1 PRELIMINARY ASSESSMENT

The preliminary assessment for the site involves reviewing the Koala Habitat Planning Map for the area as contained in the CKPoM and undertaking a site inspection to determine whether the site contains individuals of Koala trees outside areas marked as ‘Preferred Koala Habitat’. Review of Koala Habitat Planning Map – June 2001 (Figure 12.1) showed the study area to contain only one Koala habitat category:

- ‘Mainly Cleared’

Within the CKPoM there are three species of Eucalypt identified as Koala food trees, being *Eucalyptus robusta* (Swamp Mahogany), *Eucalyptus parramattensis* subsp. *decadens* (Drooping Red Gum) and *Eucalyptus tereticornis* (Forest Red Gum). No Preferred Koala Feed Tree Species were present within the study area. The study area was found to be void of trees.



Job Ref	12490
A4 Scale	1:5000

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information portrayed is free from error or omission. In addition the spatial accuracy of the map is wholly dependant on source data. Please verify the accuracy of all information prior to use. Development footprint areas should be used for indicative areas only.

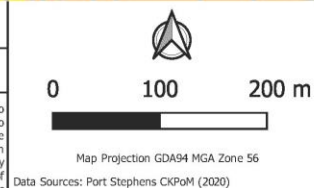


Figure 12.1

**Port Stephens Council
Koala Planning Map**

21D & 21F School Drive
TOMAGO, NSW

July 2020

WILDTHING
Environmental Consultants
(a Division of Tattersall Lander Pty Ltd)
ABN 41 003 509 215

12.1.2 VEGETATION MAPPING

The CKPoM has identified the entire site as containing 'Mainly Cleared Habitat' the next step in the Koala Habitat Assessment is to provide a description of the vegetation assemblages present on site and to compare the results of the vegetation survey conducted for this report with the LGA wide vegetation map (Figure 2.4 - 'Western Section Vegetation' in Part 2 of the Port Stephens CKPoM).

As detailed in Section 5.0 only three vegetation assemblages within the study area:

- PCT 1647 - Red Bloodwood – Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast_(Disturbed);
- Introduced Grassland;
- Planted Garden.

Review of the relevant LGA vegetation map (Figure 2.5 in Part 2: CKPoM Resource Document) showed vegetation on the site as being composed of one vegetation assemblages:

- Map Unit 25 – Mainly Cleared (some trees).

The field survey map largely agreed with the LGA vegetation map. The area containing PCT 1647 although containing some native species in the form of shrubs and a small number of groundcovers species, no trees were present.

12.1.3 KOALA HABITAT IDENTIFICATION

Koala Habitat Identification involves:

- (i) the application of the definitions of Preferred and Supplementary Koala Habitat detailed by Lunney *et al.* (1998) to the study area;

The definitions provided by Lunney *et al.* (1998) are as follows:

- Preferred Koala Habitat - a combination of field survey Primary or Secondary and Community Survey category A/B (regardless of whether or not they overlap).
- Supplementary Koala Habitat - where field survey Marginal and community survey category C/D overlap
- Marginal Koala Habitat - where field survey Marginal and community survey category E overlap

As no trees were present PCT 1647 was consistent with Category Excluded. According to the LGA Koala Habitat Planning Map this area could not be categorised as marginal due to the high disturbance and absence of trees.

12.1.4 ASSESSMENT OF THE PROPOSAL

There are eight performance criteria applied to developments proposed on sites that contain or are adjacent to 'Preferred Koala Habitat', 'Supplementary Koala Habitat', 'Habitat Buffers', 'Habitat Linking Areas' or areas that contain preferred Koala food tree species. Each criterion is displayed below in italics followed by the site-specific answer.

The proposed development must:

a) *Minimise the removal or degradation of native vegetation within Preferred Koala Habitat or Habitat Buffers;*

The impact of the development area will not result in the removal of any area of preferred Koala Habitat.

b) *Maximise retention and minimise degradation of native vegetation within Supplementary Koala Habitat and Habitat Linking Areas;*

The impact of the development area will not result in the removal of any area of Supplementary Koala Habitat and Habitat Linking Areas.

c) *Minimise the removal of any individuals of Koala feed trees where ever they occur on a development site. In the Port Stephens LGA these tree species are Eucalyptus robusta (Swamp Mahogany), Eucalyptus parramattensis (Parramatta Red Gum) and Eucalyptus tereticornis (Forest Red Gum).*

No Preferred Koala Feed Tree species or any tree species was present within the study area.

d) *Make provisions, where appropriate, for restoration and rehabilitation of areas identified as Koala Habitat including Habitat Buffers and Habitat Linking Areas over mainly cleared land;*

No areas of habitat should require restoration and rehabilitation.

e) *Make provision for long term management and protection of Koala Habitat including both existing and restored habitat;*

No areas are likely to require management.

f) *Not compromise the potential for safe movement of Koalas across the site. This should include the maximum tree retention generally and minimising the likelihood that the proposal would result in the creation of barriers to Koala movement, such as would be imposed by certain types of fencing;*

The proposal is not likely to further compromise the potential for safe movement of Koalas.

g) *Be restricted to identified envelopes which contain all buildings and infrastructure and fire fuel reduced zones;*

No Koala habitat will be impacted.

h) *Include measures to effectively minimise the threat posed to Koalas by dogs and motor vehicles by adopting minimum standards;*

The proposed project may result in an increased use of motor vehicles within the site. Speed limit within the site should be restricted to 20km/h in order to minimise the risk of injury or fatality to any koalas as a result of motor vehicles.

12.2 NSW BIOSECURITY ACT 2015

Four priority weed species listed under the Biosecurity Act 2015 were identified on site and are listed below in Table 12.1. The site lies within the Hunter Local Land Services Region.

Table 12.1: Priority Weed species found within the study area.

WEED SPECIES	LEGAL REQUIREMENTS	ADDITIONAL SIGNIFICANCE
<i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i> (Bitou Bush)	General Biosecurity Duty Prohibition on dealings Biosecurity Zone	T, N
<i>Cortaderia species</i> (Pampas Grass)	General Biosecurity Duty Regional Recommended Measure	
<i>Lantana camara</i> (Lantana)	General Biosecurity Duty Prohibition on dealings	T, N
<i>Senecio madagascariensis</i> (Fireweed)	General Biosecurity Duty Prohibition on dealings	N

T – Listed as a Threatening Process under the NSW BC Act 2016.

N – Weed of National Significance.

*Priorities under the Biosecurity Act 2015

General Biosecurity Duty - any person dealing with plant matter must take measures to prevent, minimise or eliminate the biosecurity risk (as far as is reasonably practicable).

Prohibition on dealings - Must not be imported into the State or sold

Biosecurity Zone - Within the Biosecurity Zone this weed must be eradicated where practicable, or as much of the weed destroyed as practicable, and any remaining weed suppressed. The local control authority must be notified of any new infestations of this weed within the Biosecurity Zone

Regional Recommended Measure - 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. Core infestation area: Land managers should mitigate spread from their land. Land managers to reduce impacts from the plant on priority assets.

It is recommended that these priority weeds as well as other introduced species be controlled as part of routine weed control within the study area.

12.3 COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

Considerations have been made to the Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999. Assessments have been made to determine whether or not the proposal or activity has, will have, or is likely to have a significant impact on a matter of National Environmental Significance. The matters of National Environmental Significance and the appropriate responses are listed below:

- *World Heritage properties;*

The study area is not affected by World Heritage listing, nor is it likely to impact upon any World Heritage area.

- *wetlands recognised under the Ramsar convention as having international significance;*

The study area is located north of the Hunter Estuary Wetlands Ramsar site. The proposed project is not likely to have a significant impact on this Ramsar site.

- *listed threatened species and communities;*

Four nationally threatened ecological communities were recorded on the DAWE database as having potential to occur within 10km of the site, these being:

- Central Hunter Valley eucalypt forest and woodland;
- Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community;
- Lowland Rainforest of Subtropical Australia;
- Subtropical and Temperate Coastal Saltmarsh.

The ecological community located within the site was not consistent with any nationally listed threatened ecological communities.

Forty-six nationally threatened species were recorded on the DAWE database as occurring or having potential habitat available within 10km of the site, these being:

<i>Caladenia tessellata</i>	Thick-lipped Spider Orchid
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid
<i>Diuris praecox</i>	Newcastle Doubletail
<i>Phaius australis</i>	Lesser Swamp Orchid
<i>Prasophyllum</i> sp. <i>Wybong</i>	a Leek Orchid
<i>Pterostylis gibbosa</i>	Illawarra Greenhood
<i>Dichanthium setosum</i>	Bluegrass
<i>Angophora inopina</i>	Charmhaven Apple
<i>Eucalyptus camfieldii</i>	Camfield's Stringybark
<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	Earp's Gum
<i>Melaleuca biconvexa</i>	Biconvex Paperbark
<i>Syzygium paniculatum</i>	Magenta Lillypilly
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Small-flower Grevillea
<i>Grevillea shiressii</i>	
<i>Commersonia prostrata</i>	Dwarf Kerrawang

<i>Rutidosis heterogama</i>	Heath Wrinklewort
<i>Tetralthea juncea</i>	Black-eyed Susan
<i>Asperula asthenes</i>	Trailing Woodruff
<i>Cynanchum elegans</i>	White-flowered Wax Plant
<i>Persicaria elatior</i>	Tall Knotweed
<i>Synemon plana</i>	Golden Sun Moth
<i>Heleioporus australiacus</i>	Giant Burrowing Frog
<i>Litoria aurea</i>	Green and Golden Bell Frog
<i>Mixophyes balbus</i>	Stuttering Frog
<i>Calidris canutus</i>	Red Knot,
<i>Calidris ferruginea</i>	Curlew Sandpiper
<i>Calidris tenuirostris</i>	Great Knot
<i>Charadrius leschenaultia</i>	Greater Sand Plover
<i>Charadrius mongolus</i>	Lesser Sand Plover
<i>Sternula nereis nereis</i>	Australian Fairy Tern
<i>Thinornis rubricollis rubricollis</i>	Hooded Plover (eastern)
<i>Numenius madagascariensis</i>	Eastern Curlew
<i>Rostratula benghalensis australis</i>	Australian Painted Snipe
<i>Botaurus poiciloptilus</i>	Australasian Bittern
<i>Lathamus discolor</i>	Swift Parrot
<i>Anthochaera phrygia</i>	Regent Honeyeater
<i>Grantiella picta</i>	Painted Honeyeater
<i>Hirundapus caudacutus</i>	White-throated Needletail
<i>Erythrorhynchus radiates</i>	Red Goshawk
<i>Dasyurus maculatus maculatus</i>	Tiger Quoll
<i>Phascogalea cinerea</i>	Koala
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo
<i>Petaurideus volans</i>	Greater Glider
<i>Psuedomys novaehollandiae</i>	New Holland Mouse
<i>Pteropus poliocephalus</i>	Grey-headed Flying-Fox
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat

Under the EPBC Act Policy Statement 1.1 – Significant Impact Guidelines (DEWHA, 2009) an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of an important population of a species;
- reduce the area of occupancy of an important population;
- fragment an existing important population into two or more populations;
- adversely affect habitat critical to the survival of a species;
- disrupt the breeding cycle of an important population;
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;
- introduce disease that may cause the species to decline; or
- interfere substantially with the recovery of the species.

No nationally listed species were recorded on site during surveys. Although degraded, 21F was also considered to contain some suitable habitat for *Psuedomys novaehollandiae* which has been recorded nearby (Wildthing Environmental Consultants, 2013). No other nationally listed species were recorded within the study area.

Psuedomys novaehollandiae

The proposal requires the removal of 0.1ha of degraded PCT 1647 which fringes a larger area of vegetation within the locality. The site has previously been fenced for security, however would still allow the movement of this species between vegetation within the study area and vegetation within the wider landscape. The proposal is unlikely to disrupt the lifecycle of this small mammal species and place local populations in extinction. Significant impact is unlikely to result from the proposed development.

- *migratory species protected under international agreements;*

The site was considered to not contain suitable habitat for marine migratory species and have therefore not been addressed. Thirty-five nationally listed migratory bird species were recorded on the DAWE on-line database as occurring or having potential habitat available within 10km of the study area, these being:

Migratory Terrestrial Species:

- *Cuculus optatus* (Oriental Cuckoo)
- *Hirundapus caudacutus* (White-throated Needletail)
- *Monarcha melanopsis* (Black-faced Monarch)
- *Monarcha trivirgatus* (Spectacled Monarch)
- *Motacilla flava* (Yellow Wagtail)
- *Myiagra cyanoleuca* (Satin Flycatcher)
- *Rhipidura rufifrons* (Rufous Fantail)

Migratory Wetland Species:

- *Actitis hypoleucos* (Common Sandpiper)
- *Arenaria interpres* (Ruddy Turnstone)
- *Calidris acuminata* (Sharp-tailed Sandpiper)
- *Calidris canutus* (Red Knot)
- *Calidris ferruginea* (Curlew Sandpiper)
- *Calidris melanotos* (Pectoral Sandpiper)
- *Calidris ruficollis* (Red-necked Stint)
- *Calidris tenuirostris* (Great Knot)
- *Charadrius bicinctus* (Double-banded Plover)
- *Charadrius leschenaultia* (Greater Sand Plover)
- *Charadrius mongolus* (Lesser Sand Plover)
- *Charadrius mongolus* (Latham's Snipe)
- *Gallinago hardwickii* (Swinhoe's Snipe)
- *Gallinago megala* (Pin-tailed Snipe)
- *Gallinago stenura* (Broad-billed Sandpiper)
- *Limicola falcinellus* (Bar-tailed Godwit)
- *Limosa lapponica* (Black-tailed Godwit)
- *Limosa limosa* (Eastern Curlew)
- *Numenius madagascariensis* (Little Curlew)
- *Numenius minutus* (Whimbrel)
- *Numenius phaeopus* (Osprey)
- *Pandion haliaetus* (Ruff)
- *Philomachus pugnax* (Pacific Golden Plover)
- *Pluvialis fulva* (Grey Plover)
- *Pluvialis squatarola* (Grey-tailed Tattler)

- *Tringa brevipes* (Common Greenshank)
- *Tringa nebularia* (Marsh Sandpiper)
- *Tringa stagnatilis* (Terek Sandpiper)

The site would provide areas of suitable habitat for a number of the migratory species assessed.

Under the EPBC Act Policy Statement 1.1 – Significant Impact Guidelines (Department of the Environment, Water, Heritage and the Arts, 2009) an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species.
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or
- Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

Considering the overall commonality of the migratory species recorded within local area and the relatively small impact on habitat in the locality it is unlikely that any of the listed migratory species would be significantly impacted by the development.

- *nuclear activities;*

The proposal does not involve any type of nuclear activity.

- *the Commonwealth marine environment;*

The proposal does not involve the modification of the Commonwealth marine environment.

12.3.1 EPBC ACT REFERRAL GUIDELINES FOR THE VULNERABLE KOALA

The proposal requires the removal of 0.1ha of degraded PCT 1647 vegetation from the study area. No Eucalypt tree or any tree species was located within the study area. No species located within the vegetation community present within the study area were considered a 'Tree' under the Native Species Growth Form list available on the BAMCC website (Bionet, 2020). As no habitat suitable for Koala was located within the study area, it is considered that referral is not recommended for adversely affecting habitat critical to the survival of the Koala.

13.0 CONCLUSION

This Biodiversity Development Assessment Report (BDAR) has been prepared to address requirement No. 10 of the Secretary's Environmental Assessment Requirements (SEARs) for a proposed Resource Recovery Facility at 21D, 21F and part 35A School Drive, Tomago NSW.

This BDAR has been prepared in accordance with the Biodiversity Assessment Methodology (BAM) (OEH 2017) by Wildthing Environmental Consultants to identify the potential impacts of the proposed development on biodiversity values within the subject site.

This assessment has been completed in accordance with the Biodiversity Assessment Method (BAM) and includes:

Stage 1 – Biodiversity Assessment

- assessment of site context features,
- assessment of native vegetation; and
- assessment of threatened species and populations

Stage 2 – Impact Assessment

- avoid and minimise impacts on biodiversity values,
- consider impact and offset thresholds; and
- determine and calculate offset requirements

In addition, assessment was also undertaken having regard to Matters of National Environmental Significance (MNES) listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), the NSW Biosecurity Act 2015 and relevant State Environmental Planning Policies.

The study area (Lot 11 DP 270328, Lot 8 DP 270328 and a portion of Lot 301 DP 634536) was 4.09ha. It is proposed a Resource Recovery Facility be established within existing buildings on 21D School Drive, a paved and bunded overnight truck parking area and Onsite Stormwater Detention area be constructed on 21F School Drive and a parking and turning bay is also proposed for part 35A School Drive. Impact to vegetation was confined to 21F School Drive, Tomago.

Taking into consideration the native species composition within the site and that occurring within the locality One Plant Community Types (PCT) was determined to be present, being PCT 1647 – Red Bloodwood – Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast. PCT 1647 occurring within 21F was found to be highly disturbed and consisted of a few native shrubs with a largely introduced groundcover. No upper stratum was present. This PCT was uniform in condition within the site and did not require further stratification into vegetation zones. The PCT was given the Vegetation Zone name PCT 1647_Disturbed.

The development footprint has been positioned on an area of land that has been subject to a number of disturbances from past industrial development activities.

The direct impacts arising from the project include:

- the removal of up to 0.1 ha of Vegetation Zone PCT 1647_Disturbed;
- the removal of up to 0.1 ha of habitat assumed present for 1 Species Credit Species *Uperoleia mahonyi*.

Considerations have been made to the Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act (1999). It was determined that there would be not significant matters of national significance and no referrals should be required.

No Ecosystem Credits are required to be retired as a vegetation integrity score of 12.1 (i.e. ≤ 17) was given for the PCT zone 1647 located within the study area.

Due to time constraints, a total of one Species Credit Species was assumed present within the study area as fieldwork for this BDAR was undertaken outside of the survey period for these species. Species Credits required to be retired to offset the impacts of the project include:

- 1 species credit for impacts on *Uperoleia mahonyi*

To avoid and minimise potential impacts of the project on biodiversity, a series of mitigation and management measures have been identified and detailed within this report.

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APPENDIX A

TOTAL FLORA LIST

Introduced species are indicated by an asterisk (“*”).

The following standard abbreviations are used to indicate subspecific taxa:

- subsp.** subspecies
- var.-** variety
- x -** hybrid between the two indicated species

Threatened Species - NSW Biodiversity Conservation Act 2016 (BC Act)

- V** Vulnerable
- E1** Endangered
- E2** Endangered Population
- E4A** Critically Endangered Population

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

- V** Vulnerable
- E** Endangered
- CE** Critically Endangered

Serious and Irreversible Impact SAIL

Regional Significance (Hunter Rare Plants Database – Version 1 2003)

- L** endemic to Hunter Region
- DA** disjunct in the Hunter Region, rare or localized (aggregated)
- DB** disjunct in the Hunter Region, widespread and uncommon (broad)
- R** rare but extends beyond the Hunter Region
- U** everywhere uncommon
- N** at northern distributional limit in the Hunter
- E** at eastern distributional limit in the Hunter
- S** at southern distributional limited in the Hunter
- W** at western distributional limited in the Hunter
- T** may be threatened in the Hunter Region
- S** Probably secure in the Hunter Region

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SERIOUS AND IRREVERSIBLE IMPACT	REGIONALLY SIGNIFICANT	FLOWERING PERIOD
CLASS FILICOPSIDA (Ferns)						
Adiantaceae syn. Sinopteridaceae						
<i>Pellaea falcata</i> subsp. <i>falcata</i>	Sickle Fern					
Dennstaedtiaceae						
<i>Pteridium esculentum</i>	Bracken					
MAGNOLIOPSIDA: Magnoliidae						
LILOPSIDA: (Monocotyledons)						
Cyperaceae						
* <i>Cyperus brevifolius</i>	Mullumbimby Couch					
<i>Cyperus difformis</i>	Dirty Dora					
Juncaceae						
* <i>Juncus acutus</i>	Spiny Rush					
Lomandraceae						
<i>Lomandra glauca</i>	Pale Mat-rush					
<i>Lomandra longifolia</i>	Spiny Mat Rush					Sept
Phormiaceae						
<i>Dianella caerulea</i> var. <i>producta</i>	Blue Flax-lily					
Poaceae						
* <i>Andropogon virginicus</i>	Whisky Grass					
* <i>Anthoxanthum odoratum</i>	Sweet Vernal Grass					
* <i>Avena fatua</i>	Wild Oats					
* <i>Axonopus fissifolius</i>	Narrow-leaved Carpet Grass					
* <i>Briza maxima</i>	Quaking Grass					
* <i>Bromus catharticus</i>	Prairie Grass					
* <i>Cenchrus clandestinus</i> syn <i>Pennisetum clandestinum</i>	Kikuyu					
* <i>Chloris gayana</i>	Rhodes Grass					
* <i>Cortaderia selloana</i>	Pampas Grass					

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SERIOUS AND IRREVERSIBLE IMPACT	REGIONALLY SIGNIFICANT	FLOWERING PERIOD
<i>Cynodon dactylon</i>	Common Couch					
<i>Digitaria parviflora</i>	Smallflower Fingergrass					
* <i>Ehrharta erecta</i>	Panic Veldt Grass					
* <i>Eragrostis curvula</i>	African Lovegrass					
* <i>Eragrostis tenuifolia</i>	Elastic Grass					
* <i>Hyparrhenia hirta</i>	Coolatai Grass					Sept
<i>Imperata cylindrica</i> var. <i>major</i>	Blady Grass					
* <i>Lolium perenne</i>	Perennial Ryegrass					
* <i>Megathyrsus maximus</i> syn. <i>Panicum maximum</i>	Guinea Grass					
* <i>Melinis repens</i>	Red Natal Grass					
<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Meadow Grass					
* <i>Paspalum dilatatum</i>	Paspalum					
* <i>Setaria gracilis</i>	Slender Pigeon Grass					
MAGNOLIIDAE (Dicotyledons)						
Apiaceae						
<i>Centella asiatica</i>	Indian Pennywort					
Apocynaceae						
<i>Parsonsia straminea</i> var. <i>straminea</i>	Common Silkpod/Monkey Rope				W?	
Asteraceae						
* <i>Ambrosia artemisiifolia</i>	Annual Ragweed					Noxious Weed
* <i>Ageratina adenophora</i>	Crofton Weed					Sept
* <i>Bidens pilosa</i>	Cobblers Pegs					
* <i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i>	Bitou Bush					
* <i>Cirsium vulgare</i>	Spear Thistle					Sept
* <i>Conyza bonariensis</i>	Flax-leaved Fleabane					
* <i>Conyza parva</i>	Whorled Fleabane					
* <i>Facelis retusa</i>	Facelis					
* <i>Heterotheca grandiflora</i>	Telegraph Weed					
* <i>Hypochaeris glabra</i>	Smooth Catsear					

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SERIOUS AND IRREVERSIBLE IMPACT	REGIONALLY SIGNIFICANT	FLOWERING PERIOD
<i>*Hypochaeris radicata</i>	Catsear, Flatweed					
<i>*Lactuca serriola</i>	Prickly Lettuce					
<i>*Senecio madagascariensis</i>	Fireweed					Sept, Oct
<i>Sigesbeckia orientalis</i>	Indian-Weed					
<i>*Soliva sessilis</i>	Jo-jo, Bindyi, Lawn Burweed					
<i>*Sonchus asper</i>	Prickly Sowthistle					
<i>*Sonchus oleraceus</i>	Common Sow Thistle					
<i>*Taraxacum officinale</i>	Dandelion					
Bignoniaceae						
<i>Pandorea pandorana</i>	Wonga-wonga Vine					
Brassicaceae						
<i>*Lepidium africanum</i>	Peppercress					
Campanulaceae						
Lobeliaceae						
<i>Lobelia purpurascens</i>	White Root					
Caryophyllaceae						
<i>*Petrohragia nanteuillii</i>	Proliferous Pink					Sept, Oct
<i>*Polycarpon tetraphyllum</i>	Fourleaf Allseed					
<i>*Stellaria media</i>	Common Chickweed					Aug, Sept
Chenopodiaceae						
<i>Chenopodium ambrosioides</i>	Mexican Tea					
Convolvulaceae						
<i>Dichondra repens</i>	Kidney Weed					
Euphorbiaceae						
<i>*Euphorbia peplus</i>	Petty Spurge					
<i>*Ricinus communis</i>	Castor Oil Plant					

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SERIOUS AND IRREVERSIBLE IMPACT	REGIONALLY SIGNIFICANT	FLOWERING PERIOD
Fabaceae Subfamily (Caesalpinioideae)						
<i>*Senna pendula</i> var. <i>glabrata</i>						
Fabaceae Subfamily (Faboideae)						
<i>Glycine clandestina</i> subsp. complex	Love Creeper					Sept
<i>Hardenbergia violacea</i>	False Sarsaparilla					Aug, Sept
<i>Kennedia rubicunda</i>	Dusky Coral Pea					Sept, Oct
<i>*Medicago polymorpha</i>	Burr Medic					
<i>*Melilotus indicus</i>	Hexham Scent					
<i>*Trifolium arvense</i>	Haresfoot Clover					
<i>*Trifolium campestre</i>	Hop Clover					Sept, Oct
<i>*Trifolium repens</i>	White Clover					Sept, Oct
<i>*Vicia sativa</i>	Common Vetch					
Fabaceae (Subfamily Mimosoideae)						
<i>Acacia longifolia</i>	Sydney Golden Wattle					
<i>Acacia saligna</i>	Golden Wreath Wattle					Aug, Sept
<i>Acacia suaveolens</i>	Sweet-scented Wattle					
<i>Acacia ulicifolia</i>	Prickly Moses					
Geraniaceae						
<i>Pelargonium australe</i>	Native Stocks-bill					
Lamiaceae						
<i>*Stachys arvensis</i>	Stagger Weed					
<i>Westringia fruticosa</i>	Coastal Rosemary					
Malvaceae						
<i>*Modiola carliniana</i>	Red-flowered Mallow					Sept
<i>*Pavonia hastata</i>	Pink Parvonia					
<i>*Sida rhombifolia</i>	Paddys Lucerne					
Myrtaceae						
<i>Leptospermum laevigatum</i>	Coastal Tea-tree					

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SERIOUS AND IRREVERSIBLE IMPACT	REGIONALLY SIGNIFICANT	FLOWERING PERIOD
Oxalidaceae						
<i>Oxalis corniculata</i>	Creeping Oxalis					
Phytolaccaceae						
* <i>Phytolacca octandra</i>	Inkweed					
Pittosporaceae						
<i>Billardiera scandens</i>	Apple Dumplings					Sept
Plantaginaceae						
* <i>Plantago lanceolata</i>	Plantain					
Primulaceae						
* <i>Lysimachia arvensis</i> syn. <i>Anagallis arvensis</i>	Scarlet Pimpernel					
Proteaceae						
<i>Banksia sp.</i> cultivar	Heath-leaved Banksia					
Rubiaceae						
* <i>Richardia humistrata</i>						
Scrophulariaceae						
* <i>Verbascum virgatum</i>	Twiggy Mullein					
Solanaceae						
* <i>Solanum mauritianum</i>	Wild Tobacco					
* <i>Solanum nigrum</i>	Blackberry Nightshade					
Verbenaceae						
* <i>Lantana camara</i>	Lantana					Noxious
* <i>Verbena bonariensis</i>	Purple Top					
* <i>Verbena rigida</i> var. <i>rigida</i>	Veined Verbena					

APPENDIX B

TOTAL FAUNA LIST

VERTEBRATE FAUNA LIST

Family sequencing and taxonomy follow for each fauna class:

Fish

Allen, G.R., Midgley, S.H. & Allen, M. (2002). *Field Guide to the Freshwater Fishes of Australia*. Western Australian Museum, Perth.

Herpetofauna

Cogger, H.G. (2014). *Reptiles and Amphibians of Australia* (7th edn.). CSIRO Publishing.

Birds

Pizzey and Knight (2012)(9th edn).

Mammals

Van Dyck, S. and Strahan, R. (Ed) (2008). *The Mammals of Australia* (3rd edn). New Holland Publishers, Australia –

Churchill, S. (2008). *Australian Bats*. (2nd edn.). Allen & Unwin Australia.

(?) - Indicates a species identified without certainty or to a Genus level only.

* - Indicates an introduced species.

Threatened species addressed within this assessment appear in **bold** font.

Introduced species are indicated by an asterisk (“*”).

The following standard abbreviations are used to indicate subspecific taxa:

subsp. -subspecies

var.- variety

x - hybrid between the two indicated species

Biodiversity Conservation Act 2016 (BC Act)

V Vulnerable

E1 Endangered

E2 Endangered Population

E4A Critically Endangered Population

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

V **Vulnerable**

E **Endangered**

CE **Critically Endangered Population**

M **Migratory**

Regionally Significant Fauna Species.

+ Region includes Gosford, Wyong, Cessnock, Maitland, Lake Macquarie, Newcastle and Port Stephens LGA's. Produced from Stage 1 of the LHCCREMS – Regional Biodiversity Conservation Strategy.

Observation Type

O - Observed (sighted)

W - Heard call

OW – Observed and heard call

X - In scat

P – Scat

T - Trapped or netted

H – Hair, feathers or skin

A - Stranded/Beached

G – Crushed cones

R – Road Kill

D – Dog Kill

Q – Camera

C – Cat Kill

V – Fox Kill

K – Dead

S – Shot

I – Fossil/subfossil

FB – Burrow

F – Tracks, scratching

Z – In raptor/owl Pellet

U – Ultrasonic recording

M - Miscellaneous

E – Nest/roost

B - Burnt

Y – Bones, teeth or shell

N – Not located

AR – Acoustic Recording

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	REGIONALLY SIGNIFICANT	OBSERVATION TYPE
Phylum - Chordata					
Subphylum - Vertebrata					
Class Reptilia - Reptiles					
Order Squamata – Lizards and Snakes					
Suborder Sauria - Lizards					
Family Scinidae - Skinks					
<i>Ctenotus robustus</i>	Striped Skink				O
Class Aves - Birds					
Family Falconidae - Falcons					
<i>Falco cenchroides</i>	Nankeen Kestrel				O
Family Charadriidae Plover, Dotterels, Lapwings					
<i>Vanellus miles</i>	Masked Lapwing				O
Family Cacatuidae - Cockatoos and Corellas					
<i>Cacatua roseicapilla</i>	Galah				O
Family Psittacidae - Parrots, Rosellas and Lorikeets					
<i>Platycercus eximius</i>	Eastern Rosella				OW
Family Halcyonidae - Tree Kingfishers					
<i>Dacelo novaeguineae</i>	Laughing Kookaburra				OW

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	REGIONALLY SIGNIFICANT	OBSERVATION TYPE
Family Maluridae					
<i>Malurus cyaneus</i>	Superb Fairy-wren				OW
Family Meliphagidae - Honeyeaters					
<i>Manorina melanocephala</i>	Noisy Miner				O
Family Monarchidae - Monarchs, Flycatchers and Magpie-Lark					
<i>Grallina cyanoleuca</i>	Magpie-lark				OW
Family Rhipiduridae - Fantails					
<i>Rhipidura leucophrys</i>	Willie Wagtail				O
Family Artamidae - Wood-swallows, Butcherbirds, Magpie and Currawongs					
<i>Cracticus nigrogularis</i>	Pied Butcherbird				OW
<i>Cracticus tibicen</i> syn. <i>Gymnorhina tibicen</i>	Australian Magpie				O
Family Corvidae - Crows, Raven					
<i>Corvus coronoides</i>	Australian Raven				OW
Corcoracidae - Chough and Apostlebird					
Family Estrildidae - Grassfinches					
<i>Neochima temporalis</i>	Red-browed Finch				
Class Mammalia - Mammals					
Subclass Marsupialia - Marsupials					
Family Macropodidae - Kangaroos, Wallabies					
<i>Macropus giganteus</i>	Eastern Grey Kangaroo?			+	F, P
<i>Macropus rufogriseus</i>	Red-necked Wallaby?			+	F, P

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	REGIONALLY SIGNIFICANT	OBSERVATION TYPE
Subclass Eutheria - Eutherian Mammals					
Suborder Microchiroptera					
Family Vespertilionidae - Plain-nosed Bats					
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat				U
<i>Vespadelus sp.</i> Likely <i>V. vulturinus</i>	Little Forest Bat				U
Order Carnivora					
Family Canidae					
<i>*Vulpes vulpes</i>	Red Fox				F

APPENDIX C

BAM FIELD DATA SHEETS

BAM Site – Field Survey Form

Plot Identifier: _____

Midline start		Midline end		Plot Size	Date	Plot Waypoint ID			Recorders
E- 381118		E- 381068			9/7/20	Start -		End -	J. Barry
N- 6367325		N- 6367336		IBRA region	NSW North Coast				
Photo# #4496		Photo# #4498		Vegetation Class	Coastal Dune Dry Sclerophyll Forest				
Bearing 275°		Bearing 94°		Vegetation Zone	Degraded				
PCT #	1647	PCT Name Red Bloodwood Apple Heathy woodland							
Consistent BC ACT TEC?		No.							

BAM Attribute (400 m ² plot)	Sum values
Trees	0
Shrubs	1
Grasses etc.	2
Forbs	2
Ferns	0
Other	1
Count of Native Richness	
Trees	0
Shrubs	20
Grasses etc.	4.1
Forbs	0.3
Ferns	0
Other	0.1
Sum of Cover of native vascular plants by growth form group	
High Threat Weed cover	8

BAM Attribute (1000 m ² plot)		
DBH	# Tree Stems Count	# Stems with Hollows
80 + cm	0	0
50 – 79 cm	0	
30 – 49 cm	0	
20 – 29 cm	0	
10 – 19 cm	0	
5 – 9 cm	0	
Regeneration < 5 cm	0	
Length of logs (m) (≥10 cm diameter, >50 cm in length)	0	

Large Tree Sizes

Dry Sclerophyll Forests - ≥50, Forested Wetlands - ≥50, Freshwater Wetlands - NA, Grasslands - NA, Grassy Woodlands - ≥50, Heathlands - ≥30, Rainforests - ≥50, Saline Wetlands - NA, Semi-arid Woodland (grassy sub-formation) ≥30, Semi-arid woodlands (shrubby sub-formation) ≥30, Wet sclerophyll forests (grassy sub-formation) ≥79, Wetland sclerophyll forests (shrubby sub-formation) ≥79

BAM Attribute (1 x 1 m plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	5 30 60 40 80	0 50 0 0 0	0 0 0 0 0	0 0 0 2 0
Average of the 5 subplots	43	10	0	0.4

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type	Landform Element	Landform Pattern	Microrelief
Lithology	Soil Surface Texture	Soil Colour	Soil Depth
Slope	Aspect	Site Drainage	Distance to nearest water and type

Additional Plot Comments

quadrat 1 - center of concrete filled tyres
quadrat 4 - contaminated fill
quadrat 5 - center of cedar logs

400 m ² plot: Sheet _ of _		Survey Name	Plot Identifier	Recorders	
Date					
GF		Species	Cover	Abund	voucher
S	1	<i>Acacia longifolia</i>	20	22	
HTW	2	<i>Eragrostis curvula</i>	3	20	
HTW	3	<i>Hyparrhenia hirta</i>	1.5	20	
HTW	4	<i>Ageratina adenophora</i>	0.2	7	
HTW	5	<i>Andropogon virginicus</i>	0.3	14	
F	6	<i>Dianella caerulea prostrata</i>	0.2	15	
HTW	7	<i>Cortaderia</i> s.p.	0.5	1	
-	8	<i>Melinis repens</i>	0.5	10	
G	9	<i>Cynodon dactylon</i>	4	200	
HTW	10	<i>Lantana camara</i>	1	5	
-	11	<i>Artemisia</i>	0.1	10	
HTW	12	<i>Cenchrus clandestinus</i>	0.1	1	
HTW	13	<i>Juncus acutus</i>	0.5	17	
-	14	<i>Plantago lanceolata</i>	0.5	20	
O	15	<i>Billardiera scandens</i>	0.1	2	
G	16	<i>Lomandra glauca</i>	0.1	6	
-	17	<i>Hypochaeris radicata</i>	0.1		
-	18	<i>Viburnum bonariensis</i>	0.1	1	
F	19	<i>Euphorbia drummondii</i>	0.1	3	
-	20	<i>Lolium perenne</i>	0.5	50	
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APPENDIX D

BAM PLOT PHOTOS



Plate D1: BAM Plot 1 front median line.



Plate D2: BAM Plot 1 back median line.

APPENDIX E TARGETED SURVEY EFFORT

Date	Time (24hr)	Survey Effort (Expressed in Person Hours)	Activity	Weather
22-Jun-20	0930-1230	6 (two persons)	- General Site Inspection - Random Meander Flora Survey - Targeted Survey for Threatened Diurnal Birds	3/8 Cloud, 12 C, SSW 23km/h, 70% humidity
9-Jul--20	0900-1230	7 (two persons)	- General Vegetation Survey - Vegetation Integrity Assessment (BAM Plot) - Targeted Survey for the threatened Charmhaven Apple and Grove's Paperbark - Significant Tree Inventory - Targeted Survey for Threatened Diurnal Birds - Targeted Survey for Reptiles - Targeted Diurnal Survey for Threatened Amphibians	2/8 Cloud, clearing fog, 12C, SW 6km/h, 87% humidity, 3% precipitation
29-Jul-20	1630-1730	1.00 (one person)	- Targeted Survey for Reptiles - Targeted Diurnal Survey for Threatened Amphibians - Targeted Survey for Threatened Diurnal Birds - Deploy Anabat for targeted Survey for Threatened Microchiropteran Bats - Deploy Reconyx Camera for targeted Survey for Small Nocturnal Mammals	0/8 Cloud, 17 C, SSW 20km/h, 68% humidity.

	1730 - 1900	1.50 (one persons)	- Targeted Survey for Small Nocturnal Mammals using spotlighting - Targeted Survey for Threatened Microchiropteran Bats using mobile Anabat Detector - Targeted Survey for Threatened Nocturnal Birds including Bush Stone-curlew using spotlighting - Targeted Survey for Threatened Amphibians - Broadcast of targeted nocturnal bird calls	6/8 moon, 0/8 Cloud, 15 C, S 10km/h, 77% humidity
30-Jul-20	0730-0800	0.5 (one person)	- Reconyx Camera retrieved - Stationary Anabat detector retrieved - Targeted Survey for Threatened Diurnal Birds	3/8 Cloud, 10C, WNW 17km/h, 100% humidity
6 August	1030 - -1200	2.5 (two persons)	- Targeted Flora Searches, particularly <i>Diuris praecox</i> (Rough Doubletail). - Other species <i>Angophora inopina</i> (Charmhaven Apple) <i>Melaleuca groveana</i> (Grove's Paperbark) <i>Burhinus grallarius</i> (Bush Stone-curlew).	0/8 Cloud, 14oC, Westly Wind 19km/h, 40% relative humidity

APPENDIX F

CREDIT SUMMARY REPORT

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00021210/BAAS20005/20/00021222	Tomago	18/06/2020
Assessor Name	Report Created	BAM Data version *
	11/08/2020	29
Assessor Number	BAM Case Status	Date Finalised
BAAS20005	Finalised	11/08/2020
Assessment Revision	Assessment Type	
0	Part 4 Developments (Small Area)	

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	Vegetation integrity loss / gain	Area (ha)	Constant	Species sensitivity to gain class (for BRW)	Biodiversity risk weighting	Potential SAI	Ecosystem credits
Red Bloodwood - Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast								
1	1647_Disturbed	12.1	0.1	0.25	High Sensitivity to Potential Gain	1.50		0
							Subtotal	0
							Total	0

BAM Credit Summary Report

Species credits for threatened species

Vegetation zone name	Habitat condition (HC)	Area (ha) / individual (HL)	Constant	Biodiversity risk weighting	Potential SAI	Species credits
<i>Uperoleia mahonyi</i> / Mahony's Toadlet (Fauna)						
1647_Disturbed	12.1	0.1	0.25	2	False	1
					Subtotal	1

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00021210/BAAS20005/20/00021222	Tomago	18/06/2020
Assessor Name	Assessor Number	BAM Data version *
	BAAS20005	29
Proponent Names	Report Created	BAM Case Status
REMONDIS Australia	11/08/2020	Finalised
Assessment Revision	Assessment Type	Date Finalised
0	Part 4 Developments (Small Area)	11/08/2020

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Nil

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

BAM Biodiversity Credit Report (Like for like)

Predicted Threatened Species Not On Site

No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	Number of credits to be retired
1647-Red Bloodwood - Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast	Not a TEC	0.1	0.00

1647-Red Bloodwood - Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast	Like-for-like credit retirement options			
	Class	Trading group	HBT	IBRA region
	Coastal Dune Dry Sclerophyll Forests This includes PCT's: 685, 776, 1074, 1135, 1184, 1618, 1637, 1646, 1647, 1648, 1775	Coastal Dune Dry Sclerophyll Forests <50%	No	Karuah Manning, Hunter, Macleay Hastings, Mummel Escarpment and Upper Hunter. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.



BAM Biodiversity Credit Report (Like for like)

Species Credit Summary

Species	Area	Credits
Uperoleia mahonyi / Mahony's Toadlet	0.1	1.00

Uperoleia mahonyi / Mahony's Toadlet	1647_Disturbed	Like-for-like credit retirement options	
		Spp	IBRA region
		Uperoleia mahonyi /Mahony's Toadlet	Any in NSW

Biodiversity payment summary report

Assessment Id	Payment data version	Assessment Revision	Report created
00021210/BAAS20005/20/00021222	68	0	11/08/2020
Assessor Name	Assessor Number	Proposal Name	BAM Case Status
	BAAS20005	Tomago	Finalised
	Assessment Type	Date Finalised	
	Part 4 Developments (Small Area)	11/08/2020	

PCT list

Price calculated	PCT common name	Credits
Yes	1647 - Red Bloodwood - Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast	0

Species list

Price calculated	Species	Credits
Yes	<i>Uperoleia mahonyi</i> (Mahony's Toadlet)	1

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Biodiversity payment summary report

Biodiversity payment summary report

IBRA sub region	PCT common name	Threat status	Offset trading group	Risk premium	Administrative cost	Methodology adjustment factor	Price per credit	No. of ecosystem credits	Final credits price
Karuah Manning	1647 - Red Bloodwood - Smooth-barked Apple heathy woodland on coastal sands of the Central and lower North Coast	No	Coastal Dune Dry Sclerophyll Forests <50%	20.69%	\$224.75	1.8823	\$7,006.02	0	\$0.00
Subtotal (excl. GST)									\$0.00
GST									\$0.00
Total ecosystem credits (incl. GST)									\$0.00

Species credits for threatened species

Species profile ID	Species	Threat status	Price per credit	Risk premium	Administrative cost	No. of species credits	Final credits price
20325	<i>Uperoleia mahonyi</i> (Mahony's Toadlet)		\$1,730.17	20.6900%	\$80.00	1	\$2,168.14
Subtotal (excl. GST)							\$2,168.14
GST							\$216.81

Biodiversity payment summary report



Biodiversity payment summary report

Total species credits (incl. GST)

\$2,384.95

Grand total

\$2,384.95

APPENDIX G

SEARS



Ms Susie McBurney
General Manager

REMONDIS AUSTRALIA PTY LTD
LEVEL 4, 163 O'RIORDAN STREET
MASCOT NSW 2020

24/04/2020

Dear Ms McBurney

**Tomago Resource Recovery Facility and Truck Depot (SSD-10447)
Planning Secretary's Environmental Assessment Requirements**

Please find attached a copy of the Planning Secretary's environmental assessment requirements (SEARs) for the preparation of an environmental impact statement (EIS) for the Tomago Resource Recovery Facility and Truck Depot. These requirements have been prepared in consultation with relevant public authorities based on the information you have provided to date. Please note the Planning Secretary may modify these requirements at any time.

If you do not submit a Development Application (DA) and EIS within two years, you must consult further with the Planning Secretary in relation to the preparation of the EIS.

Prior to exhibiting the EIS, the Department will review the document in consultation with relevant authorities to determine if it addresses the requirements in Schedule 2 of the Environmental Planning and Assessment Regulation 2000. You will be required to submit an amended EIS if it does not adequately address the requirements.

The Department wishes to emphasise the importance of effective and genuine community consultation where a comprehensive open and transparent community consultation engagement process must be undertaken during the preparation of the EIS. This process must ensure that the community is provided with a good understanding of what is proposed, description of any potential impacts and they are actively engaged in issues of concern to them.

Please contact the Department at least two weeks before you propose to submit your DA and EIS. This will enable the Department to:

- confirm the applicable fee (see Division 1AA, Part 15 of the Environmental Planning and Assessment Regulation 2000); and
- determine the number of copies (hard-copy and CD/DVD) of the DA and EIS that will be required for reviewing purposes.

If your development is likely to have a significant impact on matters of National Environmental Significance, it will require an approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This approval would be in addition to any approvals required under NSW legislation and it is your responsibility to contact the Commonwealth Department of the Environment and Energy to determine if an approval under the EPBC Act is required (<http://www.environment.gov.au> or 6274 1111).

If you have any questions, please contact Bianca Thornton at bianca.thornton@planning.nsw.gov.au.

Yours sincerely,

Chris Ritchie

Director
Industry Assessments
as delegate for the Planning Secretary

Planning Secretary's Environmental Assessment Requirements

Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* Schedule 2 of the Environmental Planning and Assessment Regulation 2000

Application Number	SSD-10447
Project Name	Tomago Resource Recovery Facility and Truck Parking Depot
Development	A Resource Recovery Facility, within existing buildings on 21D School Drive, with a processing capacity of 98,200 tonnes per annum of solid and liquid waste. A truck parking depot on 21F School Drive.
Location	21D and 21F School Drive, Tomago (Lot 11, DP270328 and Lot 8, DP270328), in the Port Stephens local government area
Applicant	REMONDIS Australia Pty Ltd
Date of Issue	24/04/2020
General Requirements	The environmental impact statement (EIS) must be prepared in accordance with, and meet the minimum requirements of, clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (the Regulation). In addition, the EIS must include a: · detailed description of the development, including: - need for the proposed development - justification for the proposed development - likely staging of the development - likely interactions between the development and existing, approved and proposed operations in the vicinity of the site - plans of any proposed building works · consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments · consideration of issues discussed in Attachment 2 (public authority responses to key issues) · risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment · detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes: - a description of the existing environment, <u>using sufficient baseline data</u> - an assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes - a description of the measures that would be implemented to avoid, minimise, mitigate and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage significant risks to the environment · consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS. The EIS must also be accompanied by a report from a qualified quantity surveyor

	providing: · a detailed calculation of the capital investment value (CIV) (as defined in clause 3 of the Regulation) of the proposal, including details of all assumptions and components from which the CIV calculation is derived. The report shall be prepared on company letterhead and indicate applicable GST component of the CIV · an estimate of jobs that will be created during the construction and operational phases of the proposed development · certification that the information provided is accurate at the date of preparation.
Key issues	The EIS must address the following specific matters: 1. Suitability of the Site – including: · details of all development consents and approved plans for the existing facility, including for all structures, plant and equipment · a detailed justification that the site can accommodate the proposed resource processing facility and its environmental impacts and relevant mitigation measures · consistency of the proposal with the approved operation of the Tomago Aluminium Smelter and its associated conditions, including development in close proximity to the smelter and within its buffers. 2. Community and Stakeholder Engagement – including: · a detailed community and stakeholder participation strategy which identifies who in the community has been consulted and a justification for their selection, other stakeholders consulted and the form(s) of the consultation, including a justification for this approach · a report on the results of the implementation of the strategy including issues raised by the community and surrounding landowners and occupiers that may be impacted by the proposal · details of how issues raised during community and stakeholder consultation have been addressed and whether they have resulted in changes to the proposal · details of the proposed approach to future community and stakeholder engagement based on the results of the consultation. 3. Waste Management – including: · a description of the waste streams that would be accepted at the site including maximum daily, weekly and annual throughputs and the maximum size for stockpiles and any liquid waste storage · a detailed description of waste processing operations (including flow diagrams for each waste stream) including a description of the technology to be installed, resource outputs, and the quality control measures that would be implemented · details of how waste would be stored (including the maximum daily waste storage capacity of the site) and handled on site, and transported to and from the site, including details of how the receipt of non-conforming waste would be dealt with · details of the waste tracking system for incoming and outgoing waste · details of the waste management strategy for construction and ongoing operational waste generated · the measures that would be implemented to ensure that the development is

consistent with the aims, objectives and guidance in the *NSW Waste Avoidance and Resource Recovery Strategy 2014-2021*.

4. Air Quality and Odour – including:

- a quantitative assessment of the potential air quality, dust and odour impacts of the development in accordance with relevant Environment Protection Authority guidelines. This is to include the identification of existing and potential future sensitive receivers and consideration of approved and/or proposed developments in the vicinity
- the details of buildings and air handling systems and strong justification (including quantitative evidence) for any material handling, processing or stockpiling external to a building
- a greenhouse gas assessment
- consideration of the Tomago Aluminium Buffer Area and whether the proposed development would result in the release of sulfur
- details of proposed mitigation, management and monitoring measures.

5. Soil and Water – including:

- an assessment of potential impacts to soil and water resources, topography, hydrology, groundwater, drainage lines, watercourses and riparian lands on or nearby to the site, including mapping and description of existing background conditions and cumulative impacts
- a detailed site water balance including identification of water requirements for the life of the project, measures that would be implemented to ensure an adequate and secure water supply is available for the proposal and a detailed description of the measures to minimise the water use at the site
- characterisation of water quality at the point of discharge to surface and/or groundwater against the relevant water quality criteria (including details of the contaminants of concern that may leach from the waste into the wastewater and proposed mitigation measures to manage any impacts to receiving waters)
- details of stormwater/wastewater/leachate management systems including the capacity of onsite detention system/s, onsite sewage management and measures to treat, reuse or dispose of water
- detailed flooding assessment
- a description of erosion and sediment controls
- consideration of salinity and acid sulphate soil impacts
- characterisation of the nature and extent of contamination on the site and a description of proposed management measures.

6. Traffic and Transport – including:

- details of all traffic types and volumes likely to be generated during construction and operation, including a description of haul routes. Traffic flows are to be shown diagrammatically to a level of detail sufficient for easy interpretation
- an assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model. This is to include the identification and consideration of approved and/or proposed developments in the vicinity
- detailed plans of the proposed layout of the internal road and pedestrian network and parking on site in accordance with the relevant Australian

Standards and Council's DCP

- plans of any proposed road upgrades, infrastructure works or new roads required for the development
- plans demonstrating how all vehicles associated with construction and operation awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network
- swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site for both heavy and light vehicles.

7. Noise and Vibration – including:

- a quantitative assessment of potential construction, operational and transport noise and vibration impacts in accordance with relevant Environment Protection Authority guidelines. This is to include the identification of existing and potential future sensitive receivers and consideration of approved and/or proposed developments in the vicinity, including current and future rail traffic
- details and justification of the proposed noise mitigation and monitoring measures
- specified times of operation for all phases of the development and for all noise producing activities.

8. Fire and Incident Management – including:

- a bushfire threat assessment
- identification of the aggregate quantities of combustible waste products to be stockpiled at any one time
- technical information on the environmental protection equipment to be installed on the premises such as air, water and noise controls, spill clean-up equipment and fire (including management of fire water, location of fire hydrants and water flow rates at the hydrant) management and containment measures
- details of how the development would comply with Volume 1 of the National Construction Code, including clauses E.10 and E2.3
- details of how the development would be designed in accordance with applicable FRNSW guidelines.

9. Hazards – including a preliminary risk screening completed in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development and Applying SEPP 33 (DoP, 2011), with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development. In particular, the preliminary risk screening must include maximum storage quantities of any waste materials that are classified as dangerous goods and chemicals/reagents used as part of waste handling/treatment processes which are classified as dangerous goods. Should preliminary screening indicate that the project is "potentially hazardous" a Preliminary Hazard Analysis (PHA) must be prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 - Guidelines for Hazard Analysis (DoP, 2011) and Multi-Level Risk Assessment (DoP, 2011).

10. Biodiversity – including an assessment of biodiversity impacts in accordance with the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR).

11. Aboriginal Cultural Heritage – including a detailed assessment of Aboriginal cultural heritage if ground disturbing works are required for the proposed

	development. 12. Visual – including an assessment of the potential impacts of the development on the amenity of the surrounding area.
Consultation	During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. In particular you must consult with: (delete agencies that had no comments) · Department of Planning, Industry and Environment, specifically the: - Environment, Energy and Science Group (including the Climate Change and Sustainability Division) - Water Group · Environment Protection Authority · Fire and Rescue NSW · Rural Fire Service · Transport for NSW (including the former Roads and Maritime Services) · Hunter Water · SafeWork NSW · Port Stephens Council. The EIS must describe the consultation process and the issues raised and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.
Further consultation after 2 years	If you do not lodge a Development Application and EIS for the development within two (2) years of the issue date of these SEARs, you must consult further with the Secretary in relation to the preparation of the EIS.
References	The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. While not exhaustive, the following attachment contains a list of some of the guidelines, policies, and plans that may be relevant to the environmental assessment of this proposal.

ATTACHMENT 1

Technical and Policy Guidelines

The following guidelines may assist in the preparation of the environmental impact statement. This list is not exhaustive and not all of these guidelines may be relevant to your proposal.

Many of these documents can be found on the following websites:

<http://www.planning.nsw.gov.au>

<http://www.shop.nsw.gov.au/index.jsp>

<https://www.australia.gov.au/about-government/publications>

<http://www.epa.nsw.gov.au/>

<http://www.environment.nsw.gov.au/>

<http://www.dpi.nsw.gov.au/>

Plans and Documents

The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Environmental Planning and Assessment Regulation 2000. Provide these as part of the EIS rather than as separate documents.

In addition, the EIS must include the following:

1. An existing site survey plan drawn at an appropriate scale illustrating:
 - the location of the land, boundary measurements, area (sqm) and north point
 - the existing levels of the land in relation to buildings and roads
 - location and height of existing structures on the site
 - location and height of adjacent buildings and private open space
 - all levels to be to Australian Height Datum (AHD).
2. Locality/context plan drawn at an appropriate scale should be submitted indicating:
 - significant local features such as heritage items
 - the location and uses of existing buildings, shopping and employment areas
 - traffic and road patterns, pedestrian routes and public transport nodes.
3. Drawings at an appropriate scale illustrating:
 - detailed plans, section and elevations of all proposed buildings
 - detailed plans of proposed access driveways, internal roadways, carparking and services infrastructure.

Documents to be Submitted

Documents to submit include:

- one (1) electronic copy of all the documents and plans for review prior to exhibition
 - other copies as determined by the Department once the development application is lodged.
-

Policies, Guidelines & Plans

Aspect	Policy /Methodology
Waste	
	Waste Avoidance and Resource Recovery Strategy 2014-2021 (EPA)
	The National Waste Policy: Less Waste More Resources 2009
	Waste Classification Guidelines (EPA 2014)
	Environmental guidelines: Composting and Related Organics Processing Facilities (DEC 2004)
	Environmental guidelines: Use and Disposal of Biosolid Products (EPA 1997)
	Composts, soil conditioners and mulches (Standards Australia, AS 4454)
	NSW Energy from Waste Policy Statement (EPA 2015)
Air Quality and Odour	
Air Quality	Protection of the Environment Operations (Clean Air) Regulation 2010
	Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA 2016)
	Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC)
Odour	Assessment and Management of Odour from Stationary Sources in NSW (DEC 2006)
Greenhouse Gas	The National Greenhouse and Energy Reporting (Measurement) Technical Guidelines (NGER Technical Guidelines)
	Guidelines for Energy Savings Action Plans (DEUS 2005)
Traffic and Transport	
	Guide to Traffic Generating Development (RTA)
	Guide to Traffic Management Part 12: Traffic Impacts of Developments (Austroads 2016)
	NSW Long Term Transport Master Plan (TfNSW 2012)
	Road Design Guide (RTA)
Soil and Water	
Soil	Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (ANZECC & NHMRC)
	National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC)
	Draft Guidelines for the Assessment & Management of Groundwater Contamination (DECC)
	State Environmental Planning Policy No. 55 – Remediation of Land
	Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land (DOP)
	Acid Sulfate Soils Manual (Stone et al. 1998)
Surface Water	National Water Quality Management Strategy: Water quality management - an outline of the policies (ANZECC/ARMCANZ)
	National Water Quality Management Strategy: Policies and principles - a reference document (ANZECC/ARMCANZ)
	National Water Quality Management Strategy: Implementation guidelines (ANZECC/ARMCANZ)

	National Water Quality Management Strategy: Australian Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ)
	National Water Quality Management Strategy: Australian Guidelines for Water Quality Monitoring and Reporting (ANZECC/ARMCANZ)
	Using the ANZECC Guideline and Water Quality Objectives in NSW (DEC)
	NSW State Rivers and Estuaries Policy (1993)
	State Water Management Outcomes Plan
	NSW Government Water Quality and River Flow Environmental Objectives (DECC)
	Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC)
	Managing Urban Stormwater: Soils & Construction (Landcom 2004)
	Managing Urban Stormwater: Treatment Techniques (DECC 1997)
	Managing Urban Stormwater: Source Control (DECC)
	Technical Guidelines: Bunding & Spill Management (DECC)
	NSW Floodplain Development Manual 2005
	NSW Guidelines for Controlled Activities on Waterfront Land (NOW 2012)
Groundwater	National Water Quality Management Strategy Guidelines for Groundwater Protection in Australia (ARMCANZ/ANZECC 1995)
	NSW State Groundwater Policy Framework Document (DLWC 1997)
	NSW State Groundwater Quality Protection Policy (DLWC 1998)
	NSW State Groundwater Dependent Ecosystems Policy (DLWC 2002)
	NSW State Groundwater Quantity Management Policy (DLWC 2002)
	Guidelines for the Assessment and Management of Groundwater Contamination (DEC 2007)
	NSW Aquifer Interference Policy (NOW 2012)
Wastewater	MDBC Guidelines on Groundwater Flow Modelling 2000
	Australian Groundwater Modelling Guidelines (NWC 2012)
	Environmental Guidelines: Use of Effluent by Irrigation (DECC 2004)
	Environmental Guidelines: Storage and Handling of Liquids (DECC 2007)
	National Water Quality Management Strategy - Guidelines For Water Recycling: Managing Health And Environmental Risks (Phase 1) 2006 (EPHC, NRMMC & AHMC)
	National Water Quality Management Strategy – Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 2): Augmentation of Drinking Water Supplies 2008 (EPHC, NRMMC & AHMC)
	National Water Quality Management Strategy: Guidelines for Sewerage Systems - Effluent Management (ARMCANZ/ANZECC)
	National Water Quality Management Strategy: Guidelines for Sewerage Systems - Use of Reclaimed Water (ARMCANZ/ANZECC)
	Recycled Water Guidance Document: Recycled Water Management Systems (DPI 2015)
Noise and Vibration	
Noise	Noise Policy for Industry (EPA 2017)
	NSW Road Noise Policy (EPA 2011)
	Environmental Criteria for Road Traffic Noise (EPA 1999)

Vibration	Interim Construction Noise Guideline (DECC 2009)
	Assessing Vibration: A Technical Guideline (DEC 2006)
	Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration (ANZECC 1990)
Fire and Incident Management	
	Fire Safety Guideline: Fire Safety in Waste Facilities (FRNSW 2019)
	Fire Safety Guideline: Access for fire brigade vehicles and firefighters (FRNSW 2019)
Hazards and Risk	
	State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
	Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines (DUAP)
	AS/NZS 4360:2004 Risk Management
	HB 203:2006 Environmental Risk Management – Principles and Process
	Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis
	Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning (DUAP)
	Contaminated Sites – Guidelines on Significant Risk of Harm from Contaminated Land and the Duty to Report (EPA 2003)
Heritage	
	Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011)
	Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010)
	Draft Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation (Department of Planning 2005)
	Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010)
Biodiversity	
	Biodiversity Assessment Method (2017)
Visual	
	Control of Obtrusive Effects of Outdoor Lighting (Standards Australia, AS 4282)
	State Environmental Planning Policy No 64 - Advertising and Signage

ATTACHMENT 2
Government Authority Responses to Request for Key Issues

14 April 2020

NSW Department of Planning, Industry and Environment
GPO Box 39
Sydney NSW 2001

APPLICATION NO: SSD 10447 (Our Ref. 25-2020-3-1)

PROPOSAL: Tomago Resource Recovery Facility and Truck Depot

PROPERTY: 21D School Drive TOMAGO, 21F School Drive TOMAGO LOT: 11 DP: 270328, LOT: 8
DP: 270328

Dear Bianca,

Thank you for your correspondence dated 2 April 2020 requesting Council's input to the Secretary's Environmental Assessment Requirements (SEARs) for the proposed Tomago Resource Recovery Facility and Truck Depot (SSD 10447), located at 21D School Drive TOMAGO, 21F School Drive TOMAGO 2322, currently lodged with the Department of Planning, Industry and Environment (DPIE).

On the 4th February Council held a pre-lodgement application meeting with the applicant regarding the proposed development. At this time, Council understood the development to be classified as Designated Development under clause 23(6b) of Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011. During the meeting, a number of key issues relating to the proposal were identified and discussed. Council requested these issues to be addressed in any future application.

Council understands the project is classified as State Significant Development under clause 23(6b) of Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011, and therefore requires the submission of an Environmental Impact Statement and the issuing of SEARs.

Council has given consideration to the likely impacts of the proposal and makes the following comments.

Planning Matters

Operational Details

The application should identify the following operational details with regard to waste management:

- Detail the type, quantity and classification of waste to be received at the site;
- Details of the resource outputs and any additional processes for residual waste;
- Details of waste handling including, transport, identification, receipt, stockpiling and quantity control.
- Details of the truck depot, and its use in conjunction with the resource recovery facility, including the number of trucks and parking location.
- Hours of operation in regards to both the resource recovery facility and the depot.

Building Design and Layout

It is noted that the majority of the facility is to be located within the existing buildings. As such it is required that architectural plans be further developed to highlight any proposed additions, alterations or internal works.

The architectural plans for the truck depot should be further developed to include any additional hardstand areas, driveway access, landscaping and fencing. Truck parking external to buildings must be sighted to avoid adverse visual impact when viewed from the street.

Although it is noted that 21G School Drive won't be included in the current proposal, any application should consider impacts to future development on this site, including provision of appropriate setbacks and site landscaping where appropriate. If 21G School Drive is intended to be purchased by the proponent, consideration should be given to future preservation of connectivity between the sites.

Bushfire Hazard

The site is located within Bushfire Prone land, and as such a Bushfire Threat Assessment is required to be submitted as part of the proposal.

Acid Sulfate Soils

The site is located within class 4 Acid Sulfate Soils. As such, consideration of clause 7.1 of the Port Stephens Local Environmental Plan 2013 will be required. Any works more than 2 meters below ground level will require an Acid Sulfate Soils Management Plan (ASSMP). The need for this plan may be mitigated if a preliminary geotechnical investigation is provided identifying that it is unlikely that Acid Sulfate Soils will be disturbed.

Environmental Health Matters

SEPP 33 – Hazardous and Offensive Development

The Preliminary Environmental Assessment Report notes that the proposal will include the storage of hazardous wastes. As such, a Preliminary Risk Screening is required to identify the class, quantity and location of all dangerous goods and hazardous materials associated with the development. The risk screening must be undertaken in accordance with SEPP 33 and 'Applying SEPP 33 - Hazardous and Offensive Development Application Guidelines' (DOP 2011).

SEPP 55 – Remediation of Land

The Phase 2 Contamination Report (GHD, dated 2011) included with the appended documentation references a series of documents that have all been revised and updated since it was written.

It is appropriate that the proposed development is considered under existing contamination legislation and guidelines and reports updated. It is possible that criteria used in the sampling, analysis and assessment have changed from previous versions.

Given the history of previous potentially contaminating uses of the site, a Preliminary Site Investigation will be required to be submitted with the application. The preliminary investigation will detail whether a phase 2 assessment is needed and if so, will be required to be submitted with the application prior to determination.

Tomago Aluminium Buffer Area

The proposal is located within the Tomago Aluminium buffer area. The buffer area was established as part of the 1981 approval and 1991 expansion (as modified) of the Tomago Aluminium Smelter. The buffer area was identified land likely to be affected by Sulphur (SO₂) and Fluoride emissions from the Smelter. As such, the application should identify whether the development would result in the release of any sulphur. It is expected this will be addressed as part of an Air Quality Impact Assessment.

Air Quality

An Air Quality Impact Assessment is required where the development has potential to adversely impact surrounding areas in terms of air quality under section B3 of the Port Stephens Development Control Plan 2014 (PS DCP). This will also need to identify if there is any sulphur produced given the sites location within the Tomago Aluminium Buffer, as noted above.

Waste Management

Detail of the proposed waste management system will need to be provided.

The site does not have access to reticulated sewer and it is understood that there is an existing on-site sewer management system for 21D School Drive. Details of servicing, including any proposed changes to current utilities will need to be included as part of the application. Any proposed OSMS for 21F School Drive will also need to be addressed within the application. A Waste Management Report, prepared by a suitably qualified person will need to be provided, demonstrating that the proposed sewage and trade waste are appropriate for the proposed development.

Traffic

In accordance with section B9 Road Networking and Parking of the PSDCP, a Traffic Impact Assessment is required to be submitted with the application, detailing the traffic impacts associated with the resource recovery facility and the truck parking depot.

Further to this, information will need to be provided showing that the proposed parking will be sufficient for the proposed uses.

Flooding

The site is listed as flood prone, it is recommended that further information be sought from Council to obtain the relevant flood levels for the site. This information will need to be considered within the proposal, and any relevant requirements within Chapter B5 of the PSDCP.

A flood study is required to be submitted as part of the EIS, and include a survey of the floor levels of the existing buildings.

14 April 2020

Stormwater Drainage and Water Quality

In accordance with Section B4 Drainage and Water Quality of the PSDCP, a Stormwater Drainage Plan may be required if there is an increase in impervious surfaces or drains to the public drainage system.

The proposal will also need to demonstrate that compliance with the Water Quality targets can be met. Any existing water quality measures currently in place on the site will also need to be addressed.

Thank you for the opportunity to comment on the proposed development. If you wish to discuss the matters raised above or have any questions, please contact me on the below details and I will be happy to assist.

Yours Sincerely,

Dylan Mitchell
Senior Development Planner
Development Assessment and Compliance
Port Stephens Council
P: 02 4988 0280



Department of Planning, Industry and Environment
Locked Bag 5022
PARRAMATTA NSW 2124
Attention: Bianca Thornton

Notice Number 1593774
Date 09-Apr-2020

RE: Remondis Resource Recovery Facility & Truck Depot - SEARs 10447

I refer to your request for the Environment Protection Authority's (EPA) requirements for the environmental assessment (EA) in regard to the above proposal received by EPA on 2 April 2020.

The EPA has considered the details of the proposal as provided by the applicant and has identified the information it requires to issue its general terms of approval in Attachment A. In summary, the EPA's key information requirements for the proposal include an adequate assessment of:

1. Management of various waste types, including capacity of facility to manage the volume and throughput of wastes anticipated;
2. Odour and other air emissions;
3. Sediment and erosion controls, particularly during construction; and
4. Storage and handling of hazardous wastes, and contaminated soils.

In carrying out the assessment, the proponent should refer to the relevant guidelines as listed in Attachment B and any relevant industry codes of practice and best practice management guidelines.

Please note that this response does not cover biodiversity or Aboriginal cultural heritage issues, which are the responsibility of the Office of Environment and Heritage.

The Proponent should be made aware that any commitments made in the EA may be formalised as approval conditions and may also be placed as formal licence conditions.

The Proponent should be made aware that, consistent with provisions under Part 9.4 of the *Protection of the Environment Operations Act 1997* (the Act) the EPA may require the provision of a financial assurance and/or assurances. The amount and form of the assurance(s) would be determined by the EPA and required as a condition of an Environment Protection Licence (EPL).

In addition, as a requirement of an EPL, the EPA will require the Proponent to prepare, test and implement a Pollution Incident Response Management Plan and/or Plans in accordance with Section 153A of the Act. The Proponent should be aware that the description of the proposal makes it a waste levy liable facility, and therefore a weighbridge shall be required to be installed, and that certain information about waste entering and leaving the facility is to be recorded and reported to the EPA.

Yours sincerely

A handwritten signature in blue ink, appearing to be "S. James", written over a faint circular stamp.

.....
Steven James
Unit Head Metro North
Environment Protection Authority
(by Delegation)

ATTACHMENT A: EIS REQUIREMENTS FOR Remondis Resource Recovery Facility and Truck Depot

How to use these requirements

The EPA requirements have been structured in accordance with the DIPNR EIS Guidelines, as follows. It is suggested that the EIS follow the same structure:

- A. Executive summary
- B. The proposal
- C. The location
- D. Identification and prioritisation of issues
- E. The environmental issues
- F. List of approvals and licences
- G. Compilation of mitigation measures
- H. Justification for the proposal

A Executive summary

The executive summary should include a brief discussion of the extent to which the proposal achieves identified environmental outcomes.

B The proposal

1. Objectives of the proposal

- The objectives of the proposal should be clearly stated and refer to:
 - a) the size and type of the operation, the nature of the processes and the products, by-products and wastes produced
 - b) a life cycle approach to the production, use or disposal of products
 - c) the anticipated level of performance in meeting required environmental standards and cleaner production principles
 - d) the staging and timing of the proposal and any plans for future expansion
 - e) the proposal's relationship to any other industry or facility.

2. Description of the proposal

General

- Outline the production process including:
 - a) the environmental "mass balance" for the process – quantify in-flow and out-flow of materials, any points of discharge to the environment and their respective destinations (sewer, stormwater, atmosphere, recycling, landfill etc)
 - b) any life-cycle strategies for the products.
- Outline cleaner production actions, including:
 - a) measures to minimise waste (typically through addressing source reduction)
 - b) proposals for use or recycling of by-products
 - c) proposed disposal methods for solid and liquid waste
 - d) air management systems including all potential sources of air emissions, proposals to re-use or treat emissions, emission levels relative to relevant standards in regulations, discharge points
 - e) water management system including all potential sources of water pollution, proposals for re-use, treatment etc, emission levels of any wastewater discharged, discharge points, summary of options explored to avoid a discharge, reduce its frequency or reduce its impacts, and rationale for selection of option to discharge.
 - f) soil contamination treatment and prevention systems.
- Outline construction works including:
 - a) actions to address any existing soil contamination
 - b) any earthworks or site clearing; re-use and disposal of cleared material (including use of spoil on-site)
 - c) construction timetable and staging; hours of construction; proposed construction methods

- d) environment protection measures, including noise mitigation measures, dust control measures and erosion and sediment control measures.
- Include a site diagram showing the site layout and location of environmental controls.

Air

- Identify all sources or potential sources of air emissions from the development.

Note: emissions can be classed as either:

- *point (e.g. emissions from stack or vent) or*
- *fugitive (from wind erosion, leakages or spillages, associated with loading or unloading, conveyors, storage facilities, plant and yard operation, vehicle movements (dust from road, exhausts, loss from load), land clearing and construction works).*
- Provide details of the project that are essential for predicting and assessing air impacts including:
 - a) the quantities and physio-chemical parameters (e.g. concentration, moisture content, bulk density, particle sizes etc) of materials to be used, transported, produced or stored
 - b) an outline of procedures for handling, transport, production and storage
 - c) the management of solid, liquid and gaseous waste streams with potential to generate emissions to air.

Noise and vibration

- Identify all noise sources or potential sources from the development (including both construction and operation phases). Detail all potentially noisy activities including ancillary activities such as transport of goods and raw materials.
- Specify the times of operation for all phases of the development and for all noise producing activities.
- For projects with a significant potential traffic noise impact provide details of road alignment (include gradients, road surface, topography, bridges, culverts etc), and land use along the proposed road and measurement locations – diagrams should be to a scale sufficient to delineate individual residential blocks.

Water

- Provide details of the project that are essential for predicting and assessing impacts to waters including:
 - a) the quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health, including the risks they pose to Water Quality Objectives in the ambient waters (as defined on <http://www.environment.nsw.gov.au/ieo/index.htm>, using technical criteria derived from *the Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, ANZECC 2000)
 - b) the management of discharges with potential for water impacts
 - c) drainage works and associated infrastructure; land-forming and excavations; working capacity of structures; and water resource requirements of the proposal.

- Outline site layout, demonstrating efforts to avoid proximity to water resources (especially for activities with significant potential impacts e.g. effluent ponds) and showing potential areas of modification of contours, drainage etc.
- Outline how total water cycle considerations are to be addressed showing total water balances for the development (with the objective of minimising demands and impacts on water resources). Include water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options.

Waste and chemicals

Provide details of the quantity and type of both liquid waste and non-liquid waste generated, handled, processed or disposed of at the premises. Waste must be classified according to the EPA's *Waste Classification Guidelines 2014 (as amended from time to time)*

- Provide details of liquid waste and non-liquid waste management at the facility, including:
 - a) the transportation, assessment and handling of waste arriving at or generated at the site
 - b) any stockpiling of wastes or recovered materials at the site
 - c) any waste processing related to the facility, including reuse, recycling, reprocessing (including composting) or treatment both on- and off-site
 - d) the method for disposing of all wastes or recovered materials at the facility
 - e) the emissions arising from the handling, storage, processing and reprocessing of waste at the facility
 - f) the proposed controls for managing the environmental impacts of these activities.
- Provide details of spoil disposal with particular attention to:
 - a) the quantity of spoil material likely to be generated
 - b) proposed strategies for the handling, stockpiling, reuse/recycling and disposal of spoil
 - c) the need to maximise reuse of spoil material in the construction industry
 - d) identification of the history of spoil material and whether there is any likelihood of contaminated material, and if so, measures for the management of any contaminated material
 - e) designation of transportation routes for transport of spoil.
- Provide details of procedures for the assessment, handling, storage, transport and disposal of all hazardous and dangerous materials used, stored, processed or disposed of at the site, in addition to the requirements for liquid and non-liquid wastes.
- Provide details of the type and quantity of any chemical substances to be used or stored and describe arrangements for their safe use and storage.
- Reference should be made to the guidelines: EPA's *Waste Classification Guidelines 2014 (as amended from time to time)*

ESD

- Demonstrate that the planning process and any subsequent development incorporates objectives and mechanisms for achieving ESD, including:

- a) an assessment of a range of options available for use of the resource, including the benefits of each option to future generations

proper valuation and pricing of environmental resources

- b) identification of who will bear the environmental costs of the proposal.

3. Rehabilitation

- Outline considerations of site maintenance, and proposed plans for the final condition of the site (ensuring its suitability for future uses).

4. Consideration of alternatives and justification for the proposal

- Consider the environmental consequences of adopting alternatives, including alternative:
 - a) sites and site layouts
 - b) access modes and routes
 - c) materials handling and production processes
 - d) waste and water management
 - e) impact mitigation measures
 - f) energy sources
- Selection of the preferred option should be justified in terms of:
 - a) ability to satisfy the objectives of the proposal
 - b) relative environmental and other costs of each alternative
 - c) acceptability of environmental impacts and contribution to identified environmental objectives
 - d) acceptability of any environmental risks or uncertainties
 - e) reliability of proposed environmental impact mitigation measures
 - f) efficient use (including maximising re-use) of land, raw materials, energy and other resources.

C The location

1. General

- Provide an overview of the affected environment to place the proposal in its local and regional environmental context including:
 - a) meteorological data (e.g. rainfall, temperature and evaporation, wind speed and direction)
 - b) topography (landform element, slope type, gradient and length)
 - c) surrounding land uses (potential synergies and conflicts)
 - d) geomorphology (rates of landform change and current erosion and deposition processes)
 - e) soil types and properties (including erodibility; engineering and structural properties; dispersibility; permeability; presence of acid sulfate soils and potential acid sulfate soils)
 - f) ecological information (water system habitat, vegetation, fauna)
 - g) availability of services and the accessibility of the site for passenger and freight transport.

2. Air

- Describe the topography and surrounding land uses. Provide details of the exact locations of dwellings, schools and hospitals. Where appropriate provide a perspective view of the study area such as the terrain file used in dispersion models.
- Describe surrounding buildings that may effect plume dispersion.
- Provide and analyse site representative data on following meteorological parameters:
 - a) temperature and humidity
 - b) rainfall, evaporation and cloud cover
 - c) wind speed and direction

3. Noise and vibration

- Identify any noise sensitive locations likely to be affected by activities at the site, such as residential properties, schools, churches, and hospitals. Typically the location of any noise sensitive locations in relation to the site should be included on a map of the locality.
- Identify the land use zoning of the site and the immediate vicinity and the potentially affected areas.

4. Water

- Describe the catchment including proximity of the development to any waterways and provide an assessment of their sensitivity/significance from a public health, ecological and/or economic perspective. The Water Quality and River Flow Objectives on the website: <http://www.environment.nsw.gov.au/ieo/index.htm> should be used to identify the agreed environmental

values and human uses for any affected waterways. This will help with the description of the local and regional area.

5. Soil Contamination Issues

- Provide details of site history – if earthworks are proposed, this needs to be considered with regard to possible soil contamination, for example if the site was previously a landfill site or if irrigation of effluent has occurred.

D Identification and prioritisation of issues / scoping of impact assessment

- Provide an overview of the methodology used to identify and prioritise issues. The methodology should take into account:
 - a) relevant NSW government guidelines
 - b) industry guidelines
 - c) EISs for similar projects
 - d) relevant research and reference material
 - e) relevant preliminary studies or reports for the proposal
 - f) consultation with stakeholders.
- Provide a summary of the outcomes of the process including:
 - a) all issues identified including local, regional and global impacts (e.g. increased/ decreased greenhouse emissions)
 - b) key issues which will require a full analysis (including comprehensive baseline assessment)
 - c) issues not needing full analysis though they may be addressed in the mitigation strategy
 - d) justification for the level of analysis proposed (the capacity of the proposal to give rise to high concentrations of pollution compared with the ambient environment or environmental outcomes is an important factor in setting the level of assessment).

E The environmental issues

1. General

- The potential impacts identified in the scoping study need to be assessed to determine their significance, particularly in terms of achieving environmental outcomes, and minimising environmental pollution.
- Identify gaps in information and data relevant to significant impacts of the proposal and any actions proposed to fill those information gaps so as to enable development of appropriate management and mitigation measures. This is in accordance with ESD requirements.

Note: The level of detail should match the level of importance of the issue in decision making which is dependent on the environmental risk.

Describe baseline conditions

- Provide a description of existing environmental conditions for any potential impacts.

Assess impacts

- For any potential impacts relevant for the assessment of the proposal provide a detailed analysis of the impacts of the proposal on the environment including the cumulative impact of the proposal on the receiving environment especially where there are sensitive receivers.
- Describe the methodology used and assumptions made in undertaking this analysis (including any modelling or monitoring undertaken) and indicate the level of confidence in the predicted outcomes and the resilience of the environment to cope with the predicted impacts.
- The analysis should also make linkages between different areas of assessment where necessary to enable a full assessment of environmental impacts e.g. assessment of impacts on air quality will often need to draw on the analysis of traffic, health, social, soil and/or ecological systems impacts; etc.
- The assessment needs to consider impacts at all phases of the project cycle including: exploration (if relevant or significant), construction, routine operation, start-up operations, upset operations and decommissioning if relevant.
- The level of assessment should be commensurate with the risk to the environment.

Describe management and mitigation measures

- Describe any mitigation measures and management options proposed to prevent, control, abate or mitigate identified environmental impacts associated with the proposal and to reduce risks to human health and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.
- Proponents are expected to implement a 'reasonable level of performance' to minimise environmental impacts. The proponent must indicate how the proposal meets reasonable levels of performance. For example, reference technology based criteria if available, or identify good practice for this type of activity or development. A 'reasonable level of performance' involves adopting and implementing technology and

management practices to achieve certain pollutant emissions levels in economically viable operations. Technology-based criteria evolve gradually over time as technologies and practices change.

- Use environmental impacts as key criteria in selecting between alternative sites, designs and technologies, and to avoid options having the highest environmental impacts.
- Outline any proposed approach (such as an Environmental Management Plan) that will demonstrate how commitments made in the EIS will be implemented. Areas that should be described include:
 - a) operational procedures to manage environmental impacts
 - b) monitoring procedures
 - c) training programs
 - d) community consultation
 - e) complaint mechanisms including site contacts
 - f) strategies to use monitoring information to improve performance
 - g) strategies to achieve acceptable environmental impacts and to respond in event of exceedences.

4. Air

Describe baseline conditions

- Provide a description of existing air quality and meteorology, using existing information and site representative ambient monitoring data.

Assess impacts

- The EIS must include an Air Quality Impact Assessment (AQIA) to identify all pollutants of concern and estimate emissions by quantity (and size for particles), source and discharge point.
- The AQIA must identify and describe in detail all possible sources of air pollution and activities or processes with the potential to cause air pollutants including odours and fugitive dust emissions beyond the boundary of any pipeline route. This should cover both the construction and operational phases of the development. The AQIA should include cumulative impacts associated with existing developments and any developments having been granted development consent but which have not commenced.
- The EIS must describe in detail the measures proposed to mitigate the impacts and quantify the extent to which the mitigation measures are likely to be effective in achieving the relevant environmental outcomes.
- Estimate the resulting ground level concentrations of all pollutants. This should include fumes and particulates from diesel plant and equipment at the facility. Where necessary (e.g. potentially significant impacts and complex terrain effects), use an appropriate dispersion model to estimate ambient pollutant concentrations. Discuss choice of model and parameters with the EPA.
- Describe the effects and significance of pollutant concentration on the environment, human health, amenity and regional ambient air quality standards or goals.
- Describe the contribution that the development will make to regional and global pollution, particularly in sensitive locations.

- For potentially odorous emissions provide the emission rates in terms of odour units (determined by techniques compatible with EPA procedures). Use sampling and analysis techniques for individual or complex odours and for point or diffuse sources, as appropriate.

Note: With dust and odour, it may be possible to use data from existing similar activities to generate emission rates.

- Consider and assess odour impacts from the various waste types such as putrescible wastes (food, garden organics), liquid wastes, hazardous wastes and chemicals.

Describe management and mitigation measures

- The applicant should design management and mitigation measures to ensure:
 - emissions do not cause adverse impacts upon human health and the environment;
 - there are no offensive odours from the facility beyond the boundary of the premises;
- Outline specifications of pollution control equipment (including manufacturer's performance guarantees where available) and management protocols for odour and both point and fugitive emissions. Where possible, this should include cleaner production processes.
- The EIS must describe in detail the measures proposed to mitigate the impacts and quantify the extent to which the mitigation measures are likely to be effective in achieving the relevant environmental outcomes..

5. Noise and vibration

Describe baseline conditions

- Determine the existing background (LA90) and ambient (LAeq) noise levels, as relevant, in accordance with the *NSW Noise Policy for Industry*.
- Determine the existing road traffic noise levels in accordance with the *NSW Road Noise Policy*, where road traffic noise impacts may occur.
- The noise impact assessment report should provide details of all monitoring of existing ambient noise levels including:
 - a) details of equipment used for the measurements
 - b) a brief description of where the equipment was positioned
 - c) a statement justifying the choice of monitoring site(s), including the procedure used to choose the site(s), having regards to Fact Sheets A and B of the *NSW Noise Policy for Industry*.
 - d) details of the exact location of the monitoring site and a description of land uses in surrounding areas
 - e) a description of the dominant and background noise sources at the site
 - f) day, evening and night assessment background levels for each day of the monitoring period
 - g) the final Rating Background Level (RBL) value

- h) graphs of the measured noise levels for each day should be provided
- i) a record of periods of affected data (due to adverse weather and extraneous noise), methods used to exclude invalid data and a statement indicating the need for any re-monitoring.

Assess impacts

- The environmental outcome of the project should be to minimise adverse impacts due to noise from the project. The EIS must clearly outline the noise mitigation, monitoring and management measures the proponent intends to apply to the project to minimise noise pollution.

A noise assessment should be undertaken in accordance with the New South Wales Noise Policy for Industry (EPA 2017).

- Determine the project noise trigger levels for the site.
- Determine expected noise level and noise character likely to be generated from noise sources during:
 - a) site establishment
 - b) construction
 - c) operational phases
 - d) transport including traffic noise generated by the proposal
 - e) other services.
- The noise impact assessment report should include:
 - a) a plan showing the assumed location of each noise source for each prediction scenario
 - b) a list of the number and type of noise sources used in each prediction scenario to simulate all potential significant operating conditions on the site
 - c) any assumptions made in the predictions in terms of source heights, directivity effects, shielding from topography, buildings or barriers, etc
 - d) methods used to predict noise impacts including identification of any noise models used.
 - e) the weather conditions considered for the noise predictions
 - f) the predicted noise impacts from each noise source as well as the combined noise level for each prediction scenario
 - g) for developments where a significant level of noise impact is likely to occur, noise contours for the key prediction scenarios should be derived
 - h) an assessment of the need to include modification factors as detailed in Fact Sheet C of the *NSW Noise Policy for Industry*.
- Discuss the findings from the predictive modelling and, where relevant noise criteria have not been met, recommend additional feasible and reasonable mitigation measures.
- The noise impact assessment report should include details of any mitigation proposed including the attenuation that will be achieved and the revised noise impact predictions following mitigation.
 - a) Where relevant noise/vibration levels cannot be met after application of all feasible and reasonable mitigation measures the residual level of noise impact needs to be quantified
- For the assessment of existing and future traffic noise, details of data for the road should be included such as assumed traffic volume; percentage heavy vehicles by time of day; and details of the calculation process. These details should be consistent with any traffic study carried out in the EIS.

Describe management and mitigation measures

- Determine the most appropriate noise mitigation measures and expected noise reduction including both noise controls and management of impacts for both construction and operational noise. This will include selecting quiet equipment and construction methods, noise barriers or acoustic screens, location of stockpiles, temporary offices, compounds and vehicle routes, scheduling of activities, etc.
- For traffic noise impacts, provide a description of the ameliorative measures considered (if required), reasons for inclusion or exclusion, and procedures for calculation of noise levels including ameliorative measures. Also include, where necessary, a discussion of any potential problems associated with the proposed ameliorative measures, such as overshadowing effects from barriers. Appropriate ameliorative measures may include:
 - a) use of alternative transportation modes, alternative routes, or other methods of avoiding the new road usage
 - b) control of traffic (eg: limiting times of access or speed limitations)
 - c) resurfacing of the road using a quiet surface
 - d) use of (additional) noise barriers or bunds
 - e) treatment of the façade to reduce internal noise levels buildings where the night-time criteria is a major concern
 - f) more stringent limits for noise emission from vehicles (i.e. using specially designed 'quite' trucks and/or trucks to use air bag suspension
 - g) driver education
 - h) appropriate truck routes
 - i) limit usage of exhaust brakes
 - j) use of premium muffles on trucks
 - k) reducing speed limits for trucks
 - l) ongoing community liaison and monitoring of complaints
 - m) phasing in the increased road use.

4. Water

The environmental outcome for the project should ensure:

- polluted water (including process waters, wash down waters, polluted stormwater or sewage) is captured on the site and directed to reticulated sewer where available or else collected, treated and beneficially reused, where this is safe and practicable to do so.
- Promote integrated water cycle management that optimises opportunities for sustainable water supply, wastewater and stormwater management and reuse initiatives where it is safe and practicable to do so.
- Appropriate stormwater management during construction and operation
- bunding is designed in accordance with the EPA's Bunding and Spill Management guidelines.

The EIS should document how the above outcomes will be achieved. The EIS should also demonstrate how the stormwater management system will satisfy relevant contemporary guidelines such as *Managing Urban Stormwater - Soils and Construction - Volume 2E Mines and Quarries* (DECC June 2008).

Describe baseline conditions

- Describe existing surface and groundwater quality – an assessment needs to be undertaken for any water resource likely to be affected by the proposal and for all conditions (e.g. a wet weather sampling program is needed if runoff events may cause impacts).
Note: Methods of sampling and analysis need to conform with an accepted standard (e.g. Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC 2004) or be approved and analyses undertaken by accredited laboratories).
- Provide site drainage details and surface runoff yield.

Describe the state of the receiving waters and relate this to the relevant Water Quality and River Flow Objectives (i.e. are Water Quality and River Flow Objectives being achieved?).

Assess impacts

- No proposal should breach section 120 of the *Protection of the Environment Operations Act 1997* (i.e. pollution of waters is prohibited unless undertaken in accordance with relevant regulations).
- Identify and estimate the quantity of all pollutants that may be introduced into the water cycle by source and discharge point including residual discharges after mitigation measures are implemented.
- Identify any potential impacts on quality or quantity of groundwater describing their source.
- Identify potential impacts associated with geomorphological activities with potential to increase surface water and sediment runoff or to reduce surface runoff and sediment transport. Also consider possible impacts such as bed lowering, bank lowering, instream siltation, floodplain erosion and floodplain siltation.
- Identify impacts associated with the disturbance of acid sulfate soils and potential acid sulfate soils.
- Containment of spills and leaks shall be in accordance with EPA's guidelines section 'Bunding and Spill Management' at <http://www.epa.nsw.gov.au/mao/bundingspill.htm> and the most recent versions of the Australian Standards referred to in the Guidelines. Containment should be designed for no-discharge.
- Where a licensed discharge is proposed, provide the rationale as to why it represents the best environmental outcome and what measures can be taken to reduce its environmental impact.
- Assess impacts for the construction and operational phases of the proposal.

Describe management and mitigation measures

- Outline stormwater management to control pollutants at the source and contain them within the site. Also describe measures for maintaining and monitoring any stormwater controls.
- Outline erosion and sediment control measures directed at minimising disturbance of land, minimising water flow through the site and filtering, trapping or detaining sediment. Also include measures to maintain and monitor controls as well as rehabilitation strategies.

- Describe waste water treatment measures that are appropriate to the type and volume of waste water and are based on a hierarchy of avoiding generation of waste water.
- Outline pollution control measures relating to storage of materials, possibility of accidental spills (e.g. preparation of contingency plans), appropriate disposal methods, and generation of leachate.
- Any proposed monitoring should be undertaken in accordance with the *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (DEC 2004).

5. Soils and contamination

Describe baseline conditions

- Provide any details (in addition to those provided in the location description - Section C) that are needed to describe the existing situation in terms of soil types and properties and soil contamination.

Assess impacts

- Identify any likely impacts resulting from the construction or operation of the proposal, including the likelihood of:
 - a) disturbing any existing contaminated soil
 - b) contamination of soil by operation of the activity
 - c) subsidence or instability
 - d) soil erosion
 - e) disturbing acid sulfate or potential acid sulfate soils.
- Reference should be made relevant guidelines e.g. *Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites* (OEH, 2011); *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (EPA, 2015).

Describe management and mitigation measures

- Describe and assess the effectiveness or adequacy of any soil management and mitigation measures during construction and operation of the proposal including:
 - a) erosion and sediment control measures
 - b) proposals for site remediation – see *Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning and Environment Protection Authority, 1998)
 - c) proposals for the management of these soils – see *Acid Sulfate Soil Manual* (Acid Sulfate Soil Advisory Committee 1998) and *Acid Sulfate Soils Assessment Guidelines* (Acid Sulfate Soil Advisory Committee 1998).

6. Waste and chemicals

Describe baseline conditions

- Describe any existing waste or chemicals operations related to the proposal, particularly given the historical industrial uses of the site.

Assess impacts

- Describe the sources, types and quantities of all waste types proposed to be received, and handled at the premises.
- Describe the waste processing capacity of the facility. Give consideration that all wastes must be received, processed and stored indoors.
- Provide the maximum annual throughput of waste and the maximum amount of waste anticipated to be stored at the premises at any one time. Consider Fire + Rescue NSW's *Fire Safety in Waste Facilities* guideline 2019.
- Assess the adequacy of proposed measures to minimise natural resource consumption and minimise impacts from the handling, transporting, storage, processing and reprocessing of waste and/or chemicals.
- Assess the requirements for handling and storing different types of hazardous wastes and contaminated soils, including potential impact on employees and visitors at the facility.
- Assess the impacts of leachate generating wastes which are proposed to be received.
- Detail procedures for dealing with wastes not permitted to be accepted at the premises.
- Detail how the proponent will meet the EPA's record keeping and reporting requirements for waste facilities, see the EPA's *Waste Levy Guideline 2018*.
- Reference should be made to: the EPA's *Waste Classification Guidelines 2014*.

Describe management and mitigation measures

- Consider specific impacts from the various waste types that are proposed to be received at the facility and that all wastes are to be received and handled indoors.
- Detail leachate and odour minimising measures to be implemented specific to the impacts identified for leachate and odour generating wastes .
- Describe sources of waste types proposed, and impacts of wastes leaving the facility being transported to other uses, processing or disposal options, and the lawful status of those facilities to receive wastes.
- Outline measures to minimise the consumption of natural resources.
- Outline measures to avoid the generation of waste and promote the re-use and recycling and reprocessing of any waste.
- Outline measures to support any approved regional or industry waste plans.

7. Cumulative impacts

- Identify the extent that the receiving environment is already stressed by existing development and background levels of emissions to which this proposal will contribute.
- Assess the impact of the proposal against the long term air, noise and water quality objectives for the area or region.
- Identify infrastructure requirements flowing from the proposal (e.g. water and sewerage services, transport infrastructure upgrades).
- Assess likely impacts from such additional infrastructure and measures reasonably available to the proponent to contain such requirements or mitigate their impacts (e.g. travel demand management strategies).

F. List of approvals and licences

- Identify all approvals and licences required under environment protection legislation including details of all scheduled activities, types of ancillary activities and types of discharges (to air, land, water).

G. Compilation of mitigation measures

- Outline how the proposal and its environmental protection measures would be implemented and managed in an integrated manner so as to demonstrate that the proposal is capable of complying with statutory obligations under EPA licences or approvals (e.g. outline of an environmental management plan).
- The mitigation strategy should include the environmental management and cleaner production principles which would be followed when planning, designing, establishing and operating the proposal. It should include two sections, one setting out the program for managing the proposal and the other outlining the monitoring program with a feedback loop to the management program.

H. Justification for the Proposal

- Reasons should be included which justify undertaking the proposal in the manner proposed, having regard to the potential environmental impacts.

ATTACHMENT B: GUIDANCE MATERIAL

Title	Web address
Relevant Legislation	
<i>Contaminated Land Management Act 1997</i>	http://www.legislation.nsw.gov.au/#/view/act/1997/140
<i>Environmentally Hazardous Chemicals Act 1985</i>	http://www.legislation.nsw.gov.au/#/view/act/1985/14
<i>Environmental Planning and Assessment Act 1979</i>	http://www.legislation.nsw.gov.au/#/view/act/1979/203
<i>Protection of the Environment Operations Act 1997</i>	http://www.legislation.nsw.gov.au/#/view/act/1997/156
<i>Water Management Act 2000</i>	http://www.legislation.nsw.gov.au/#/view/act/2000/92
Licensing	
Guide to Licensing	www.epa.nsw.gov.au/licensing/licenceguide.htm
Air Issues	
Air Quality	
Approved methods for modelling and assessment of air pollutants in NSW (2016)	http://www.epa.nsw.gov.au/air/appmethods.htm
POEO (Clean Air) Regulation 2010	http://www.legislation.nsw.gov.au/#/view/regulation/2010/428
Noise and Vibration	
NSW Noise Policy for Industry	http://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-(2017)
Interim Construction Noise Guideline (DECC, 2009)	http://www.epa.nsw.gov.au/noise/constructnoise.htm
Assessing Vibration: a technical guideline (DEC, 2006)	http://www.epa.nsw.gov.au/noise/vibrationguide.htm
NSW Road Noise Policy (DECCW, 2011)	http://www.epa.nsw.gov.au/your-environment/noise/transport-noise
NSW Rail Infrastructure Noise Guideline (EPA, 2013)	http://www.epa.nsw.gov.au/your-environment/noise/transport-noise
Human Health Risk Assessment	

Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards (enHealth, 2012)	http://www.eh.org.au/documents/item/916
Waste, Chemicals and Hazardous Materials and Radiation	
Waste	
Environmental Guidelines: Solid Waste Landfills (EPA, 2016)	http://www.epa.nsw.gov.au/waste/landfill-sites.htm
Draft Environmental Guidelines - Industrial Waste Landfilling (April 1998)	http://www.epa.nsw.gov.au/resources/waste/envguidlms/industrialfill.pdf
EPA's Waste Classification Guidelines 2014	http://www.epa.nsw.gov.au/wasteregulation/classify-guidelines.htm
Resource recovery orders and exemptions	http://www.epa.nsw.gov.au/wasteregulation/orders-exemptions.htm
European Unions Waste Incineration Directive 2000	http://ec.europa.eu/environment/archives/air/stationary/wid/legislation.htm
EPA's Energy from Waste Policy Statement	http://www.epa.nsw.gov.au/wastestrategy/energy-from-waste.htm
NSW Waste Avoidance and Resource Recovery Strategy 2014-2021	http://www.epa.nsw.gov.au/wastestrategy/warr.htm
Chemicals subject to Chemical Control Orders	
Chemical Control Orders (regulated through the EHC Act)	http://www.epa.nsw.gov.au/pesticides/CCOs.htm
National Protocol - Approval/Licensing of Trials of Technologies for the Treatment/Disposal of Schedule X Wastes - July 1994	Available in libraries
National Protocol for Approval/Licensing of Commercial Scale Facilities for the Treatment/Disposal of Schedule X Wastes - July 1994	Available in libraries
Water and Soils	
Acid sulphate soils	
Coastal acid sulfate soils guidance material	http://www.environment.nsw.gov.au/acidsulfatesoil/ and http://www.epa.nsw.gov.au/mao/acidsulfatesoils.htm
Acid Sulfate Soils Planning Maps	http://www.environment.nsw.gov.au/acidsulfatesoil/riskmaps.htm
Contaminated Sites Assessment and Remediation	
Managing land contamination: Planning Guidelines – SEPP 55 Remediation of Land	http://www.epa.nsw.gov.au/clm/planning.htm

Guidelines for Consultants Reporting on Contaminated Sites (EPA, 2000)	http://www.epa.nsw.gov.au/resources/clm/20110650consultantsgline.pdf
Guidelines for the NSW Site Auditor Scheme - 2nd edition (DEC, 2006)	http://www.epa.nsw.gov.au/resources/clm/auditorglines06121.pdf
Sampling Design Guidelines (EPA, 1995)	http://www.epa.nsw.gov.au/resources/clm/95059samppgdline.pdf
National Environment Protection (Assessment of Site Contamination) Measure 1999 (or update)	http://www.scew.gov.au/nepms/assessment-site-contamination
Soils – general	
Managing land and soil	http://www.environment.nsw.gov.au/soils/landandsoil.htm
Managing urban stormwater for the protection of soils	http://www.environment.nsw.gov.au/stormwater/publications.htm
Landslide risk management guidelines	http://australiangeomechanics.org/admin/wp-content/uploads/2010/11/LRM2000-Concepts.pdf
Site Investigations for Urban Salinity (DLWC, 2002)	http://www.environment.nsw.gov.au/resources/salinity/booklet3siteinvestigationsforurbansalinity.pdf
Local Government Salinity Initiative Booklets	http://www.environment.nsw.gov.au/salinity/solutions/urban.htm
Water	
Water Quality Objectives	http://www.environment.nsw.gov.au/ieo/index.htm
ANZECC (2000) Guidelines for Fresh and Marine Water Quality	http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html
Applying Goals for Ambient Water Quality Guidance for Operations Officers - Mixing Zones	Contact the EPA on 131555
Approved Methods for the Sampling and Analysis of Water Pollutant in NSW (2004)	http://www.environment.nsw.gov.au/resources/legislation/approved-methods-water.pdf



DOC20/264950-5
SSD 10447

Zoe Halpin

Student Planner
Industry Assessments
Department of Planning, Industry and Environment
zoe.halpin@planning.nsw.gov.au

Dear Zoe

Input into Secretary's Environmental Assessment Requirements – Tomago Resource Recovery Facility, Tomago (SSD 10447)

I refer to your email sent on 1 April 2020 seeking input into the Secretary's Environmental Assessment Requirements (SEARs) for the Tomago Resource Recovery Facility proposal, located at 21D and 21F School Drive (Lots 8 and 11, DP 270328) in Tomago. The proposed development is within the Port Stephens local government area.

The Biodiversity Conservation Division (BCD) of the Department of Planning, Industry and Environment (DPIE) understands that REMONDIS Australia Pty Ltd (the proponent) are proposing the relocation (from Thornton) of an existing resource recovery facility and truck parking depot to Tomago. BCD understands that the proposal is a State Significant Development (SSD 10447) project under the *Environmental Planning and Assessment Act 1979*.

BCD has reviewed the Preliminary Environmental Assessment documents as prepared by Jackson Environment and Planning Pty Ltd (dated 2020) and has prepared Standard SEARs which are presented in **Attachment A**. There are no project-specific SEARs provided for this project (**Attachment B**). Details of guidance documents are provided in **Attachment C**.

With respect to Aboriginal cultural heritage, BCD notes that any Aboriginal cultural heritage assessment undertaken prior to 2010 is unlikely to meet current BCD Aboriginal cultural heritage guidelines for the assessment of Aboriginal cultural heritage in NSW. The *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) should be referenced in this instance.

If you have any further questions in relation to this matter, please contact Steve Lewer, Senior Regional Biodiversity Conservation Officer, on 4927 3158 or at rog.hcc@environment.nsw.gov.au.



Yours sincerely

A handwritten signature in dark ink, appearing to be 'SC', with a long horizontal stroke extending to the right.

9 April 2020

STEVEN COX
Senior Team Leader Planning
Hunter Central Coast Branch
Biodiversity and Conservation Division

Enclosure: Attachments A, B, C

Attachment A – Standard Environmental Assessment Requirements

Biodiversity
1. Biodiversity impacts related to the proposed development (SSD 10447) are to be assessed in accordance with the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form detailed in the <i>Biodiversity Conservation Act 2016</i> (s6.12), <i>Biodiversity Conservation Regulation 2017</i> (s6.8) and Biodiversity Assessment Method. 2. The BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the Biodiversity Assessment Method. 3. The BDAR must include details of the measures proposed to address the offset obligation as follows; • The total number and classes of biodiversity credits required to be retired for the development/project; • The number and classes of like-for-like biodiversity credits proposed to be retired; • The number and classes of biodiversity credits proposed to be retired in accordance with the variation rules; • Any proposal to fund a biodiversity conservation action; • Any proposal to conduct ecological rehabilitation (if a mining project); • Any proposal to make a payment to the Biodiversity Conservation Fund. If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits. 4. The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the <i>Biodiversity Conservation Act 2016</i>.
Aboriginal cultural heritage
5. The Environmental Impact Assessment (EIS) must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the development and document these in the Aboriginal Cultural Heritage Assessment Report (ACHAR). This may include the need for surface survey and test excavation. The identification of cultural heritage values should be guided by the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011) and consultation with BCD regional branch officers. 6. Consultation with Aboriginal people must be undertaken and documented in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR.

7. Impacts on Aboriginal cultural heritage values are to be assessed and documented in the ACHAR. The ACHAR must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to BCD.
Historic heritage
8. The EIS must provide a heritage assessment including but not limited to an assessment of impacts to State and local heritage including conservation areas, natural heritage areas, places of Aboriginal heritage value, buildings, works, relics, gardens, landscapes, views, trees should be assessed. Where impacts to State or locally significant heritage items are identified, the assessment shall: a. outline the proposed mitigation and management measures (including measures to avoid significant impacts and an evaluation of the effectiveness of the mitigation measures) generally consistent with the NSW Heritage Manual (1996), b. be undertaken by a suitably qualified heritage consultant(s) (note: where archaeological excavations are proposed the relevant consultant must meet the NSW Heritage Council's Excavation Director criteria), c. include a statement of heritage impact for all heritage items (including significance assessment), d. consider impacts including, but not limited to, vibration, demolition, archaeological disturbance, altered historical arrangements and access, landscape and vistas, and architectural noise treatment (as relevant), and e. where potential archaeological impacts have been identified develop an appropriate archaeological assessment methodology, including research design, to guide physical archaeological test excavations (terrestrial and maritime as relevant) and include the results of these test excavations.
Water and soils
9. The EIS must map the following features relevant to water and soils including: a. Acid sulfate soils (Class 1, 2, 3 or 4 on the Acid Sulfate Soil Planning Map). b. Rivers, streams, wetlands, estuaries (as described in s4.2 of the Biodiversity Assessment Method). c. Wetlands as described in s4.2 of the Biodiversity Assessment Method. d. Groundwater. e. Groundwater dependent ecosystems. f. Proposed intake and discharge locations.

10. The EIS must describe background conditions for any water resource likely to be affected by the development, including:

- a. Existing surface and groundwater.
- b. Hydrology, including volume, frequency and quality of discharges at proposed intake and discharge locations.
- c. Water Quality Objectives (as endorsed by the NSW Government <http://www.environment.nsw.gov.au/ieo/index.htm>) including groundwater as appropriate that represent the community's uses and values for the receiving waters.
- d. Indicators and trigger values/criteria for the environmental values identified at (c) in accordance with the [ANZECC \(2000\) Guidelines for Fresh and Marine Water Quality](#) and/or local objectives, criteria or targets endorsed by the NSW Government.

11. The EIS must assess the impacts of the development on water quality, including:

- a. The nature and degree of impact on receiving waters for both surface and groundwater, demonstrating how the development protects the Water Quality Objectives where they are currently being achieved, and contributes towards achievement of the Water Quality Objectives over time where they are currently not being achieved. This should include an assessment of the mitigating effects of proposed stormwater and wastewater management during and after construction.
- b. Identification of proposed monitoring of water quality.

12. The EIS must assess the impact of the development on hydrology, including:

- a. Water balance including quantity, quality and source.
- b. Effects to downstream rivers, wetlands, estuaries, marine waters and floodplain areas.
- c. Effects to downstream water-dependent fauna and flora including groundwater dependent ecosystems.
- d. Impacts to natural processes and functions within rivers, wetlands, estuaries and floodplains that affect river system and landscape health such as nutrient flow, aquatic connectivity and access to habitat for spawning and refuge (e.g. river benches).
- e. Changes to environmental water availability, both regulated/licensed and unregulated/rules-based sources of such water.
- f. Mitigating effects of proposed stormwater and wastewater management during and after construction on hydrological attributes such as volumes, flow rates, management methods and re-use options.
- g. Identification of proposed monitoring of hydrological attributes.

Flooding and coastal erosion

13. The EIS must map the following features relevant to flooding as described in the Floodplain Development Manual 2005 (NSW Government 2005) including:

- a. Flood prone land.
- b. Flood planning area, the area below the flood planning level.
- c. Hydraulic categorisation (floodways and flood storage areas).

14. The EIS must describe flood assessment and modelling undertaken in determining the design flood levels for events, including a minimum of the 1 in 10 year, 1 in 100 year flood levels and the probable maximum flood, or an equivalent extreme event.
15. The EIS must model the effect of the proposed development (including fill) on the flood behaviour under the following scenarios: a. Current flood behaviour for a range of design events as identified in 11 above. This includes the 1 in 200 and 1 in 500 year flood events as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.
16. Modelling in the EIS must consider and document: a. The impact on existing flood behaviour for a full range of flood events including up to the probable maximum flood. b. Impacts of the development on flood behaviour resulting in detrimental changes in potential flood affection of other developments or land. This may include redirection of flow, flow velocities, flood levels, hazards and hydraulic categories. c. Relevant provisions of the NSW Floodplain Development Manual 2005.
17. The EIS must assess the impacts on the proposed development on flood behaviour, including: a. Whether there will be detrimental increases in the potential flood affection of other properties, assets and infrastructure. b. Consistency with Council floodplain risk management plans. c. Compatibility with the flood hazard of the land. d. Compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land. e. Whether there will be adverse effect to beneficial inundation of the floodplain environment, on, adjacent to or downstream of the site. f. Whether there will be direct or indirect increase in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses. g. Any impacts the development may have upon existing community emergency management arrangements for flooding. These matters are to be discussed with the SES and Council. h. Whether the proposal incorporates specific measures to manage risk to life from flood. These matters are to be discussed with the SES and Council. i. Emergency management, evacuation and access, and contingency measures for the development considering the full range of flood risk (based upon the probable maximum flood or an equivalent extreme flood event). These matters are to be discussed with and have the support of Council and the SES. j. Any impacts the development may have on the social and economic costs to the community as consequence of flooding.

18. The [EIS/EA] must describe the potential effects of coastal processes and hazards (within the meaning of the Coastal Management Act 2016), including sea level rise and climate change:

- a. On the proposed development
- b. Arising from the proposed development.

19. The [EIS/EA] must consider have regard to any certified Coastal Management Program (or Coastal Zone Management Plan) and be consistent with the management objectives described in the Coastal Management Act 2016 and development controls for coastal management areas mapped under the State Environmental Planning Policy (Coastal Management) 2018.

Attachment B – Project specific environmental assessment requirements

Biodiversity - nil
Aboriginal cultural heritage - nil
Historic heritage - nil
Water and soils - nil
Flooding and coastal erosion - nil

Attachment C – Guidance material

Title	Web address
Relevant legislation	
<i>Biodiversity Conservation Act 2016</i>	https://www.legislation.nsw.gov.au/#/view/act/2016/63/full
<i>Coastal Management Act 2016</i>	https://www.legislation.nsw.gov.au/#/view/act/2016/20/full
<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>	http://www.austlii.edu.au/au/legis/cth/consol_act/epabca1999588/
<i>Environmental Planning and Assessment Act 1979</i>	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+203+1979+cd+0+N
<i>Fisheries Management Act 1994</i>	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+38+1994+cd+0+N
<i>Marine Parks Act 1997</i>	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+64+1997+cd+0+N
<i>National Parks and Wildlife Act 1974</i>	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+80+1974+cd+0+N
<i>Protection of the Environment Operations Act 1997</i>	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+156+1997+cd+0+N
<i>Water Management Act 2000</i>	http://www.legislation.nsw.gov.au/maintop/view/inforce/act+92+2000+cd+0+N
<i>Wilderness Act 1987</i>	http://www.legislation.nsw.gov.au/viewtop/inforce/act+196+1987+FIRST+0+N
Biodiversity	
Biodiversity Assessment Method (OEH, 2017)	http://www.environment.nsw.gov.au/resources/bcact/biodiversity-assessment-method-170206.pdf
Guidance and Criteria to assist a decision maker to determine a serious and irreversible impact (OEH, 2017)	http://www.environment.nsw.gov.au/resources/bcact/guidance-decision-makers-determine-serious-irreversible-impact-170204.pdf
NSW Guide to Surveying Threatened Plant	http://www.environment.nsw.gov.au/resources/threatenedspecies/160129-threatened-plants-survey-guide.pdf
Fisheries NSW policies and guidelines	http://www.dpi.nsw.gov.au/fisheries/habitat/publications/policies,-guidelines-and-manuals/fish-habitat-conservation
List of national parks	http://www.environment.nsw.gov.au/NationalParks/parksearchatoz.aspx
Revocation, recategorisation and road adjustment policy (OEH, 2012)	http://www.environment.nsw.gov.au/policies/RevocationOfLandPolicy.htm
Guidelines for developments adjoining land and water managed by the Department of Environment, Climate Change and Water (DECCW, 2010)	http://www.environment.nsw.gov.au/protectedareas/developmntadjoiningdecc.htm
Heritage	
The Burra Charter (The Australia ICOMOS charter for places of cultural significance)	http://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf
Statements of Heritage Impact 2002 (HO & DUAP)	http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/hmstatementsofhi.pdf

Title	Web address
NSW Heritage Manual (DUAP) (scroll through alphabetical list to 'N')	http://www.environment.nsw.gov.au/Heritage/publications/
Aboriginal cultural heritage	
Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010)	http://www.environment.nsw.gov.au/resources/cultureheritage/com consultation/09781ACHconsultreq.pdf
Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010)	http://www.environment.nsw.gov.au/resources/cultureheritage/10783FinalArchCoP.pdf
Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011)	http://www.environment.nsw.gov.au/resources/cultureheritage/20110263ACHguide.pdf
Aboriginal Site Recording Form	http://www.environment.nsw.gov.au/resources/parks/SiteCardMainV1_1.pdf
Aboriginal Site Impact Recording Form	http://www.environment.nsw.gov.au/resources/cultureheritage/120558asirf.pdf
Aboriginal Heritage Information Management System (AHIMS) Registrar	http://www.environment.nsw.gov.au/contact/AHIMSRegistrar.htm
Care Agreement Application form	http://www.environment.nsw.gov.au/resources/cultureheritage/20110914TransferObject.pdf
Acid sulphate soils	
Acid Sulfate Soils Planning Maps via Data.NSW	http://data.nsw.gov.au/data/
Acid Sulfate Soils Manual (Stone et al. 1998)	http://www.environment.nsw.gov.au/resources/epa/Acid-Sulfate-Manual-1998.pdf
Acid Sulfate Soils Laboratory Methods Guidelines (Ahern et al. 2004)	http://www.environment.nsw.gov.au/resources/soils/acid-sulfate-soils-laboratory-methods-guidelines.pdf This replaces Chapter 4 of the Acid Sulfate Soils Manual above.
Flooding and coastal erosion	
Reforms to coastal erosion management	http://www.environment.nsw.gov.au/coasts/coastalerosionmgmt.htm
Floodplain development manual	http://www.environment.nsw.gov.au/floodplains/manual.htm
Guidelines for Preparing Coastal Zone Management Plans	Guidelines for Preparing Coastal Zone Management Plans http://www.environment.nsw.gov.au/resources/coasts/130224CZMPGuide.pdf
NSW Climate Impact Profile	http://climatechange.environment.nsw.gov.au/
Climate Change Impacts and Risk Management	Climate Change Impacts and Risk Management: A Guide for Business and Government, AGIC Guidelines for Climate Change Adaptation
Water	
Water Quality Objectives	http://www.environment.nsw.gov.au/ieo/index.htm
ANZECC (2000) Guidelines for Fresh and Marine Water Quality	www.environment.gov.au/water/publications/quality/australian-and-new-zealand-guidelines-fresh-marine-water-quality-volume-1
Applying Goals for Ambient Water Quality Guidance for Operations Officers – Mixing Zones	http://deccnet/water/resources/AWQGuidance7.pdf

Title	Web address
Approved Methods for the Sampling and Analysis of Water Pollutant in NSW (2004)	http://www.environment.nsw.gov.au/resources/legislation/approvedmethods-water.pdf



OUT20/3667

Bianca Thornton
Planning and Assessment Group
NSW Department of Planning, Industry and Environment

bianca.thornton@planning.nsw.gov.au

Dear Ms Thornton

**Tomago Resource Recovery Facility and Truck Depot (SSD 10447)
Comment on the Secretary's Environmental Assessment Requirements (SEARs)**

I refer to your email of 1 April 2020 to the Department of Planning, Industry and Environment (DPIE) Water and the Natural Resources Access Regulator (NRAR) about the above matter.

The following recommendations are provided by DPIE Water and NRAR. Please note Crown Lands, the Department of Primary Industries (DPI) – Fisheries and DPI - Agriculture all now provide a separate response directly to you.

The SEARS should include:

- 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. This is also to include an assessment of the current market depth where water entitlement is required to be purchased.
- A detailed and consolidated site water balance.
- Assessment of impacts on surface and ground water 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.
- Proposed surface and groundwater monitoring activities and methodologies.
- Consideration of relevant legislation, policies and guidelines, including the NSW Aquifer Interference Policy (2012), the Guidelines for Controlled Activities on Waterfront Land (2018) and the relevant Water Sharing Plans (available at <https://www.industry.nsw.gov.au/water>).

Any further referrals to DPIE – NRAR & Water can be sent by email to:
landuse.enquiries@dpi.nsw.gov.au.

Any further referrals to (a) Crown Lands; (b) DPI – Fisheries; and (c) DPI – Agriculture can be sent by email to: (a) lands.ministerials@industry.nsw.gov.au;
(b) ahp.central@dpi.nsw.gov.au; and (c) landuse.ag@dpi.nsw.gov.au respectively.

Yours sincerely

Alistair Drew
Project Officer, Assessments
Water – Strategic Relations
6 April 2020

9 April 2020

Land Use Planning and Development
Customer Strategy & Technology
Transport for NSW
477 Pitt Street Sydney NSW 2008

Attention: Robert Rutledge

SSD - 10447 - WASTE MANAGEMENT FACILITY AND TRUCK PARKING DEPOT, 21D and 21F SCHOOL DRIVE TOMAGO (LOTS: 8 & 11 DP: 270328) SEARS ID NO. 1431

Transport for NSW (TfNSW) advises that legislation to dissolve Roads and Maritime Services and transfer its assets, rights and liabilities to TfNSW came into effect on 1 December 2019. It is intended that the new structure will enable TfNSW to deliver more integrated transport services across modes and better outcomes to customers and communities across NSW.

For convenience, correspondence, advice or submissions made to or by Roads and Maritime Services prior to its dissolution, are referred to in this letter as having been made to or by 'TfNSW'.

On 3 April 2020 TfNSW accepted the referral by the Department of Planning, Industry and Environment (DPIE) via email regarding the abovementioned application. DPIE referred the application to TfNSW for comment. This letter is a submission in response to that referral.

TfNSW's primary interests are in the road network, traffic and broader transport issues. In particular, the efficiency and safety of the classified road network, the security of property assets and the integration of land use and transport.

TfNSW have reviewed the Preliminary Environmental Assessment, prepared by Jackson Environment and Planning Pty Ltd. It is understood that the proposal be for a resource recovery facility and truck parking depot to be located at 21D and 21F School Drive Tomago.

Remondis proposes to use the site for the receipt and processing of up to 98,200 tonnes of solid and liquid waste materials per annum. Waste materials include dry non-putrescible waste materials from domestic sources, commercial and industrial sources. It will also receive within this total a small amount of putrescible waste materials from the depackaging

of food, such as drinks and packaged food items. The facility will also receive and recycle liquid wastes such as drill muds from hydro-excavation and oily wastes from mining and industrial activities across the region.

The recycling operations will be established within Buildings 1 and 2 on the site. Each recycling operation will be established in discreet parts of the existing industrial warehousing, and collectively, the Tomago Resource Recovery Facility will provide a wide range of recycling services through:

- A fully integrated Materials Recovery Facility for sorting and processing dry recycling;
- A Cardboard Baling Facility for source separated cardboard collected from businesses;
- A Drill Mud Recycling Facility for drill muds sourced from the mining and coal seam gas industry;
- A Packaged Food Recycling Plant, which will accept packaged foods and drinks, separating the food contents and packaging for recycling;
- A Garden Organics Primary Processing plant, which will receive, decontaminate and shred woody garden organics for off-site composting;
- A Hazardous Waste Recycling Facility, for sorting and aggregating a range of spent solid materials and liquids containing oils and chemicals;
- A Copper Processing area; and
- A Metals Recycling Facility.

A truck parking depot is proposed to be established on the adjacent vacant lot referred to as 21F School Drive.

TfNSW response & requirements

TfNSW recommends that the Environmental Impact Statement (EIS) should refer to the following guidelines with regard to the traffic and transport impacts of the proposed development:

- Road and Related Facilities within the Department of Planning EIS Guidelines, and,
- Section 2 Traffic Impact Studies of Roads and Maritime's NSW's *Guide to Traffic Generating Developments 2002*.

Furthermore, a traffic and transport study shall be prepared in accordance with the Roads and Maritime Services NSW's *Guide to Traffic Generating Developments 2002* and is to include (but not be limited to) the following:

- Details of the design vehicle and swept paths from Tomago Road into and out of the site, as well as within the site.
- Details of the driver facilities provided on site.
- Details of the vehicle movements into and out the site (construction and operations) throughout the day, with detailed breakdown of movements during peak site operational hours and peak hours on the broader road network.

- Demonstration that the site is able to cater for all necessary queuing and parking on site, without the need to stage heavy vehicles on the public road network (for construction and operation).
- Details of the origin/destination of heavy vehicles leaving the site and identification of broader road network upgrades.
- Details of the origin/destination of dangerous goods movements to/from the site.
- Assessment of all relevant vehicular traffic routes and intersections for access to / from the subject properties.
- Current traffic counts for all of the traffic routes and intersections.
- The anticipated additional vehicular traffic generated from both the construction and operational stages of the project.
- The distribution on the road network of the trips generated by the proposed development. It is requested that the predicted traffic flows are shown diagrammatically to a level of detail sufficient for easy interpretation.
- Consideration of the traffic impacts on existing and proposed intersections, in particular, the intersection of Tomago Road and the Pacific Highway and the capacity of the local and classified road network to safely and efficiently cater for the additional vehicular traffic generated by the proposed development during both the construction and operational stages. The traffic impact shall also include the cumulative traffic impact of other proposed developments in the area.
- Identify the necessary road network infrastructure upgrades that are required to maintain existing levels of service on both the local and classified road network for the development. In this regard, preliminary concept drawings shall be submitted with the EIS for any identified road infrastructure upgrades. However, it should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of Transport for NSW and Council.
- Traffic analysis of any major / relevant intersections impacted, using SIDRA or similar traffic model, including:
 - o Current traffic counts and 10 year traffic growth projections
 - o With and without development scenarios
 - o 95th percentile back of queue lengths
 - o Delays and level of service on all legs for the relevant intersections
 - o Electronic data for Transport for NSW review.
- Any other impacts on the regional and state road network including consideration of pedestrian, cyclist and public transport facilities and provision for service vehicles.

On determination of this matter, please forward a copy to TfNSW for record and / or action

purposes. Should you require further information please contact Tim Chapman,
A/Development Assessment Officer, on 4908 7688 or by emailing
development.hunter@rms.nsw.gov.au.

Yours sincerely

A handwritten signature in black ink, appearing to be 'Peter Marler', with a large loop at the start and a horizontal stroke at the end.

Peter Marler
Manager Land Use Assessment
Hunter Region

From: Brendan.M Hurley <Brendan.M.Hurley@fire.nsw.gov.au>
Sent: Tuesday, 7 April 2020 10:18 AM
To: Zoe Halpin
Cc: Fire Safety
Subject: HPE CM: Request for Input: Tomago Resource Recovery Facility – 21D and 21F School Drive, Tomago (Lots 8 and 11, DP 270328) - SSD 10447. FRN20/411

Request for Input: Tomago Resource Recovery Facility – 21D and 21F School Drive, Tomago (Lots 8 and 11, DP 270328) - SSD 10447

Dear Zoe,

Thank you for your submission of the Planning Secretary's Environmental Assessment Requirements (SEARs) for the preparation of an Environmental Impact Statement (EIS) for the above designated development to Fire & Rescue NSW (FRNSW) for agency review and comment.

It is understood that the SEARs has been prepared by Jackson Environment and Planning Pty Ltd on behalf of REMONDIS Australia Pty Ltd (the Applicant) relating to the operation of a waste recycling and truck parking depot with a handling capacity of greater than 30, 000 tonnes per year at 21D and 21F School Drive, Tomago (Lot 11, DP270328 and Lot 8, DP270328).

FRNSW reaffirm comments and recommendations previously submitted (20 February 2020) in preparation of the Environmental Impact Statement (EIS) and maintain that they remain relevant in addressing fire and life safety considerations for the proposed development.

The following comments and recommendations are provided following a review of relevant parts of the SEARs and associated appendices.

- It is understood that the Applicant is seeking to construct and operate the following; Cardboard Baling, Mud Recycling, Packaged Food Recycling Plant, Garden Organics Primary Processing plant, Hazardous Waste Recycling Facility, Copper Processing area, and a Metals Recycling Facility. FRNSW would consider a significant portion of such waste streams to be combustible in nature and would require the provision of fire safety systems and measures commensurate with a worst credible fire scenario.
- It is noted under that the development will be assessed against the requirements of State Environmental Planning Policy No. 33 - Hazardous and Offensive Development (SEPP 33).
- It is recommended that advice and considerations contained within FRNSW's Fire Safety Guideline – Emergency Vehicle Access be addressed. This is required such that FRNSW are able to safely access all parts of the site where an incident may occur.
- It is recommended that advice and considerations contained within FRNSW's Fire Safety Guideline – Fire safety in waste facilities be addressed. Advice and recommendations contained within the guideline have been developed to enable FRNSW to adequately manage an incident at such facilities.
- It is recommended that provisions be made for the containment of contaminated fire water run-off based on the worst credible fire scenario for the site. Any system(s) provided is to be automatic in nature and should not rely upon on-site staff or emergency services personnel to access or activate provided systems or valves in the event of fire.
- It is recommended that if the development proposes to incorporate a fire engineered solution (FES), whether a building design having a performance solution in accordance with the National Construction Code (NCC) or other infrastructure where building codes are not applicable, FRNSW should be engaged in the fire engineering brief (FEB) consultation process at the preliminary design phase, post approval of the development application. FRNSW also recommend that clauses E1.10 and E2.3 be addressed where a FES is required.

- It is recommended that a Condition of Consent be included that would require the fire and life safety measures for the development to be reassessed for adequacy in the event that either; significant changes are made to the site configuration, processing capacity is increased or there are changes to either the accepted waste streams or a significant increase in streams that are combustible in nature.
- It is recommended that an emergency plan for the waste facility in accordance with AS 3745–2010 Planning for emergencies in facilities be prepared for the development. An external consultant should be engaged to provide specialist advice and services in relation fire safety planning and developing an emergency plan.

If you have any queries regarding the above please contact the Fire Safety Infrastructure Liaison Unit, referencing FRNSW file number BFS20/411. Please ensure that all correspondence in relation to this matter is submitted electronically to firesafety@fire.nsw.gov.au.

Regards
Brendan



A/INSPECTOR BRENDAN HURLEY
TEAM LEADER INFRASTRUCTURE LIAISON
FIRE SAFETY | Fire and Rescue NSW
E: brendan.m.hurley@fire.nsw.gov.au
M:
1 Amarina Ave, Greenacre, NSW 2190

PREPARED FOR ANYTHING.

www.fire.nsw.gov.au



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This message has been scanned for viruses.

Bianca Thornton

From: Alan Bawden <Alan.Bawden@rfs.nsw.gov.au>
Sent: Wednesday, 15 April 2020 10:54 AM
To: Zoe Halpin
Subject: FW: Request for Input: Tomago Resource Recovery Facility - 21D and 21F School Drive, Tomago (Lots 8 and 11, DP 270328) - SSD 10447
Attachments: JEP Pty Ltd Remondis Australia - Tomago SEARs SR_.pdf; Appendix 1 - Development consent SR_.pdf; Appendix 2 - Architectural plans SR_.pdf; Appendix 3 - Contamination assessment SR_.pdf

Good morning Zoe

Please accept this correspondence as NSW RFS formal response to your request below.

The NSW RFS has received and reviewed your correspondence below and the attached documents.

The NSW RFS understands the development will include:

“REMONDIS is seeking approval for the receipt and processing of up to 98,200 tonnes of solid and liquid waste materials per annum. Waste materials include dry non-putrescible waste materials from domestic sources, commercial and industrial sources. It will also receive within this total a small amount of putrescible waste materials from the depackaging of food, such as drinks and packaged food items. The facility will also receive and recycle liquid wastes such as drill muds from hydro-excavation and oily wastes from mining and industrial activities across the region.”

The EIS shall address the aims/objectives and chapter 8 of *Planning of Bush Protection 2019* and shall ensure that all new development (structures and facilities) are not within flame contact of any un-managed vegetation and an adequate on-site water supply (hydrants and risers) is available.

Regards



Alan Bawden

Team Leader - Development Assessment and Planning

Planning and Environment Services (North)

NSW RURAL FIRE SERVICE

1/129 West High Street Coffs Harbour

Locked Bag 17 GRANVILLE NSW 2142

p 02 66910400 e pes@rfs.nsw.gov.au

www.rfs.nsw.gov.au www.facebook.com/nswrfs www.twitter.com/nswrfs

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