30400956

Gwynneville Estate - Preliminary Biodiversity Assessment

Homes NSW

20 February 2025





Gwynneville Estate

Preliminary Biodiversity Assessment

20 February 2025

Prepared for:

Homes NSW

Prepared by:

Stantec Pty Ltd.

Revision	Description	Aut	hor	Quality Check		Independent Review	
1	Draft for Internal Review	Jackson McCutchen	2/06/2023	Adriana Corona Mothe	2/06/2023	ET	27/09/2023
2	Draft following Council comments	Jackson McCutchen	15/07/2024	Dane Fogliada	15/07/2024	ТМ	16/07/2024
3	Final Issue	Jackson McCutchen	16/07/2024	Dane Fogliada	16/07/2024	ТМ	17/07/2024
4	Final following concept change	Shawn Virtue	20/02/2025	Dane Fogliada	20/02/2025	LG	20/02/2025

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Gwynneville Precinct – Project Summary

This report has been prepared by Stantec Australia Pty Ltd (Stantec) on behalf Homes NSW (formerly the NSW Land and Housing Corporation - LAHC) to support a planning proposal for urban renewal of land at Gwynneville, NSW.

Covering approximately 9 ha in area, the Gwynneville precinct is located 2 km north-west of the Wollongong CBD. The site sits immediately south of the University of Wollongong, and east of the Botanic Gardens. Irvine Street makes up the site's eastern boundary, with Murphy Avenue to the south. Refer Figure 1 below.

Figure 1



Source: SIX Maps, 2023

The Northfields Avenue Bus Interchange is approximately 150 m northwest of the site, and North Wollongong Railway Station is approximately 1 km to the east.

Many of the existing dwellings in Gwynneville were constructed by the NSW Government during the 1950s. The precinct is made up of predominantly single storey detached dwellings set in a modified grid-type street layout.



The Gwynneville precinct has been identified as a location capable of supporting more social, affordable and diverse private market housing for the Illawarra community, and to contribute to addressing NSW's housing crisis.

The site currently comprises approximately 131 residential lots, consisting of:

- A total of 79 social dwelling units on 75 individual lots owned by Homes NSW; and
- Approximately 56 privately owned dwelling units on 56 individual lots.

Over 60% of the homes in the precinct are owned by Homes NSW, providing an opportunity to consider additional density while taking into account key constraints such as traffic, views to and from Mount Keira as well potential to increase and embellish existing areas of open space.

Redevelopment of the Gwynneville precinct requires a formal rezoning process to confirm an amended land use zone; increased FSR and building heights, and result in improvements to the current street network, pedestrian connectivity, open space / parkland, and public amenity.

Homes NSW propose amending the Wollongong Local Environmental Plan 2009 (WLEP) to help deliver a diverse range of housing typologies which will include additional social and affordable housing, market housing products and seniors housing, as well as opportunities to develop build-to-rent, key worker housing and student accommodation.

The planning proposal intends to change the current zone of the land from R2 Low Density Residential to R4 High Density Residential, with new and expanded areas of RE1 Public Recreation. This will create the opportunity for more low to mid- rise apartments in the precinct.

The base FSR of 0.5:1 and the height control of 9 m that currently applies to the precinct is not proposed change. However, building height and FSR incentives will facilitate site amalgamation to create lots more capable of accommodating increased density and providing amenity. Height and FSR bonuses will be contingent upon achieving design excellence outcomes, providing public benefits such as social and affordable housing, and increased public open space within the precinct.

Homes NSW aims to create a high-amenity, walkable residential neighbourhood with an increased density and choice of affordable and diverse housing options that provide for a broad range of community needs and family types - including students, people on low incomes, people with disability and seniors.

New residential development will enable increased housing choices within in a well-connected location benefiting from frequent free shuttle bus services operating between University of Wollongong, North Wollongong railway station and a multitude of destinations including the city centre and hospital.

Executive Summary

This Preliminary Biodiversity Assessment (PBA) has been prepared on behalf the Homes NSW to support a planning proposal to amend the Wollongong Local Environmental Plan 2009 to accommodate urban renewal of land at Gwynneville, NSW. The redevelopment of the Gwynneville precinct will require rezoning to facilitate an amended land use zone; increased floor space ratio and building heights, and result in improvements to the current street network, pedestrian connectivity, open space / parkland, and public amenity. This PBA focuses on determining what biodiversity values are present on site.

The PBA included a desktop review of relevant information and a site inspection to ground-truth vegetation mapping to support the identification of key ecological values within the Study Area. The Study Area contains one Plant Community Type (PCT), PCT 3153- Illawarra Escarpment Bangalay x Blue Gum Wet Forest. No Threatened Ecological Communities (TECs) listed under the *Biodiversity Conservation Act 2016* (BC Act) or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) occurred within the Study Area.

Common native fauna species were identified within the Study Area during the site inspection. Predominately, birds were observed foraging or transiting through. One threatened bird species was detected during the site inspection, a little lorikeet (*Glossopsitta pusilla*). No threatened flora species were detected during the site inspection.

A likelihood of occurrence assessment was conducted and found eight species that had at least a moderate likelihood of occurring within the Study Area and could potentially use the available habitat within the Study Area. These species were: gang-gang cockatoo (*Callocephalon fimbriatum*), little lorikeet (*Glossopsitta pusilla*), little bent-winged bat (*Miniopterus australis*), large bent-winged bat (*Miniopterus orianae oceanensis*), grey-headed flying fox (*Pteropus poliocephalus*), knotweed (*Persicaria elatior*) rufous fantail (*Rhipidura rufifrons*) and yellow-bellied sheathtail-bat (*Saccolaimus flaviventris*).

The riparian zone and surrounding vegetation in the south of the Study Area present the highest ecological value in the Study Area, however, remnant and planted vegetation throughout the Study Area may also be important for fauna.

The revised masterplan (Gyde, 2025) has not altered the conclusion and recommendations found within this report.

Recommendations

1.1.1 CONCEPT DESIGN

The Concept design proposed in the Gyde (2025) plans, proposed an east to west 'Green Spine' across the central area of the Study Area. This environmental measure would see an improvement to habitat connectivity and biodiversity corridors to maintain that transient habitat for species such as the Little Lorikeet (*Glossopsitta pusilla*). The plan would seek to expand on the riparian zone within Spearing Reserve and retain and increase the number of street trees within the Study Area. These measures would ensure that a significant impact to locally occurring threatened species would be unlikely from the implementation of the Projects concept design.

1.1.2 GENERAL

As this assessment is informing a Planning Proposal and the extent of the proposed works is currently at a concept stage, Stantec have provided general recommendations as to what could be done to assist with planning for the proposed development. Proponents of any proposed project should, as a priority, aim to avoid impacts upon biodiversity values as a general principle. Where avoidance is impossible or impractical, proponents should then aim to minimise impacts. Further detail of this process is given below:

Avoid: Modify the project so no significant impact on resident biodiversity values would occur. This is typically impractical, especially given the already developed nature of the Study Area but can help guide mitigation measures.

Minimise: Modify the project to reduce the significant impacts on biodiversity values to the maximum extent possible. This is typically achieved through measures such as modification of proposed development footprint to avoid removing vegetation and areas with high biodiversity value.

Mitigate: Include measures for the proposed development to manage potential impacts to biodiversity values present within the Study Area and the locality. Measures for rezoning may include the installation of sediment fencing to avoid sediment migration to downstream environments, pre-clearance surveys and measures to avoid the introduction of weed and novel biota contaminated in fill, etc.

1.1.3 FURTHER ASSESSMENT

A future Part 4 development (under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) has three triggers that may require the proponent to enter into the BOS through a Biodiversity Development Assessment Report (BDAR):

- Clearing of native vegetation on land mapped on the Biodiversity Values (BV) map: A review of the Biodiversity Values Map and Threshold Tool (BVMATT) on July 2024 shows the Study Area does not contain any mapped biodiversity values land.
- Clearing thresholds are exceeded for the subject land: The clearing threshold is 0.25 ha for the Study Area.
- There is likely to be a significant impact on any threatened species, population and/or community: The impacts associated with the Concept Plan (Gyde, 2025) it is considered unlikely that the rezoning and development would lead to a significant impact on any threatened species.



If the final re-development footprint requires removal of native vegetation an assessment of triggers to the biodiversity offsets scheme (BOS) would be required. Where the BOS is triggered, preparation of a BDAR by an Accredited Assessor as per the Biodiversity Assessment Method (BAM) may be required.

Should entry into the BOS be a requirement for development approval, the BAM – Calculator would identify a list of 'Candidate Species' to which would require consideration in the BDAR. The following methods of assessment may be considered when applying the BAM to Candidate Species:

- Targeted surveys in accordance with relevant State and Commonwealth survey guidelines.
- Expert report.
- Assumed presence.

It should be noted that under the BC Act, the Little Lorikeet (*Glossopsitta pusilla*) is considered an ecosystem credit species and targeted surveys in accordance with the Biodiversity Assessment Method (BAM) are not required should entry into the Biodiversity Offsets Scheme (BOS) be required for the project.

Stantec also recommend the following additional requirements:

- Weed management is implemented to prevent the spread of exotic species.
- Further ecological assessment is to be undertaken subsequent to finalisation of the proposed development footprint and design which may require entry into the BOS.
- As far as practicable, any proposed development should avoid the riparian zone and surrounding Illawarra Escarpment Bangalay x Blue Gum Wet Forest in the south of the Study Area.
- As far as practicable, remnant trees and large planted native trees should be retained.

The revised masterplan (Gyde, 2025) has not altered the conclusion and recommendations found within this report.

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Abbreviations

AOBV	Area of Outstanding Biodiversity Value
AoS	Assessment of Significance
asl	Above Sea Level
BC Act	NSW Biodiversity Conservation Act 2016
Bio Act	NSW Biosecurity Act 2015
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
FM Act	Fisheries Management Act 1994
HTW	High Threat Weed
IBRA	Interim Biogeographic Regionalisation for Australia
LEP	Local Environmental Plan
LGA	Local Government Area
РВА	Preliminary Biodiversity Assessment
PCT	Plant Community Type
PW	Priority Weed
TEC	Threatened Ecological Community
ToS	Test of Significance
WoNS	Weed of National Significance

2.0 INTRODUCTION

2.1 BACKGROUND

Homes NSW, proposes to rezone the Gwynneville Precinct to facilitate an amended land use zone; increased floor space ratio and building heights and likely improvements to the current street network and public amenity. The amended controls will facilitate the delivery of a diverse range of housing typologies which will include additional social and affordable housing, market housing products and seniors housing, as well as opportunities to develop build-to-rent and student accommodation The proposal will allow for approximately 1,250 dwellings, 50% of which will be social and affordable housing. This Preliminary Biodiversity Assessment (PBA) is required to inform the planning proposal for this rezoning.

The planning proposal was submitted to Wollongong City Council on 19 July 2024, which was then placed on preliminary notification for public and agency comment. Following this notification period, Council and Homes NSW worked together to establish key amendments to the proposal and master plan that formed the basis of the reporting to Council in November 2024. The planning proposal was unanimously approved by Council on 25 November 2024 to proceed to the next step in the approval process, i.e. Gateway Determination. The revised proposal and masterplan included revisions which relate to key sites and implementation, built form outcomes, and public open space delivery. This report has been updated to reflect the outcomes of the amended planning proposal and master plan, current as at February 2025.

A Concept Plan showing a proposed layout has been prepared by Gyde (2025) to form the basis of the Planning Proposal. The Concept Plan is shown below in **Plate 1**.



Plate 1 Concept Plan (Gyde Consulting, 2025)

2.2 STUDY AREA

The Study Area is located in Gwynneville, NSW, a suburb approximately 2km north-west of the Wollongong CBD. Study Area specific particulars are summarised in **Table 1**.

Table 1 Study Area Particulars

Attribute	Study Area Particular
Locality	The Study Area is located in Gwynneville, a suburb approximately 2km north-west of Wollongong CBD (Figure 1)
LGA	Wollongong
LEP	The Study Area is included within the Wollongong Local Environmental Plan 2009.
Land Use Zone	The majority of the Study Area is zoned R2- Low Density Residential. Spearing Reserve, on the southern edge of the Study Area, is zoned RE1- Public Recreation.
Study Area	11.26 ha
Current Land Use	The Study Area contains mostly single storey residential dwellings. There is a public park in the south of the Study Area.
Topography	The Study Area gently rises from 10m asl at the south-east corner to 30m asl at the north-west corner.
Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and subregion	IBRA region: Sydney Basin IBRA subregion: Illawarra
NSW landscape regions (Mitchell landscapes)	Lake Illawarra Barrier
Watercourses and Waterbodies	An unnamed first order stream flows though the southern edge of the Study Area.
Geology	The Study Area occurs on fine-to-medium grained bioturbated andesitic sandstone and alluvium, gravel beach and dune sand.
Conservation Reserves	The Study Area is adjacent to the Wollongong Botanic Gardens which, while not a conservation reserve, does assist in the conservation of native flora. The Illawarra Escarpment State Conservation Area is the closest conservation reserve, approx. 1.5km away.
Connectivity features	The Study Area is in a heavily developed urban area and does not have any direct connectivity.
Areas of Outstanding Biodiversity Value (AOBVs)	 There are four declared areas of outstanding biodiversity value (AOBV) in NSW: Gould's Petrel; Little Penguin population in Sydney's North Harbour; Mitchell's Rainforest Snail in Stotts Island Nature Reserve; and Wollemi Pine. The Little Penguin population in Sydney's North Harbour; is the closest AOBV to the Study Area, approximately 75km away.
Local Land Services (LLS) Region	South East LLS region for application of the NSW Biosecurity Act 2015.



Figure 1 Study Area

2.3 SCOPE OF WORKS

This PBA aims to identify biodiversity values present within the Study Area and identify constraints and opportunities for repurposing the site and provide advice on assessment pathways and requirements in accordance with State and Commonwealth legislative obligations.

The PBA addresses the following legislative planning requirements relevant to biodiversity:

- Determine presence and assess proposal impacts to threatened species, populations or threatened ecological communities (TECs) listed under the NSW *Biodiversity Conservation Act 2016* (BC Act), *Fisheries Management Act 1994* (FM Act) and/or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in the Study Area
- Biosecurity obligations under the NSW *Biosecurity Act 2015* (Bio Act) for Priority Weeds for the South East region.

3.0 METHODOLOGY

3.1 DESKTOP REVIEW

A desktop review was undertaken to identify current records of threatened flora, fauna and ecological communities, migratory species, and Key Threatening Processes (KTP) within 5 km of the Study Area (i.e. the locality). This included searches of online databases and a review of available spatial data and literature relevant to the Study Area, including:

- Existing vegetation mapping as available in NSW BioNet Vegetation Information System;
- Local threatened species records within the NSW BioNet Atlas;
- Relevant Threatened Ecological Community (TEC) description and assessment guidelines (DEC, 2004; DPE, 2021);
- Freshwater threatened species distribution mapping (DPI, 2021);
- Predicted Matters of National Environmental Significance (MNES), including threatened species and ecological communities as per the Commonwealth's Protected Matters Search Tool (PMST);
- The Commonwealth Bureau of Meteorology's Atlas of Groundwater Dependent Ecosystems (GDE) (BOM, 2023b) and;
- Other relevant literature for the Study Area and its surrounds.

3.2 FIELD SURVEY

A field survey of the Study Area was undertaken on 19 May 2023. The site inspection was informed by the desktop findings and a summary of the survey effort and environmental conditions during the field survey is presented in **Table 2** and **Table 3**.

Table 2 Site Inspection Effort

Date	Staff	Hours	Survey Method	Survey Effort
19/05/2023	Ecologists: Dane Fogliada and Jackson McCutchen	4	Random Meander (RM), Rapid Biodiversity Assessment (RBA), Vegetation integrity plots, Diurnal Bird Survey, opportunistic observations	8 hours

Table 3 Environmental Conditions During Site Inspection

Date	Temperature (°C)		Rainfall (mm)	Other Observations		
	Minimum	Maximum				
19/05/2023	10.7	16.9	0.0	N/A		
Data as per Bureau of Meteorology (BOM) nearest meteorological station (Station 068228 Bellambi AWS at http://www.bom.gov.au/climate/dwo/IDCJDW2146.latest.shtml)						

3.2.1 SURVEY METHODS

3.2.1.1 RANDOM MEANDER AND RAPID ASSESSMENT

A Random Meander (RM) and Rapid Biodiversity Assessment (RBA) was conducted to ground-truth vegetation mapping and identify potential habitat in the Study Area. Biodiversity values and conditions within the Study Area were recorded. Field data was used to generate an updated map of the vegetation communities in the Study Area. Incidental flora observations were also recorded.

Fauna habitat features were collected as part of the site inspections. The availability and quality of habitat within the Study Area was assessed with respect to the following factors:

- Flora diversity and structure;
- Type and extent of habitat types;
- Habitat connectivity, including continuity with similar habitats within the Study Area;
- Occupancy of key habitat features including hollow-bearing trees and creeks, where possible;
- Degree of disturbance and degradation; and
- Topographic features such as aspect and slope.

Fauna encountered opportunistically during the site inspection were also recorded.

3.2.1.2 DIURNAL BIRD SURVEY

A diurnal bird survey was completed in accordance with the 'Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities Draft' (DEC, 2004). The diurnal survey consisted of ecologists conducting an area search of approximately two hectares for at least 20 minutes whilst actively listening and looking for bird species. The diurnal bird survey was completed before 9am to optimise detection.

3.2.1.3 VEGETATION INTEGRITY PLOT

A vegetation integrity plot was carried out in the native vegetation in Spearing Reserve in the south of the Study Area in accordance with Biodiversity Assessment Method 2020 Operational Manual – Stage 1 (DPE, 2020). This consisted of a 50m x 20m plot to assess vegetation structure and a nested 20m x 20m plot where all vascular plants were identified. This allowed for the assignment of a Plant Community Type (PCT).

3.3 SURVEY LIMITATIONS

The methodology presented here provides a limitation on describing the biodiversity values of the Study Area. The biodiversity values of the Study Area recorded from this site inspection should not be seen as a complete/comprehensive inventory.

The site inspection has sampled the Study Area at a point in time. A period of several seasons or years is often required to identify all species in an area. Given the short period of time spent on site, the detection of certain species may be affected by:



- Seasonal migration (particularly migratory birds);
- Seasonal flowering periods (some species are cryptic and are unlikely to be detected outside of the known flowering period);
- Seasonal availability of food, such as blossoms for some fauna;
- Weather conditions during the survey period (some species may go through cycles of activity related to specific weather conditions, for example some microbats, reptiles and frogs can be inactive during cold weather); and
- Species lifecycle (cycles of activity related to breeding).

These potential limitations have been addressed by applying the precautionary principle in cases where the survey methodology may have given a false negative result (e.g., a species that could reasonably be expected to occur, based on previous records and available habitat, was not observed). All species have been assessed on the basis of the presence of suitable habitat and the likely significance of that habitat to support a viable local population.

The vegetation extent within the Study Area has been mapped as accurately as possible, although some boundary errors may still exist. The vegetation within the Study Area has been assigned to the most likely Plant Community Type (PCT) described in the BioNet Vegetation Classification database. In many cases there are no sharp boundaries defining the transition between PCTs and communities are naturally variable. The vegetation boundaries on the Study Area have been mapped as best as possible based on observations during the site inspection and based on aerial imagery. It is likely that the boundaries of PCTs and vegetation zones will change with time and in response to long-term variation in environmental conditions such as rainfall, surface drainage patterns and anthropogenic disturbance.

3.3.1 LIMITED SITE ACCESS

This site inspection was conducted in the publicly accessible areas within the Study Area and, as a result, may have not detected native flora, fauna, or habitat features present in the private residences within the Study Area.

4.0 DESKTOP RESULTS

4.1 DESKTOP SEARCHES AND LITERATURE REVIEW

4.1.1 BIONET ATLAS SEARCH

The results from the BioNet Atlas database search (**Appendix A**), undertaken on 15 July 2024, indicated that 75 threatened or migratory species have been recorded within 5 km of the Study Area, including three amphibians, 44 birds, 14 mammals, four reptiles, and 10 flora species.

4.1.2 PROTECTED MATTERS SEARCH TOOL

The results of the Commonwealth EPBC Protected Matters Search Tool (PMST), undertaken on the 15 July 2024, indicated that three Matters of National Environmental Significance (MNES) are predicted to occur within the 5km locality, as listed in **Table 4**.

The full PMST report is provided in Appendix B.

MNES	Applicability to the Study Area	Addressed in:
World Heritage Places	Not identified within the Study Area.	NA
National Heritage Places	Not identified within the Study Area.	NA
Wetlands of International Importance	Not identified within the Study Area.	NA
Great Barrier Reef Marine Park	Not identified within the Study Area.	NA
Commonwealth Marine Area	Not identified within the Study Area.	NA
Threatened Ecological Communities (TECs)	 Six TECs are predicted as likely or known to occur within the 5km locality: Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community–listed as endangered under the EPBC Act; Coastal Upland Swamps in the Sydney Basin Bioregion–listed as endangered under the EPBC Act; Illawarra and south coast lowland forest and woodland ecological community-listed as critically endangered under the EPBC Act; Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion-listed as critically endangered under the EPBC Act; River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria-listed as critically endangered under the EPBC Act; and Subtropical and Temperate Coastal Saltmarsh–listed as vulnerable under the EPBC Act. 	Further assessment is presented in Section 4.2.

Table 4 Predicted Matters of National Environmental Significance.

GWYNNEVILLE ESTATE - PRELIMINARY BIODIVERSITY ASSESSMENT| FEBRUARY 2025

MNES	Applicability	Applicability to the Study Area						
Threatened Species	A total of 112 listed threatened species were predicted to occur within the 5km locality, as per the table below.					Further assessment is		
	Group	Number of s	pecies prec	licted		presented in Section 4.2.		
		Conservation Dependent	Vulnerable	Endangered	Critically Endangered			
	Birds	-	31	12	5			
	Fish	2	2	2	-			
	Frogs Mammals Plants Reptiles Sharks	-	3	2	-			
		-	6	7	-			
		-	12	14	3			
		-	3	3	-			
		2	2	-	1			
Migratory Species	A total of 60 migratory species were predicted to occur within the 5km locality.					Further assessment is presented in Section 4.2.		

4.1.3 GROUNDWATER DEPENDENT ECOSYSTEMS

The level of groundwater dependence of PCTs in the subject land has been determined using the Atlas of Groundwater Dependent Ecosystems (GDE) (BOM, 2023b). The Atlas of Groundwater Dependent Ecosystems provides broad-scale mapping of potential GDEs and has been used with contemporary, location-specific data collected as part of this PBA to determine the presence of GDEs. PCT characteristics, including vegetation class based on the Ocean Shores to Desert Dunes: The Native Vegetation of New South Wales and the ACT (Keith, 2004), were used to determine and categorise GDEs in the Study Area.

There are no terrestrial GDEs identified in the locality. Therefore, it is unlikely that any GDEs would be directly impacted by the proposal.

4.1.4 LOCAL VEGETATION MAPPING

No PCT are mapped within the Study Area within the NSW State Vegetation Type Map (SVTM) (DPE, 2022)

4.2 LIKELIHOOD OF OCCURRENCE

4.2.1 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

As detailed in Section 4.1.2, the PMST indicated that three of the eight MNES listed under the EPBC Act are known or predicted to occur within a 5km locality surrounding the Study Area (**Appendix B**). The



three MNES are various TECs, threatened species and migratory species. This information, along with local knowledge and information gathered from the Study Area during the site inspection was used to assess the likelihood of occurrence on MNES (**Appendix D**). Any MNES with the potential to be impacted by the proposed development must be subject to Assessment of Significance (AoS), under the EPBC Act, which would determine if the proposal would result in significant impacts. Given that the final project design is yet to be defined, likely impacts on these species will require further assessment based on the final project design footprint and to determine if significant impacts are likely to occur.

4.2.1.1 LISTED THREATENED ECOLOGICAL COMMUNITIES

The PMST indicated that six TECs were potentially present within the 5km locality:

- Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community– listed as endangered under the EPBC Act;
- Coastal Upland Swamps in the Sydney Basin Bioregion-listed as endangered under the EPBC Act;
- Illawarra and south coast lowland forest and woodland ecological community- listed as critically endangered under the EPBC Act;
- Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion- listed as critically endangered under the EPBC Act;
- River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victorialisted as critically endangered under the EPBC Act; and
- Subtropical and Temperate Coastal Saltmarsh-listed as vulnerable under the EPBC Act.

None of these TEC are associated with PCT 3153- Illawarra Escarpment Bangalay x Blue Gum Wet Forest. Theses TEC were identified as being unlikely to occur in the Study Area due to a lack of associated PCTs, lack of characteristic trees and/or suitable habitat. As none of the TEC were determined to have a likelihood of occurrence of moderate or higher, no Aos/ToS were conducted.

4.2.1.2 LISTED THREATENED SPECIES

The PMST indicated that 112 threatened species, listed under the EPBC Act, are known, or predicted to occur within the 5km locality. The threatened species included 48 bird, six fish, five frog,13 mammal, 29 plant, six reptile, and five shark species.

A likelihood of occurrence assessment was undertaken on 112 threatened species, listed under the EPBC Act (**Appendix D**). Three EPBC listed threatened species were considered to have a moderate or higher likelihood of occurrence within the Study Area (**Table 5**).

4.2.1.3 LISTED MIGRATORY SPECIES

The PMST report indicated that 60 migratory species are known or predicted to occur within the 5km locality. The Rufous Fantail (*Rhipidura rufifrons*) was the only migratory species considered to have a moderate or higher likelihood of occurrence within the Study Area (**Appendix D**). Any listed migratory species likely to be impacted by the proposed development must be subject to an Assessment of Significance as defined under the EPBC Act which would determine if the proposal would result in significant impacts. Given that the final project design is yet to be defined, likely impacts on these species



will require further assessment based on the final project design footprint and to determine if significant impacts are likely to occur.

4.2.2 THREATENED SPECIES, POPULATIONS AND ECOLOGICAL COMMUNITIES

Threatened biodiversity (e.g., TECs, threatened species and their habitats) listed under the BC Act and EPBC Act with known records within 5km of the Study Area was determined using the BioNet Atlas (**Appendix A**) and the PMST (**Appendix B**). Subsequent to site inspections, an assessment of likelihood of occurrence was undertaken for all threatened biodiversity identified with potential to occur within 5km of the Study Area (**Appendix D**). Generally, threatened biodiversity identified in the assessment as having a moderate or higher ranking are subject to further analysis of significance.

A total of 7 threatened species and (**Table 5**) have been identified as having moderate, high or known likelihood of occurrence. Any threatened entity likely to be impacted by the proposed development must be subject to an analysis of significance (i.e., Test of Significance (BC Act) and/or Assessment of Significance (EPBC Act)) which would determine if the proposal would result in significant impacts. Given that the final project design is yet to be defined, likely impacts on these species will require further assessment based on the final project design footprint and to determine if significant impacts are likely to occur.

Species	BC Act	EPBC Act	Likelihood of occurrence
Birds			
Gang-gang Cockatoo (Callocephalon fimbriatum)	V	E	Moderate
Little Lorikeet (Glossopsitta pusilla)	V	-	Known
Mammals			
Little Bent-winged Bat (Miniopterus australis)	V	-	Moderate
Large Bent-winged Bat (Miniopterus orianae oceanensis)	V	-	Moderate
Grey-headed flying fox (Pteropus poliocephalus)	V	V	Moderate
Yellow-bellied Sheathtail-bat (Saccolaimus flaviventris)	V	-	Moderate
Flora			
Knotweed, Tall Knotweed (Persicaria elatior)	V	V	Moderate
V- Vulnerable, E- Endangered, CE- Critically Endangered			

Table 5 Threatened Species with a Moderate or Higher Likelihood of Occurrence

BC Act- NSW Biodiversity Conservation Act (2016), EPBC Act- Commonwealth Environment Protection and Biodiversity Conservation Act (1999)

5.0 FIELD SURVEYS

5.1 **VEGETATION**

The extents of each vegetation type located within the Study Area is given in **Table 6** below and illustrated in **Figure 2**. Descriptions of the vegetation types are provided in the sections below.

Vegetation Type	РСТ	Potential TEC	Area within Study Area (ha)
PCT 3153	Illawarra Escarpment Bangalay x Blue Gum Wet Forest	No associated TEC	0.50
Remnant Native Vegetation	-	-	0.11
Planted Native Vegetation	-	-	0.22
Planted Native and Exotic Vegetation	-	-	0.99
		Total Area	1.82



Figure 2: Ground-truthed Vegetation Mapping

5.1.1 GROUND-TRUTHED VEGETATION MAPPING

5.1.1.1 PCT 3153: ILLAWARRA ESCARPMENT BANGALAY X BLUE GUM WET FOREST

Vegetation adjacent to the creek which flows through Spearing Reserve in the south of the Study Area is considered to be commensurate with Illawarra Escarpment Bangalay x Blue Gum Wet Forest (PCT 3153). PCT 3153 is a tall open wet sclerophyll forest which occurs at low to mid elevation on the Illawarra coastal plain and Illawarra escarpment.

The canopy within this area is dominated by *Eucalyptus saligna x botroides*. The mid storey includes multiple *Melaleuca* species (*M. styphloides, M. quinquenerva and M. linearfolia*), *Pittosporum undulatum* and *Casuarina glauca*, as shown in Plate 2. The ground cover was predominately exotic, including *Lantana camara, Tradescantia fluminensis* and *Bidens Pilosa*.

The unnamed creek ran through the patch of PCT3153. The vegetation was more heavily dominated by exotic species on the edges of the creek such as *Colocasia esculenta, Arundo donax* and *Zantedeschia aethiopica*, with the species composition becoming more native dominated higher up the bank.



Plate 2 PCT 3153 Illawarra Escarpment Bangalay x Blue Gum Wet Forest.

5.1.1.2 REMNANT NATIVE VEGETATION

There were large remnant trees throughout the Study Are, predominantly *Eucalyptus saligna*. These may provide foraging and roosting habitat for native fauna. However, no hollows were identified during the site inspection.





Plate 3 Remnant E. saligna on street corner

5.1.1.3 PLANTED NATIVE VEGETATION

The Study Area included a variety of planted native vegetation, including in Spearing Reserve (**Plate 4**), street trees and vegetation in the yards of private residences (**Plate 5**) throughout the Study Area. Common species include *Ficus macrophylla*, *Lophostemon confertus* and *Callistemon viminalis*. Birds were observed foraging in these trees. While there is no record of a camp in the Study Area, *Ficus* are a potential food source for threatened Grey-headed flying fox (*Pteropus poliocephalus*) which have been recorded in the locality and, as such, may provide foraging habitat.



Plate 4 Ficus macrophylla in Spearing Reserve



Plate 5 Planted native vegetation in the yard of a private residence including Lophostemon confertus

5.1.1.4 PLANTED NATIVE/EXOTIC VEGETATION

Many of the yards of the private residences contained planted vegetation. During the site inspection access was only permitted to public places in the Study Area, and as such the species composition of this vegetation was unable to be confirmed. Subsequently to land purchase and prior to re-development, additional assessment to confirm the native versus exotic nature of those areas will be required. Regardless, this vegetation would potentially provide resources for fauna including shelter and food.



5.2 FLORA SPECIES

A total of 68 flora species were recorded within the Study Area, including 38 native species (56%) and 30 exotic species (44%) across 33 families. A full list of flora species recorded during the site inspection is provided in **Appendix C**.

No threatened flora species were detected within the Study Area during the site inspection.

5.2.1 WEEDS

A total of 30 exotic species were recorded within the Study Area during the site inspection. This included 11 exotic species which have been listed at a State and/or Commonwealth level. The following identifies weed categorisation and legislative context of each species:

- Priority Weed (PW) Identified by Local Land Services (LLS) for each LLS Region under the NSW Biosecurity Act 2015. The Study Area falls in the North Coast LLS Region. Each species identified has specific biosecurity duties to be considered;
- Weeds of National Significance (WoNS) Identified in the National Weeds Strategy 2017-2027 (2016) by the Commonwealth Government; and
- High Threat Weeds (HTW) Identified in the Biodiversity Assessment Method (BAM) under the *Biodiversity Conservation Act 2016.*

Table 7 identifies these species and their legislative context.

Table 7	State an	d/or Commor	wealth Liste	d Exotic	Species
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Species Name	Common Name	Legislative Context		
		PW	WoNS	HTW
Arundo donax	Giant Reed	-	-	√
Asparagus aethiopicus	Asparagus fern	\checkmark	√	√
Bidens pilosa	Cobbler's Pegs	-	-	\checkmark
Colocasia esculenta	Taro	-	-	\checkmark
Erharta erecta	Panic Veldtgrass	-	-	\checkmark
Hedera helix	English Ivy	-	-	\checkmark
Lantana camara	Lantana	\checkmark	~	\checkmark
Ligustrum lucidum	Broad-leaf privet	-	-	\checkmark
Olea europaea	Olive Tree	-	-	\checkmark
Paspalum dilatatum	Paspalum	-	-	\checkmark
Tradescantia fluminensis	Trad	-	-	\checkmark

PW- Priority Weed under the NSW Biosecurity Act 2015, WoNS- Weed of National Significance identified in the Commonwealth National Weeds Strategy (2016), HTW – High Threat Weed identified in the Biodiversity Assessment Method (BAM) under the NSW Biodiversity Conservation Act (2016)

5.3 FAUNA SPECIES

A total of 20 fauna species were detected within the Study Area during the site inspection (**Table 8**). Most species detected were native (80%). One threatened fauna species was detected during the site inspection, a Little Lorikeet (*Glossopsitta pusilla*).

Class	Family	Scientific Name	Common Name	BC Act	EPBC Act
Actinopterygii	Poeciliidae	Gambusia holbrooki	Plague Minnow*	-	-
Aves	Artamidae	Cracticus tibicen	Australian Magpie	-	-
Aves	Artamidae	Cracticus torquatus	Grey Butcherbird	-	-
Aves	Cacatuidae	Cacatua galerita	Sulphur-crested Cockatoo	-	-
Aves	Cacatuidae	Zanda funerea	Yellow-tailed Black Cockatoo	-	-
Aves	Climacteridae	Coracina novaehollandiae	White-throated Tree Creeper	-	-
Aves	Columbidae	Columbidae sp.	Pidgeon sp.*	-	-
Aves	Corvidae	Corvus coronoides	Raven	-	-
Aves	Maluridae	Malurus cyaneus	Superb Fairy Wren	-	-
Aves	Meliphagidae	Anthochaera carunculata	Red Wattlebird	-	-
Aves	Meliphagidae	Manorina melanocephala	Noisy Miner	-	-
Aves	Monarchidae	Grallina cyanoleuca	Magpie Lark	-	-
Aves	Petroicidae	Eopsaltria australis	Yellow Robin	-	-
Aves	Psittaculidae	Glossopsitta pusilla	Little Lorikeet	V	-
Aves	Psittaculidae	Platycercus elegans	Crimson Rosella	-	-
Aves	Rhipiduridae	Rhipidura leucophrys	Willie Wagtail	-	-
Aves	Sturnidae	Acridotheres tristis	Common Myna*	-	-
Aves	Turdidae	Turdus merula	Eurasian Blackbird*	-	-
Reptilia	Agamidae	Intellagama lesueurii	Water Dragon	-	-
Reptilia	Scincidae	Lampropholis sp.	Garden Skink	-	-

Table 8 Fauna Species Detected During the Site Inspection

* = exotic, V- Vulnerable, E- Endangered, CE-Critically Endangered

BC Act- NSW Biodiversity Conservation Act (2016), EPBC Act- Commonwealth Environment Protection and Biodiversity Conservation Act (1999)

5.3.1 LITTLE LORIKEET (GLOSSOPSITTA PUSILLA)

A Little Lorikeet (*Glossopsitta pusilla*) was observed aurally and visually on the northern edge of the Study Area, near the intersection of Paulsgrove St and Madoline St. A solitary individual was observed flying over the Study Area before landing in a large gum on the northern side of Madoline St (outside of the Study Area) to rest.

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The species is listed as vulnerable under the BC Act. This species distribution within NSW represents a large portion of the species core habitat extending west to Dubbo from the NSW east coast. Key foraging habitat includes open eucalypt forest and woodland, particularly in riparian habitats where higher soil fertility is present. Nests in proximity to feeding areas, if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Entrance is small (3 cm) and usually high above the ground (2–15 m).

There are 5 records from within the 5 km buffer area identified by the NSW BioNet database, the closest of which is on the University of Wollongong grounds in 2020 of an individual flying over the campus.

The Study Area offers marginal habitat, particularly that provided in PCT 3153 in the south. It is likely that the species would infrequent the site, stopping in transit as it makes its way through to higher quality habitat of the Illawarra Escarpment. No evidence of long-term habitation including suitable roost sites as hollow-bearing trees were not detected within the Study Area.

Threats to this species include vegetation clearing and the loss of hollow-bearing trees. It is important to maintain transient 'resting' habitat for this species as it travels across the Study Area to higher quality habitat of the Illawarra Escarpment.

5.3.2 MICROBAT HABITAT

There was a culvert where the unnamed creek crossed Irvine Street which is potential microbat habitat. The culvert consists of 3 concrete pipes, each approximately 50cm in diameter. The pipes were inspected for evidence of microbat habitation, but no evidence was found. The unnamed creek did not present ideal foraging habitat for fishing bats (i.e. Southern Myotis (*Myotis macropus*)) as it was choked by riparian and in-stream vegetation where it flowed through the Study Area, limiting access to the surface of the water.

5.3.3 FAUNA HABITAT

Suitable fauna habitat within the Study Area includes hollow-bearing trees and woody debris. Available habitat has been summarised in **Table 9**.

Habitat Value	Description
Foraging habitat	Trees and shrubs within the Study Area may provide foraging habitat, particularly for fruit eating species.
Connectivity	The study is in a heavily modified urban landscape Most vegetation in the area existed in isolated patches and is poorly connected.
Burrows, nests and other fauna habitat	No hollow-bearing trees (HBT), nests, burrows or rocky outcrops were detected within the Study Area.
Leaf litter	There was leaf litter in the native vegetation in Spearing Reserve. The remainder of the Study Area had no accumulation of leaf litter. Leaf litter represents habitat for fauna species and would contribute to organic matter cycle in the system.

Table 9 Fauna Habitat Values



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Habitat Value	Description
Logs	Fallen trees and branches (i.e. logs) were present within the native vegetation in Spearing Reserve the Study Area. Logs provide habitat and temporary refuge to fauna species (e.g. reptiles, amphibians and insects).
Human-made fauna habitat	There was a culvert where the unnamed creek crossed Irvine Street which is potential microbat habitat, however no evidence of it being utilized by bats was observed. There is potential for human made structures in the yards of private residences within the Study Area to be utilized as habitat, however these areas could not be accessed for assessment.
Aquatic habitat	An unnamed 1 st order creek flows through the south of the Study Area.

6.0 KEY FINDINGS AND RECOMMENDATIONS

6.1 KEY FINDINGS

The desktop analysis and site inspection identified on native PCT in the Study Area, PCT 3153 - Illawarra Escarpment Bangalay x Blue Gum Wet Forest. The area this PCT occupied provided the highest quality habitat for flora and fauna present in the Study Area. While most of the Study Area is developed for housing, planted and remnant vegetation is present throughout. This vegetation is also of ecological value as it provides foraging resources, potential roosting habitat and perching opportunities for transient fauna species.

One threatened species, a Little Lorikeet (*Glossopsitta pusilla*) was identified during the site inspection. Six other threatened species and one migratory species were considered to have a moderate likelihood of occurrence in the Study Area.

Thirty exotic flora species were recorded within the Study Area, two of which are listed as Priority Weeds under the Biosecurity Act 2015, *Lantana camara* (Lantana) and *Asparagus aethiopicus* (Asparagus fern). These species were also listed as Weeds of National Significance (WoNS) as per the National Weed Strategy. 11 species have been identified as High Threat Weeds under the BC Act, including the above-mentioned Priority Weed species.

6.2 **RECOMMENDATIONS AND MITIGATION**

6.2.1 CONCEPT DESIGN

The Concept design proposed in the Gyde (2024) plans, proposed an east to west 'Green Spine' across the central area of the Study Area. This environmental measure would see an improvement to habitat connectivity and biodiversity corridors to maintain that transient habitat for species such as the Little Lorikeet (*Glossopsitta pusilla*). The plan would seek to expand on the riparian zone within Spearing Reserve and retain and increase the number of street trees within the Study Area. These measures would ensure that a significant impact to locally occurring threatened species would be unlikely from the implementation of the Projects concept design.

6.2.2 GENERAL

As this assessment is informing a Planning Proposal and the extent of the proposed works is currently at a concept stage, Stantec have provided general recommendations as to what could be done to assist with planning for the proposed development. Proponents of any proposed project should, as a priority, aim to avoid impacts upon biodiversity values as a general principle. Where avoidance is impossible or impractical, proponents should then aim to minimise impacts. Further detail of this process is given below:

Avoid: Modify the project so no significant impact on resident biodiversity values would occur. This is typically impractical, especially given the already developed nature of the Study Area but can help guide mitigation measures.



Minimise: Modify the project to reduce the significant impacts on biodiversity values to the maximum extent possible. This is typically achieved through measures such as modification of proposed development footprint to avoid removing vegetation and areas with high biodiversity value.

Mitigate: Include measures for the proposed development to manage potential impacts to biodiversity values present within the Study Area and the locality. Measures for rezoning may include the installation of sediment fencing to avoid sediment migration to downstream environments, pre-clearance surveys and measures to avoid the introduction of weed and novel biota contaminated in fill, etc.

6.2.3 FURTHER ASSESSMENT

A future Part 4 development (under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) has three triggers that may require the proponent to enter into the BOS through a Biodiversity Development Assessment Report (BDAR):

- Clearing of native vegetation on land mapped on the Biodiversity Values (BV) map: A review of the Biodiversity Values Map and Threshold Tool (BVMATT) on July 2024 shows the Study Area does not contain any mapped biodiversity values land.
- Clearing thresholds are exceeded for the subject land: The clearing threshold is 0.25 ha for the Study Area.
- There is likely to be a significant impact on any threatened species, population and/or community: The impacts associated with the Concept Plan (Gyde, 2024) it is considered unlikely that the rezoning and development would lead to a significant impact on any threatened species.

If the final re-development footprint requires removal of native vegetation an assessment of triggers to the biodiversity offsets scheme (BOS) would be required. Where the BOS is triggered, preparation of a BDAR by an Accredited Assessor as per the Biodiversity Assessment Method (BAM) may be required.

Should entry into the BOS be a requirement for development approval, the BAM – Calculator would identify a list of 'Candidate Species' to which would require consideration in the BDAR. The following methods of assessment may be considered when applying the BAM to Candidate Species:

- Targeted surveys in accordance with relevant State and Commonwealth survey guidelines.
- Expert report.
- Assumed presence.

It should be noted that under the BC Act, the Little Lorikeet (*Glossopsitta pusilla*) is considered an ecosystem credit species and targeted surveys in accordance with the Biodiversity Assessment Method (BAM) are not required should entry into the Biodiversity Offsets Scheme (BOS) be required for the project.

Stantec also recommend the following additional requirements:

- Weed management is implemented to prevent the spread of exotic species.
- Further ecological assessment is to be undertaken subsequent to finalisation of the proposed development footprint and design which may require entry into the BOS.
- As far as practicable, any proposed development should avoid the riparian zone and surrounding Illawarra Escarpment Bangalay x Blue Gum Wet Forest in the south of the Study Area.
- As far as practicable, remnant trees and large planted native trees should be retained.



6.3 PLANNING PROPOSAL – BIODIVERSITY REQUIREMENTS

A review of the Local Environmental Plan Making Guideline – Appendix C (DPE, 2023) recommends that biodiversity assessments supporting planning proposals address certain criteria. **Table 10** has identified the criteria and how these criteria have been addressed in the PBA.

Criteria	PBA Response	PBA Section Reference
Maps and describe the ecological features and biodiversity value of the site (including ground truthing if relying on existing mapping) including threatened ecological communities, threatened species and their habitat including linkages to corridors beyond the site.	Maps and descriptions relating to biodiversity values present within the Study Area have been detailed within this report.	Section 3 Section 4
Discuss the implications of occurrences of native flora and fauna for future development of the site.	Native flora and fauna that frequent the Study Area are likely to be predominately using available biodiversity values transiently. The existing values have been highly urbanised and provide limited resources in the way of foraging and roosting potential.	Section 4 Section 5
Demonstrate how the proposal has taken appropriate and sufficient steps, as a first step, to avoid or minimise impacts to native vegetation (if relevant).	The Concept Layout has taken into consideration the existing biodiversity values present within the Study Area and would work to enhance them by incorporating a 'Green Spine' east to west across the Study Area. This would enhance the riparian zone of Spearing Reserve. There has also been a retention and addition of street trees (where able).	Section 5
Make recommended mitigation of the ecological impacts of rezoning (if relevant).	Recommendation relating to the Concept Design and more generally surrounding a rezoning process have been provided within this PBA.	Section 5
Make recommendations for biodiversity offsets to address any loss of native vegetation (if relevant).	The PBA provides an assessment of potential future ecological assessment should entry into the Biodiversity Offsets Scheme (BOS) be required. It is through this process that biodiversity credits may be generated for any loss of biodiversity values.	Section 5

Table 10 Planning Proposal – Biodiversity Requirements

The revised masterplan (Gyde, 2025) has not altered the conclusion and recommendations found within this report.

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APPENDICES

Gwynneville Planning Proposal PBA

Appendix A BioNet Atlas Search

Appendix A BIONET ATLAS SEARCH

Table 11 BioNet Atlas Search Results

Family	Scientific Name Common Name		BC Act	EPB C Act	Rec ord s
Amphibia					
Limnodynastidae	Heleioporus australiacus	Giant Burrowing Frog	V	V	3
Hylidae	Litoria aurea	Green and Golden Bell Frog	Е	V	14
Myobatrachidae	Pseudophryne australis	Red-crowned Toadlet	V	-	1
Aves					
Meliphagidae	Anthochaera phrygia	Regent Honeyeater	Е	CE	2
Procellariidae	Ardenna carneipes	Flesh-footed Shearwater	V	J, K	2
Ardeidae	Botaurus poiciloptilus	Australasian Bittern	Е	Е	1
Cacatuidae	Callocephalon fimbriatum	Gang-gang Cockatoo	V	Е	2
Burhinidae	Burhinus grallarius	Bush Stone-curlew	Е	-	17
Accipitridae	Circus assimilis	Spotted Harrier	V	-	1
Campephagidae	Coracina lineata	Barred Cuckoo-shrike	V	-	1
Dasyornithidae	Dasyornis brachypterus	Eastern Bristlebird	Е	Е	1
Diomedeidae	Diomedea exulans	Wandering Albatross	Е	Е	12
Ciconiidae	Ephippiorhynchus asiaticus	Black-necked Stork	Е	-	2
Psittacidae	Glossopsitta pusilla	Little Lorikeet	V	-	5
Meliphagidae	Grantiella picta	Painted Honeyeater	V	V	1
Haematopodidae	Haematopus fuliginosus	Sooty Oystercatcher	V	-	10
Haematopodidae	Haematopus longirostris	Pied Oystercatcher	Е	-	1
Accipitridae	Haliaeetus leucogaster	White-bellied Sea-Eagle	V	-	3
Accipitridae	Hieraaetus morphnoides	Little Eagle	V	-	2
Apodidae	Hirundapus caudacutus	White-throated Needletail	Р	V, C, J, K	1
Ardeidae	Ixobrychus flavicollis	Black Bittern	V	-	3
Psittacidae	Lathamus discolor	Swift Parrot	Е	CE	11
Scolopacidae	Limicola falcinellus	Broad-billed Sandpiper	v	C, J, K	1
Scolopacidae	Limosa limosa	Black-tailed Godwit	V	C, J, K	1
Accipitridae	Lophoictinia isura	Square-tailed Kite	V	-	7
Procellariidae	Macronectes giganteus	Southern Giant Petrel	Е	Е	4
Procellariidae	Macronectes halli	Northern Giant-Petrel	V	V	1



Appendix A BioNet Atlas Search

Family	Scientific Name	Common Name	BC Act	EPB C Act	Rec ord s
Psittacidae	Neophema pulchella	Turquoise Parrot	V	-	1
Strigidae	Ninox connivens	Barking Owl	V	-	2
Strigidae	Ninox strenua	Powerful Owl	V,	-	34
Anatidae	Oxyura australis	Blue-billed Duck	V	-	1
Pachycephalidae	Pachycephala olivacea	Olive Whistler	V	-	2
Accipitridae	Pandion cristatus	Eastern Osprey	V	-	1
Petroicidae	Petroica phoenicea	Flame Robin	V	-	2
Psittacidae	Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)	Е	V	1
Procellariidae	Pterodroma leucoptera leucoptera	Gould's Petrel	V	Е	1
Columbidae	Ptilinopus magnificus	Wompoo Fruit-Dove	V	-	1
Columbidae	Ptilinopus regina	Rose-crowned Fruit-Dove	V	-	3
Columbidae	Ptilinopus superbus	Superb Fruit-Dove	V	-	4
Procellariidae	Puffinus assimilis	Little Shearwater	V	-	1
Dasyornithidae	Pycnoptilus floccosus	Pilotbird	-	V	5
Diomedeidae	Thalassarche cauta	Shy Albatross	Е	Е	1
Diomedeidae	Thalassarche impavida	Campbell Albatross	-	V	1
Diomedeidae	Thalassarche melanophris	Black-browed Albatross	V	V	3
Charadriidae	Thinornis cucullatus cucullatus	Eastern Hooded Dotterel	Е	V	1
Tytonidae	Tyto novaehollandiae	Masked Owl	V	-	1
Tytonidae	Tyto tenebricosa	Sooty Owl	V	-	6
Flora					
Fabaceae (Mimosoideae)	Acacia baueri subsp. aspera	-	V	-	2
Davalliaceae	Arthropteris palisotii	Lesser Creeping Fern	Е	-	1
Apocynaceae	Cynanchum elegans	White-flowered Wax Plant	Е	Е	6
Ericaceae	Epacris purpurascens var. purpurascens		v	-	1
Myrtaceae	Gossia acmenoides	Gossia acmenoides population in the Sydney Basin Bioregion south of the Georges River	E	-	4
Fabaceae (Faboideae)	Pultenaea aristata	Prickly Bush-pea	v	V	34
Myrtaceae	Rhodamnia rubescens	Scrub Turpentine	Е	CE	30
Fabaceae (Caesalpinioideae)	Senna acclinis	Rainforest Cassia	E	-	3
Solanaceae	Solanum celatum	-	Е	-	1
Myrtaceae	Syzygium paniculatum	Magenta Lilly Pilly	Е	V	2



Appendix A BioNet Atlas Search

Family	Scientific Name Common Name		BC Act	EPB C Act	Rec ord s
Mammalia					
Otariidae	Arctocephalus forsteri	New Zealand Fur-seal	V	-	4
Otariidae	Arctocephalus pusillus doriferus	Australian Fur-seal	V	-	7
Burramyidae	Cercartetus nanus	Eastern Pygmy-possum	V		4
Dasyuridae	Dasyurus maculatus	Spotted-tailed Quoll	V	Е	1
Vespertilionidae	Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	1
Miniopteridae	Miniopterus australis	Little Bent-winged Bat	V	-	3
Miniopteridae	Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	8
Vespertilionidae	Myotis macropus	Southern Myotis	V	-	2
Petauridae	Petaurus norfolcensis	Squirrel Glider	V	-	4
Phascolarctidae	Phascolarctos cinereus	Koala	Е	Е	15
Physeteridae	Physeter macrocephalus	Sperm Whale	V	-	2
Pteropodidae	Pteropus poliocephalus	Grey-headed Flying-fox	V	V	416
Emballonuridae	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat			1
Vespertilionidae	Scoteanax rueppellii	Greater Broad-nosed Bat	V		4
Reptillia					
Cheloniidae	Caretta caretta	Loggerhead Turtle	Е	Е	4
Cheloniidae	Chelonia mydas	Green Turtle	V	V	5
Dermochelyidae	Dermochelys coriacea	Leatherback Turtle	Е	Е	1
Cheloniidae	Eretmochelys imbricata	Hawksbill Turtle	-	V	1

V- Vulnerable, E- Endangered, CE-Critically Endangered

C- China-Australia Migratory Bird Agreement, J- Japan-Australia Migratory Bird Agreement, K- Republic of Korea-Australia Migratory Bird Agreement

BC Act- NSW Biodiversity Conservation Act (2016), EPBC Act- Commonwealth Environment Protection and Biodiversity Conservation Act (1999)



Appendix B PMST Report







Australian Government

Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 15-Jul-2024

Summary Details Matters of NES Other Matters Protected by the EPBC Act Extra Information Caveat Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	8
Listed Threatened Species:	112
Listed Migratory Species:	60

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A <u>permit</u> may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	21
Commonwealth Heritage Places:	None
Listed Marine Species:	84
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	18
Key Ecological Features (Marine):	None
Biologically Important Areas:	4
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities

[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area	rIn feature area
<u>Coastal Upland Swamps in the Sydney</u> Basin Bioregion	Endangered	Community likely to occur within area	In buffer area only
Illawarra and south coast lowland forest and woodland ecological community	Critically Endangered	Community likely to occur within area	In feature area
Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area	In feature area
<u>River-flat eucalypt forest on coastal</u> <u>floodplains of southern New South</u> <u>Wales and eastern Victoria</u>	Critically Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only
<u>Upland Basalt Eucalypt Forests of the</u> Sydney Basin Bioregion	Endangered	Community may occur within area	rIn buffer area only

Listed Threatened Species

[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to	In feature area

occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Botaurus poiciloptilus			
Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Callocephalon fimbriatum			
Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Calvotorhynchus lathami lathami			
South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius leschenaultii			
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Climacteris picumnus victoriae

Brown Treecreeper (south-eastern) [67062]

Vulnerable

Species or species In feature area habitat likely to occur within area

Dasyornis brachypterus Eastern Bristlebird [533]

Endangered

Species or species In feature area habitat known to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea antipodensis			
Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea antipodensis gibsoni			
Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea epomophora			
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea exulans			
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi			
Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Falco hypoleucos			
Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Fregetta grallaria grallaria			
White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Grantiella picta



Vulnerable

Species or species In feature area habitat likely to occur within area

Hirundapus caudacutus White-throated Needletail [682]

Vulnerable

Species or species In feature area habitat known to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species	In feature area
Swiit Fanot [744]		habitat known to occur within area	in leature area
Limosa lapponica baueri			
Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus			
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli			
Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Melanodryas cucullata cucullata			
South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysogaster			
Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysostoma			
Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur subantarctica			
Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to	In buffer area only

Phoebetria fusca			
Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterodroma leucoptera leucoptera			
Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterodroma neglecta neglecta			
Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In buffer area only
Pycnoptilus floccosus			
Pilotbird [525]	Vulnerable	Species or species habitat known to occur within area	In feature area
Rostratula australis			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata			
Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
Sternula nereis nereis			
Australian Fairy Tern [82950]	Vulnerable	Breeding likely to occur within area	In feature area
Thalassarche bulleri			
Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri platei			
Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Thalassarche eremita

Chatham Albatross [64457]

Endangered

Foraging, feeding or In buffer area only related behaviour may occur within area

Thalassarche impavida

Campbell Albatross, Campbell Blackbrowed Albatross [64459]

Vulnerable

Species or species habitat may occur within area

In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
Epinephelus daemelii			
Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Hippocampus whitei			
White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Macquaria australasica			
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In buffer area only
Prototroctes maraena			
Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Seriolella brama

Blue Warehou [69374]

Conservation Dependent

Species or species In buffer area only habitat known to occur within area

Thunnus maccoyii

Southern Bluefin Tuna [69402]

Conservation Dependent

Species or species In buffer area only habitat known to occur within area

FROG

Scientific Name	Threatened Category	Presence Text	Buffer Status	
Heleioporus australiacus				
Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat known to occur within area	In feature area	
Litoria aurea				
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area	In feature area	
Litoria littlejohni				
Northern Heath Frog, Littlejohn's Tree Frog [64733]	Endangered	Species or species habitat likely to occur within area	In buffer area only	
Litoria watsoni				
Southern Heath Frog, Watson's Tree Frog [91509]	Endangered	Species or species habitat may occur within area	In feature area	
Mixophyes balbus				
Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area	In feature area	
MAMMAL				
Balaenoptera musculus				
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only	
Chalinolobus dwyeri				
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat likely to occur within area	In feature area	
Dasyurus maculatus maculatus (SF mainland population)				
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area	
Eubalaena australis				
Southern Right Whale [40]	Endangered	Species or species habitat known to	In buffer area only	

Isoodon obesulus obesulus

Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (southeastern) [68050]

Notamacropus parma Parma Wallaby [89289]

Vulnerable

Endangered

Species or species In feature area habitat likely to occur within area

Species or species In feature area habitat may occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined popula	ations of Old, NSW and the	e ACT)	
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Deterous tridectulus trigulactus			
Long-nosed Potoroo (southern mainland) [86367]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pteronus poliocenhalus			
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
PLANT			
Acacia baueri subsp. aspera			
[18662]	Endangered	Species or species habitat known to occur within area	In buffer area only
Acacia bynoeana			
Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat may occur	In feature area

within area

<u>Allocasuarina glareicola</u> [21932]

Endangered

Species or species In buffer area only habitat may occur within area

Caladenia tessellata

Thick-lipped Spider-orchid, Daddy Long- Vulnerable legs [2119]

Species or species In feature area habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calochilus pulchellus			
Pretty Beard Orchid, Pretty Beard-orchid [84677]	Endangered	Species or species habitat may occur within area	In buffer area only
Cryptostylis hunteriana			
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cynanchum elegans			
White-flowered Wax Plant [12533]	Endangered	Species or species habitat known to occur within area	In feature area
Daphnandra johnsonii			
Illawarra Socketwood [67186]	Endangered	Species or species habitat may occur within area	In feature area
Genoplesium baueri			
Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat likely to occur within area	In feature area
Grevillea ravbrownii			
[65665]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Haloragis exalata subsp. exalata			
Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hibbertia acaulothrix			
[87409]	Endangered	Species or species habitat may occur within area	In buffer area only
Leucopogon exolasius			
Woronora Beard-heath [14251]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Melaleuca biconvexa

Biconvex Paperbark [5583]

Vulnerable

Species or species In feature area habitat may occur within area

Persicaria elatior

Knotweed, Tall Knotweed [5831]

Vulnerable

Species or species In feature area habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Persoonia hirsuta			
Hairy Geebung, Hairy Persoonia [19006]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Persoonia nutans			
Nodding Geebung [18119]	Endangered	Species or species habitat known to occur within area	In buffer area only
Pimelea spicata			
Spiked Rice-flower [20834]	Endangered	Species or species habitat likely to occur within area	In feature area
Prasophyllum affine			
Jervis Bay Leek Orchid, Culburra Leek- orchid, Kinghorn Point Leek-orchid [2210]	Endangered	Species or species habitat may occur within area	In feature area
Pterostylis gibbosa			
Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat likely to occur within area	In feature area
Pterostylis saxicola			
Sydney Plains Greenhood [64537]	Endangered	Species or species habitat may occur within area	In buffer area only
Pultenaea aristata			
[18062]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Rhizanthella slateri			
Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens			
Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Rhodomyrtus psidioides Native Guava [19162]

Critically Endangered

Species or species In fe habitat may occur within area

In feature area

Syzygium paniculatum

Magenta Lilly Pilly, Magenta Cherry, Vulnerable Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307] Species or species In feature area habitat known to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thelymitra kangaloonica			
Kangaloon Sun Orchid [81861]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
Thesium australe			
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Xerochrysum palustre			
Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat may occur within area	In buffer area only
REPTILE			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In buffer area only
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Hoplocephalus bungaroides			
Broad-headed Snake [1182]	Endangered	Species or species habitat likely to occur within area	In feature area
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

SHARK

Carcharias taurus (east coast population)

Grey Nurse Shark (east coast population) [68751]

Critically Endangered Foraging, feeding or In buffer area only related behaviour likely to occur within area

Carcharodon carcharias

White Shark, Great White Shark [64470] Vulnerable

Species or species In buffer area only habitat known to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Galeorhinus galeus			
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sphyrna lewini			
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Listed Migratory Species		[Res	source Information
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Calonectris leucomelas			
Streaked Shearwater [1077]		Species or species habitat known to occur within area	In buffer area only

Diomedea antipodensisVulnerableForaging, feeding or
related behaviour
likely to occur within
areaDiomedea epomophora
Southern Royal Albatross [89221]VulnerableForaging, feeding or
related behaviour

Foraging, feeding or In buffer area only related behaviour likely to occur within area

In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea exulans			
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi			
Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Fregata ariel			
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus			
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli			
Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Phaethon lepturus			
White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Phoebetria fusca			
Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sternula albifrons			
Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri			
Buller's Albatross, Pacific Albatross	Vulnerable	Species or species habitat may occur	In buffer area only

 within area

Thalassarche carteri

Indian Yellow-nosed Albatross [64464] Vulnerable

Species or species In buffer area only habitat likely to occur within area

Thalassarche cauta Shy Albatross [89224]

Endangered

Foraging, feeding or In buffer area only related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche eremita			
Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida			
Campbell Albatross, Campbell Black- browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Migratory Marine Species			
Balaenoptera edeni			
Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Caperea marginata			
Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only '

Carcharhinus longimanus

Oceanic Whitetip Shark [84108]

Species or species In buffer area only habitat may occur within area

Carcharodon carcharias

White Shark, Great White Shark [64470] Vulnerable

Species or species In buffer area only habitat known to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area	In buffer area only
<u>Chelonia mydas</u>			
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis a	australis		
Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area	In buffer area only
Lagenorhypchus obscurus			
Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Lamna nasus			
Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In buffer area only
Megaptera novaeangliae			
Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Mobula birostris as Manta birostris			
Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only

Natator depressus

rtatator aoprocoao

Flatback Turtle [59257]

Vulnerable

Species or species In buffer area only habitat known to occur within area

Orcinus orca Killer Whale, Orca [46]

Species or species In buffer area only habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
<u>Cuculus optatus</u> Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis			
Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Mviagra cvanoleuca			
Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Symposiachrus trivirgatus as Monarcha t	rivirgatus		
Spectacled Monarch [83946]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			

Actitis hypoleucos Common Sandpiper [59309]

Species or species In feature area habitat likely to occur within area

Arenaria interpres Ruddy Turnstone [872]

Vulnerable

Species or species In buffer area only habitat known to occur within area

Calidris acuminata Sharp-tailed Sandpiper [874]

Vulnerable

Species or species In feature area habitat known to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris alba			
Sanderling [875]		Species or species habitat known to occur within area	In buffer area only
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius bicinctus			
Double-banded Plover [895]		Species or species habitat known to occur within area	In buffer area only
Charadrius leschenaultii			
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica			
Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area

<u>Tringa nebularia</u>

Common Greenshank, Greenshank [832]

Endangered

Species or species In feature area habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands	[<u>Re</u>	source Information]
The Commonwealth area listed below may indicate the presence of Common the unreliability of the data source, all proposals should be checked as to w Commonwealth area, before making a definitive decision. Contact the State department for further information.	onwealth land hether it impa e or Territory g	in this vicinity. Due to cts on a jovernment land
Commonwealth Land Name	State	Buffer Status
Commonwealth Trading Bank of Australia		
Commonwealth Land - Commonwealth Trading Bank of Australia [12224]	NSW	In buffer area only
Commonwealth Land - Commonwealth Trading Bank of Australia [12222]	NSW	In buffer area only
Communications, Information Technology and the Arts - Australian Postal C	Corporation	
Commonwealth Land - Australian Postal Commission [12205]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [16431]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [12225]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [12207]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [12227]	NSW	In buffer area only
Commonwealth Land - Australian Postal Corporation [12226]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation	n Limited	
Commonwealth Land - Australian Telecommunications Commission [12223	3]NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [12221]NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [12204]	NSW	In buffer area only
Defence		
Defence - AIRTC WOLLONGONG [10001]	NSW	In buffer area only
Defence - AIRTC WOLLONGONG [10002]	NSW	In buffer area only

Defence - Graovac House [10147]

Defence - Graovac House [10147]	NSW	In buffer area only
Defence - HYDROGRAPHIC OFFICE [10234]	NSW	In buffer area only
Defence - TS ALBATROSS-WOLLONGONG [10148]	NSW	In buffer area only
Defence - WOLLONGONG MULTI-USER DEPOT [11209]	NSW	In feature area
Defence - Defence Housing Authority		
Commonwealth Land - Defence Housing Authority [12208]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12209]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [12213]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [12216]	NSW	In buffer area only

Listed Marine Species		[Res	source Information
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only
Anus nacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneines as Puffinus carneines			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Ardonna grisoa as Puffinus grisous			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly	In feature area

marine area

Calidris acuminata Sharp-tailed Sandpiper [874]

Vulnerable

Species or species In feature area habitat known to occur within area

Calidris alba Sanderling [875]

Species or species In buffer area only habitat known to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
<u>Calidris ferruginea</u> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
<u>Calidris melanotos</u> Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Colonastria lausamalas			
Streaked Shearwater [1077]		Species or species habitat known to occur within area	In buffer area only
Charadrius bicinctus			
Double-banded Plover [895]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii			
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270] Vulnerable

Foraging, feeding or In buffer area only related behaviour likely to occur within area

Diomedea epomophora

Southern Royal Albatross [89221]

Vulnerable

Foraging, feeding or In buffer area only related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea exulans			
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Diomedea sanfordi			
Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In buffer area only
Fregata ariel			
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In buffer area only
Gallinado hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster			
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor			
Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica			
Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only

Macronectes giganteus

Southern Giant-Petrel, Southern Giant Endangered Petrel [1060]

Species or species habitat may occur In buffer area only within area

Macronectes halli

Northern Giant Petrel [1061]

Vulnerable

In buffer area only Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Merops ornatus			
Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis			
Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Mviagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Neophema chrysogaster			
Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Neophema chrysostoma			
Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pachyptila turtur			
Fairy Prion [1066]		Species or species habitat known to occur within area	In buffer area only

Phaethon lepturus

White-tailed Tropicbird [1014]

Species or species In buffer area only habitat may occur within area

Phoebetria fusca

Sooty Albatross [1075]

Vulnerable

Species or species In buffer area only habitat may occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterodroma cervicalis			
White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula bengha	lensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta sk	ua		
Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sterna striata			
White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons			
Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
Symposiachrus trivirgatus as Monarcha t	riviraatus		
Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
Thalassarche bulleri			
Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Vulnerable

Thalassarche bulleri platei as Thalassarche sp. nov.

Northern Buller's Albatross, Pacific Albatross [82273]

Species or species In buffer area only habitat may occur within area

Thalassarche carteri

Indian Yellow-nosed Albatross [64464] Vulnerable

Species or species In buffer area only habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche eremita			
Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In buffer area only
Thalassarche impavida			
Campbell Albatross, Campbell Black- browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Fish			
Acentronura tentaculata			
Shortpouch Pygmy Pipehorse [66187]		Species or species	In buffer area only

habitat may occur within area

Festucalex cinctus Girdled Pipefish [66214]

Species or species In buffer area only habitat may occur within area

Filicampus tigris Tiger Pipefish [66217]

Species or species habitat may occur within area

In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Heraldia nocturna			
Upside-down Pipefish, Eastern Upside- down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
<u>Hippichthys penicillus</u> Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In buffer area only
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In buffer area only
<u>Hippocampus whitei</u> White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In buffer area only
<u>Lissocampus runa</u> Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
<u>Notiocampus ruber</u> Red Pipefish [66265]		Species or species habitat may occur within area	In buffer area only
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only

Solegnathus spinosissimus

Spiny Pipehorse, Australian Spiny Pipehorse [66275]

Solenostomus cyanopterus

Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183] Species or species In buffer area only habitat may occur within area

Species or species In buffer area only habitat may occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Solenostomus paradoxus			
Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In buffer area only
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
Stigmatopora nigra			
Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
Syngnathoides biaculeatus			
Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In buffer area only
Trachyrhamphus bicoarctatus			
Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In buffer area only
Urocampus carinirostris			
Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
Vanacampus margaritifer			
Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur- seal [20]		Species or species habitat may occur within area	In buffer area only
Arctocephalus pusillus			
Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur	In buffer area only

Endangered	Breeding likely to occur within area	In buffer area only
Vulnerable	Species or species habitat known to occur within area	In buffer area only
	Endangered Vulnerable	Endangered Breeding likely to occur within area Vulnerable Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Whales and Other Cetaceans		[Res	source Information
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata			
Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
Balaenoptera edeni			
Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Caperea marginata			
Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only
Delphinus delphis			
Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only

Eubalaena australis Southern Right Whale [40]

Endangered

Species or species In buffer area only habitat known to occur within area

Grampus griseus

Risso's Dolphin, Grampus [64]

Species or species In buffer area only habitat may occur within area

Current Scientific Name	Status	Type of Presence	Buffer Status
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
<u>Orcinus orca</u> Killer Whale, Orca [46]		Species or species habitat likely to occur within area	In buffer area only
<u>Tursiops aduncus</u> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
<u>Tursiops truncatus s. str.</u> Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Illawarra Escarpment	State Conservation Are	ea NSW	In buffer area only

EPBC Act Referrals			[Resou	ce Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
South Pacific Offshore Wind Project	2023/09605		Completed	In buffer area only
Controlled action				
Consolidation of Existing Operations, Continuation of Underground Mining	2009/5142	Controlled Action	Completed	In buffer area only

Expansion of the NRE No. 1 Colliery
Coal Mine in the Southern Coalfield of
NSW2013/6838Controlled Action
onlyCompletedIn buffer area
only

Extension of subsurface longwall mining, Wonga West and Wonga East

2010/5786 Controlled Action Completed In buffer area only
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Russell Vale Colliery Revised Underground Expansion Project	2020/8702	Controlled Action	Post-Approval	In buffer area only
Russell Vale Colliery Underground Expansion Project, NSW	2014/7268	Controlled Action	Completed	In buffer area only
Upgrade of surface facilities at NRE No.1 Colliery	2011/5891	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Duke Cogeneration Plant Port Kembla	2001/179	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Increase of Road Access to 24 Hours a Day 7 Days a Week	2008/4206	Not Controlled Action	Completed	In buffer area only
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
<u>Lake Illawarra entrance works, Stage</u> <u>2</u>	2004/1696	Not Controlled Action	Completed	In buffer area only
Optus mobiles telecommunications base station facility, BlueScope Steel, Lot 1 Five Islands Rd, Port	2013/7014	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manne	er)			
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Lake Illawarra Entrance Works (stage 2)	2005/1997	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Transport of intermediate level radioactive waste to Lucas Heights.	2015/7437	Not Controlled Action (Particular	Post-Approval	In buffer area onlv



Manner)

Transport of OPAL Spent Fuel to France in 2018 and 2025

2016/7841 Not Controlled Post-Approval In buffer area Action (Particular Manner)

Referral decision				
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed	In buffer area only

Biologically Important Areas		[<u>Res</u>	source Information
Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In buffer area only
Seabirds			
Eudyptula minor			
Little Penguin [1085]	Breeding	Likely to occur	In buffer area only
Sharks			
Carcharias taurus			
Grey Nurse Shark [64469]	Foraging	Known to occur	In buffer area only
Whales			
Megaptera novaeangliae			
Humpback Whale [38]	Migration (north and south)	Known to occur	In buffer area only

Bioregional Assessments	[Resource Information]		
SubRegion	BioRegion	Website	Buffer Status
Sydney	Sydney Basin	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales -Department of Environment and Primary Industries, Victoria -Department of Primary Industries, Parks, Water and Environment, Tasmania -Department of Environment, Water and Natural Resources, South Australia -Department of Land and Resource Management, Northern Territory -Department of Environmental and Heritage Protection, Queensland -Department of Parks and Wildlife, Western Australia -Environment and Planning Directorate, ACT -Birdlife Australia -Australian Bird and Bat Banding Scheme -Australian National Wildlife Collection -Natural history museums of Australia -Museum Victoria -Australian Museum -South Australian Museum -Queensland Museum -Online Zoological Collections of Australian Museums -Queensland Herbarium -National Herbarium of NSW -Royal Botanic Gardens and National Herbarium of Victoria -Tasmanian Herbarium -State Herbarium of South Australia -Northern Territory Herbarium -Western Australian Herbarium -Australian National Herbarium, Canberra -University of New England -Ocean Biogeographic Information System -Australian Government, Department of Defence Forestry Corporation, NSW -Geoscience Australia -CSIRO -Australian Tropical Herbarium, Cairns -eBird Australia -Australian Government – Australian Antarctic Data Centre -Museum and Art Gallery of the Northern Territory -Australian Government National Environmental Science Program

-Australian Institute of Marine Science

-Reef Life Survey Australia

-American Museum of Natural History

-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania

-Tasmanian Museum and Art Gallery, Hobart, Tasmania

-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix C Flora List

Appendix C FLORA LIST

Table 12 Flora List

Family	Scientific Name	Common Name	Native (N)/
			Exotic (E)
Fabaceae (Mimosoideae)	Acacia binervata	Two-veined hickory	N
Fabaceae (Mimosoideae)	Acacia longifolia	Long-leaved wattle	Ν
Fabaceae (Mimosoideae)	Acacia maidenii	Maiden's wattle	Ν
Fabaceae (Mimosoideae)	Acacia mearnsii	Black wattle	Ν
Myrtaceae	Acmena smithii	Lilly Pilly	Ν
Asparagaceae	Agave sp.	Agave	Е
Myrtaceae	Angophora floribunda	Rough-barked Apple	N
Basellaceae	Anredera cordifolia	Maderia vine	Е
Arecaceae	Archontophoenix cunninghamiana	Bangalow palm	N
Poaceae	Arundo donax	Giant reed	Е
Asparagaceae	Asparagus aethiopicus	Asparagus fern	Е
Proteaceae	Banksia integrifolia	Coast banksia	N
Asteraceae	Bidens Pilosa	Cobblers Pegs	Е
Malvaceae	Brachychiton bidwillii	Little kurrajong	N
Malvaceae	Brachychiton acerifolius	Illawarra flame tree	Ν
Pittosporaceae	Bursaria spinosa	Boxthorn	Ν
Fabaceae (Caesalpinioideae)	Caesalpinia gilliesii	Bird of paradise	E
Myrtaceae	Callistemon viminalis	Weeping Bottlebrush	N
Casuarinaceae	Casurina glauca	Swamp Oak	N
Poaceae	Cenchrus clandestinus	Kikuyu Grass	Е
Araceae	Colocasia esculenta	Taro	E
Myrtaceae	Corymbia gummifera	Red bloodwood	N
Lauraceae	Cryptocarya glaucescens	Jackwood	Ν
Poaceae	Cynodon dactylon	Couch	N
Cyperaceae	Cyperus sp.	-	N
Asphodelaceae	Dianella caerulea	Blue Flax-lily	N
Convolvulaceae	Dichonda repens	Kidney weed	Ν
Dicksoniaceae	Dicksonia antarctica	Soft tree-fern	Ν
Doryanthaceae	Doryanthes excelsa	Gymea lily	N
Elaeocarpaceae	Elaeocarpus reticulatus	Blueberry Ash	N
Poaceae	Erharta erecta	Panic Veldtgrass	E
Myrtaceae	Eucalyptus boitordis	Woollybutt	N



Appendix C Flora List

Family	Scientific Name	Common Name	Native (N)/ Exotic (E)
Myrtaceae	Eucalyptus globoidea	White Stringybark	N
Myrtaceae	Eucalyptus paniculata subsp. paniculata	Grey Ironbark	N
Myrtaceae	Eucalyptus racemosa	Narrow-leaf scribbly gum	Ν
Myrtaceae	Eucalyptus saligna	Sydney blue gum	Ν
Myrtaceae	Eucalyptus saligna x E. boitroydes	Wollongong woollybutt	Ν
Myrtaceae	Eucalyptus tereticornis	Forest Red Gum	Ν
Moraceae	Ficus elastica	Rubber tree	Е
Moraceae	Ficus macrophylla	Morton Bay Fig	Ν
Araliaceae	Hedera helix	English ivy	Е
Asteraceae	Hypochaeris radicata	Flatweed	Е
Convolvulaceae	Ipomea lacunosa	White morning-glory	Е
Bignoniaceae	Jacaranda mimosifolia	Jacaranda	Е
Juncaceae	Juncus usitatus	Common rush	Ν
Verbenaceae	Lantana camara	Lantana	Е
Araceae	Lemna disperma	Duckweed	E
Oleaceae	Ligustrum lucidum	Broad-leaf privet	E
Arecaceae	Livistona australis	Cabbage tree palm	Ν
Asparagaceae	Lomandra longofolia	Spiked matt-rush	N
Myrtaceae	Lophostemon confertus	Brush box	N
Magnoliaceae	Magnolia sp.	Magnolia	Е
Myrtaceae	Melaleuca quinquenervia	Broad-leaved paperbark	Ν
Myrtaceae	Melaleuca styphelioides	Prickly-leaved Tea Tree	N
Myrtaceae	Meleleuca linearfolia	Flax-leaved Paperbark	Ν
Oleaceae	Olea europaea	Olive tree	Е
Poaceae	Oplismenus aemulus	Australian Basket Grass	Ν
Poaceae	Paspalum dilatatum	Paspalum	Е
Pittosporaceae	Pittosporum undulatum	Sweet pittosporum	Ν
Plantaginaceae	Plantago lanceolata	Lamb's Tongues	Е
Platanaceae	Plantus sp.	Sycamore sp.	Е
Apocynaceae	Plumeria sp.	Frangipani	Е
Anacardiaceae	Schinus sp.	Peppercorn tree	Е
Fabaceae (Caesalpinioideae)	Senna pendula var. glabrata	Cassia	Е
Solanaceae	Solanum americanum	Glossy Nightshade	Е
Solanaceae	Solanum mauritianum	Wild tobacco	Е
Commelinaceae	Tradescantia fluminensis	Trad	Е
Tropaeolaceae	Tropaeolum maius	Garden nasturtium	Е



Appendix C Flora List

Family	Scientific Name	Common Name	Native (N)/ Exotic (E)
Araceae	Zantedeschia aethiopica	Arum lily	Е
Unknown	Unknown	instream aquatic plant	

Appendix D Likelihood of Occurrence

Appendix D LIKELIHOOD OF OCCURRENCE

Threatened species, populations and ecological communities, and migratory species (listed under the BC Act and / or EPBC Act) that are known, or have potential, to occur within a 5km radius of the Study Area have been considered in this section. The likelihood of occurrence within the Study Area of each species or TEC was assessed using the criteria described in **Table 13** and the findings presented in **Table 14**. This assessment was undertaken based on previous records, the results of the field survey and known species habitat requirements.

Table 13 Likelihood of occurrence criteria

Likelihood Rating	Criteria
Known	The species was recorded within the Study Area during the field surveys.
High	 It is likely that a species would inhabit or utilise habitat within the Study Area. Criteria for this category may include: Species recently and/or regularly recorded in contiguous or nearby habitat. High quality habitat or resources present within the Study Area. Species is known or likely to maintain a resident population surrounding the Study Area. Species is known or likely to visit during migration or in response to seasonal availability of resources present on site.
Moderate	 Potential habitat for a species occurs within the Study Area. Criteria for this category may include: Species previously recorded in contiguous habitat albeit not recently (>10 years). Habitat present, but poor quality, depauperate or modified types and/or resources. Species has potential to utilise habitat during migration or seasonal availability of resources. Cryptic flora species with potential habitat within the Study Area that have not been targeted by surveys (for example, surveys were not undertaken with the flowering season).
Low	 It is unlikely that the species inhabits the area, if it did, it would likely be a transient visitor. Criteria for this category may include: The Study Area does not support the specific habitat types or resources required by the species. The Study Area is beyond the current distribution of the species or is isolated from known populations. Non cryptic flora species not observed during targeted surveys.
None/Absent	The habitat within the Study Area is unsuitable for the species.

Appendix D Likelihood of Occurrence

Name	BC Act/FM Act	EPBC Act	Source and Number of Sightings	Habitat/ Community Description	Likelihood of Occurrence
Birds					
Regent Honeyeater (Anthochaera phrygia)	E	CE	PMST-K Bionet - 2	The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River She-oak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.	Low. The Study Area does not contain woodland high canopy cover or mistletoe abundance. Therefore, it is unlikely that this species would occur in the Study Area.
Sooty Shearwater (Ardenna grisea)	-	V	PMST-L	The Sooty Shearwater forages in pelagic (open ocean) sub-tropical, sub-Antarctic and Antarctic waters.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Ruddy Turnstone (Arenaria interpres)	-	V	PMST-K	In Australasia, the Ruddy Turnstone is mainly found on coastal regions with exposed rock coast lines or coral reefs.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area
Flesh-footed Shearwater (Ardenna carneipes)	V	-	Bionet - 2	Marine. Nest on Lord Howe Island in forests on sandy soils from Ned's Beach to Clear Place, with smaller colonies below Transit Hill and at Old Settlement Beach.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Australasian Bittern (<i>Botaurus poiciloptilus</i>)	E	E	Bionet – 1 PMST-K	In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation particularly Bullrushes (<i>Typha</i> spp.) and Spikerushes (<i>Eleocharis</i> spp.)	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Bush Stone-curlew (Burhinus grallarius)	E	-	Bionet - 2	Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber.	Low. The Study Area does not contain suitable understory habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Table 14 Assessment of likelihood of occurrence of threatened species, populations and communities and migratory species

-						
	Sharp-tailed Sandpiper (Calidris acuminata)	-	V	PMST-K	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
	Red Knot (<i>Calidris canutus)</i>	E	E	PMST-K	NSW it is recorded in small numbers along some of the major river estuaries and sheltered embayments of the coastline, in particular the Hunter River estuary. This environment is used as a staging area for birds to rest and replenish fat resources; large numbers arrive in September then most move south to Victoria by October.	Low. The Study Area does not contain suitable estuarine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
	Curlew Sandpiper (Calidris ferruginea)	E	CE	PMST-K	This species has a widespread distribution in NSW east of the Great Divide, particularly in coastal regions. The Curlew Sandpiper inhabits intertidal mudflats in estuaries and bays, lakes and lagoons.	Low. The Study Area does not contain suitable mudflat habitat. Therefore, it is unlikely that this species would occur in the Study Area.
	Gang-gang Cockatoo (Callocephalon fimbriatum)	V	E	PMST-K Bionet - 17	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas.	Moderate. The Study Area contains eucalypt forest which may be suitable habitat. Therefore, it is possible that this species would occur in the Study Area.
	South-Eastern Glossy Black-Cockatoo (Calyptorhynchus lathami lathami)	V	V	PMST-L	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. Dependent on large hollow-bearing eucalypts for nest sites.	Low. No hollow bearing trees were observed in the Study Area. Therefore, it is unlikely that this species would occur in the Study Area.
	Greater Sand Plover (Charadrius leschenaultia)	V	V	PMST-L	In Australia the species is commonly recorded in parties of 10-20 on the west coast, with the far northwest being the stronghold of the population. The species is apparently rare on the east coast, usually found singly. In NSW, the species has been recorded between the	Low. The Study Area does not contain suitable estuarine habitat. Therefore, it is unlikely that this species would occur in the Study Area.

				northern rivers and the Illawarra, with most records coming from the Clarence and Richmond estuaries.	
Brown Treecreeper (south-eastern) (<i>Climacteris picumnus</i> <i>victoriae</i>)	V	V	PMST-L	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (<i>Eucalyptus camaldulensis</i>) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	Low. The Study Area does not contain suitable understorey habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Spotted Harrier (<i>Circus assimilis</i>)	V	-	Bionet - 1	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment, and ranges, and rarely in Tasmania. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland, and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands.	Low. The Study Area does not contain suitable grassy woodland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Barred Cuckoo-shrike (<i>Coracina lineata</i>)	V	V	Bionet - 1	Rainforest, eucalypt forests and woodlands, clearings in secondary growth, swamp woodlands and timber along watercourses. They are usually seen in pairs or small flocks foraging among foliage of trees for insects and fruit	Low. The Study Area is outside the known distribution of this species. Therefore, it is unlikely that this species would occur in the Study Area.
Eastern Bristlebird (<i>Dasyornis</i> brachypterus)	E	E	PMST-K Bionet - 1	Habitat for central and southern populations is characterised by dense, low vegetation including heath and open woodland with a heathy understorey. In northern NSW the habitat occurs in open forest with dense tussocky grass understorey and sparse mid-storey near rainforest ecotone; all of these vegetation types are fire prone.	Low. The Study Area does not contain areas with healthy, dense understorey. Therefore, it is unlikely that this species would occur in the Study Area.

Antipodean Albatross (Diomedea antipodensis)	V	V	PMST-L	The Antipodean Albatross is marine, pelagic and aerial.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Gibson's Albatross (Diomedea antipodensis gibsoni)	V	V	PMST-L	This species is known only to breed on the Adams, Disappointment and Auckland Islands in the subantarctic Auckland Island group. This species feeds pelagically on squid, fish and crustaceans.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Southern Royal Albatross (Diomedea epomophora)	-	V	PMST-L	The majority of the world's population of southern royal albatrosses nest on the rat-free subantarctic Campbell Island. Its foraging activities normally take place within a 1250 km radius of the breeding site	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Wandering Albatross (Diomedea exulans)	E	V	PMST-L Bionet - 12	The Wandering Albatross is marine, pelagic and aerial.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Northern Royal Albatross (<i>Diomedea sanfordi</i>)	-	E	PMST-M	The Northern Royal Albatross is marine and pelagic	Low. The Study Area does not contain suitable floodplain wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Black-necked Stork (Ephippiorhynchus asiaticus)	E	-	Bionet - 2	In Australia, Black-necked Storks are widespread in coastal and subcoastal northern and eastern Australia, as far south as central NSW (although vagrants may occur further south or inland, well away from breeding areas). Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries.	Low. The Study Area does not contain suitable floodplain wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Grey Falcon (Falco hypoleucos)	-	E	PMST-M	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	Low. The Study Area does not contain suitable open woodland habitat. Therefore, it is unlikely that this species would occur in the Study Area.

White-bellied Storm- Petrel (Tasman Sea and Australasian) (Fregetta grallaria grallaria)	V	V	PMST-L	Marine, in Australia breeds only on offshore islands in the Lord Howe Island group.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Latham's Snipe (Gallinago hardwickii)	-	V, J, K	PMST-L	Non-breeding visitor to south-eastern Australia and is a passage migrant through northern Australia. They usually inhabit open, freshwater wetlands with low, dense vegetation	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Little Lorikeet (Glossopsitta pusilla)	V	-	Bionet - 5	Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	Known. This species was observed during the site inspection.
				Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species.	
Painted Honeyeater (<i>Grantiella picta</i>)	V	V	PMST-L Bionet - 1	Inhabits Boree/ Weeping Myall (<i>Acacia pendula</i>), Brigalow (<i>A. harpophylla</i>) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus <i>Amyema</i> . Insects and nectar from mistletoe or eucalypts are occasionally eaten.	Low. The Study Area does not contain preferred trees or mistletoes. Therefore, it is unlikely that this species would occur in the Study Area.
Sooty Oystercatcher (Haematopus fuliginosus)	V	-	Bionet - 10	Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries. Forages on exposed rock or coral at low tide for foods such as limpets and mussels.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Pied Oystercatcher (Haematopus longirostris)	E	-	Bionet - 1	The species is distributed around the entire Australian coastline, although it is most common in coastal Tasmania and parts of Victoria, such as Corner Inlet. In NSW the species is thinly scattered along the entire coast, with fewer than 200 breeding pairs estimated to occur in the State. Favours intertidal flats of inlets and bays, open beaches and sandbanks. Forages on exposed sand, mud and rock at low tide, for molluscs, worms,	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.

				crabs and small fish. The chisel-like bill is used to pry open or break into shells of oysters and other shellfish.	
White-bellied Sea-Eagle (<i>Haliaeetus</i> <i>leucogaster</i>)	V	-	Bionet - 3	In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea- shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh.	Low. The Study Area does not contain large areas of open water preferred by this species. Therefore, it is unlikely that this species would occur in the Study Area.
Little Eagle (Hieraaetus morphnoides)	V	-	Bionet - 2	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.	Low. The Study Area does not contain sufficient open or riparian woodland habitat. Therefore, it is unlikely that this species would occur in the Study Area. It may fly over the Study Area, however the Study Area does not support specific resources for the species.
White-throated Needletail (<i>Hirundapus caudactus</i>)	-	V	Bionet – 1 PMST-K	Non-breeding habitat only: Found across a range of habitats, more often over wooded areas, where it is almost exclusively aerial. Large tracts of native vegetation, particularly forest, may be a key habitat requirement for species. Found to roost in tree hollows in tall trees on ridge-tops, on bark or rock faces. Appears to have traditional roost sites.	Low. The Study Area does not contain suitable large tracts of native vegetation. Therefore, it is unlikely that this species would occur in the Study Area. The species is almost exclusively aerial.
Black Bittern (<i>Ixobrychus flavicollis</i>)	V	-	Bionet - 3	Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Swift Parrot (<i>Lathamus discolour</i>)	E	CE	PMST-K Bionet - 11	Migrates to the Australian south-east mainland between March and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany Eucalyptus	Low. The Study Area does contain some potential feed trees, however there is no high-quality habitat. Therefore, it is unlikely that this species would occur in the Study Area.

					robusta, Spotted Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Mugga Ironbark <i>E.</i> <i>sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Inland Grey Box <i>E.</i> <i>microcarpa</i> , Grey Box <i>E. moluccana</i> and Blackbutt <i>E.</i> <i>pilularis</i> .	
Broad-billed S (<i>Limicola falcii</i>	andpiper nellus)	V	-	Bionet - 1	Broad-billed Sandpipers favour sheltered parts of the coast such as estuarine sandflats and mudflats, harbours, embayments, lagoons, saltmarshes and reefs as feeding and roosting habitat. Occasionally, individuals may be recorded in sewage farms or within shallow freshwater lagoons. Broad-billed Sandpipers roost on banks on sheltered sand, shell or shingle beaches.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Nunivak Bar-ta Godwit, Weste Alaskan Bar-ta Godwit (<i>Limosa lappor</i> <i>baueri</i>)	ailed ern ailed <i>nica</i>	-	V	PMST-K	It is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Less frequently it occurs in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Black-tailed Go (<i>Limosa limosa</i>	odwit a)	V	-	Bionet - 1	Primarily a coastal species. Usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Square-tailed (Lophoictinia i	Kite isura)	V	-	Bionet - 7	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	Low. The Study Area does not contain suitable timbered watercourse habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Southern Gian (<i>Macronectes</i> giganteus)	nt Petrel	Е	E	PMST-M Bionet - 4	Over summer, the species nests in small colonies amongst open vegetation on Antarctic and subantarctic islands, including Macquarie and Heard Islands and in Australian Antarctic territory. It is also an active predator of cephalopods and euphausiids, as well as smaller birds (particularly penguins) both at land and at sea.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Northern Gian	nt Petrel	V	V	PMST-L	Breeding in Australian territory is limited to Macquarie Island and occurs during spring and summer. Adults	Low. The Study Area does not contain suitable marine habitat. Therefore, it is

(Macronectes halli)			Bionet - 1	usually remain near the breeding colonies throughout the year (though some do travel widely) while immature birds make long and poorly known circumpolar and trans-oceanic movements. Hence most birds recorded in NSW coastal waters are immature birds.	unlikely that this species would occur in the Study Area.
South-eastern Hooded Robin (<i>Melanodryas cucullata</i> <i>cucullate</i>)	V	E	PMST-M	Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	Low. The Study Area does not contain suitable native grass ground layer. Therefore, it is unlikely that this species would occur in the Study Area.
Orange-bellied Parrot (Neophema chrysogaster)	CE	CE	PMST-M	On the mainland, the Orange-bellied Parrot spends winter mostly within 3 km of the coast in sheltered coastal habitats including bays, lagoons, estuaries, coastal dunes and saltmarshes. The species also inhabits small islands and peninsulas and occasionally saltworks and golf courses. Birds forage in low samphire herbland or taller coastal shrubland.	Low. The Study Area does not contain suitable sheltered coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Blue-winged Parrot (Neophema chrysostoma)	-	V	PMST-M	The Blue-winged Parrot inhabits a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones. Throughout their range they favour grasslands and grassy woodlands. They are often found near wetlands both near the coast and in semi-arid zones. Blue-winged Parrots can also be seen in altered environments such as airfields, golf-courses and paddocks.	Low. The Study Area does not contain suitable grassland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Turquoise Parrot (Neophema pulchella)	V	-	Bionet - 1	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland.	Low. The Study Area does not contain ideal habitat and the local record is >35 years old. Therefore, it is unlikely that this species would occur in the Study Area.
Barking Owl (Ninox connivens)	V	-	Bionet - 2	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. Sometimes able to successfully breed along timbered watercourses in	Low. The Study Area only contains a small area of vegetation and this species uses territories of 2000 ha or more. Therefore, it is unlikely that this species would occur in the Study Area.

				heavily cleared habitats (e.g. western NSW) due to the higher density of prey found on these fertile riparian soils. Requires very large permanent territories in most habitats due to sparse prey densities. Monogamous pairs hunt over as much as 6000 hectares, with 2000 hectares being more typical in NSW habitats.	
Powerful Owl (<i>Ninox strenua</i>)	V	-	Bionet - 34	Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine <i>Syncarpia glomulifera</i> , Black She-oak <i>Allocasuarina littoralis</i> , Blackwood <i>Acacia melanoxylon</i> , Rough-barked <i>Apple Angophora floribunda</i> , Cherry Ballart <i>Exocarpus cupressiformis</i> and a number of eucalypt species.	Low. The Study Area does not contain suitable hollow bearing trees or large tracts of habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Eastern Curlew, Far Eastern Curlew (<i>Numenius</i> <i>madagascariensis</i>)	-	CE	PMST-L	The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes use the mangroves. The birds are also found in saltworks and sewage farms. The numbers of Eastern Curlew recorded during one study were correlated with wetland areas.	Low. The Study Area does not contain suitable sheltered coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Blue-billed Duck (<i>Oxyura australis</i>)	V	-	Bionet - 1	The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.

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Olive Whistler (Pachycephala olivacea)	V	-	Bionet - 2	Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes. Forage in trees and shrubs and on the ground, feeding on berries and insects.	Low. The Study Area is at a lower than preferred altitude and does not contain a healthy ground cover layer. Therefore, it is unlikely that this species would occur in the Study Area.
Fairy Prion (southern) (Pachyptila turtur subantarctica)	-	V	PMST-K	The diet consists mainly of planktonic crustaceans and tiny fish, which they catch by either seizing prey while on the surface or by dipping their bill into the water while in flight	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Eastern Osprey (<i>Pandion cristatus</i>)	V	-	Bionet - 1	Eastern Ospreys are found right around the Australian coastline, except for Victoria and Tasmania. They are common around the northern coast, especially on rocky shorelines, islands and reefs. Favour coastal areas, especially the mouths of large rivers, lagoons and lakes.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Sooty Albatross (Phoebetria fusca)	V	V	PMST-M	The Sooty Albatross is marine and pelagic.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Flame Robin (Petroica phoenicea)	V	-	Bionet - 2	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense.	Low. The Study Area does not contain suitable native groundlayer. Therefore, it is unlikely that this species would occur in the Study Area.
Regent Parrot (eastern subspecies) (Polytelis anthopeplus monarchoides)	E	V	Bionet - 1	The species nests within River Red Gum forests along the Murray, Wakool and lower Murrumbidgee Rivers, and possibly the Darling River downstream of Pooncarie.	Low. The Study Area is far from the usual range of this species in western NSW. Therefore, it is unlikely that this species would occur in the Study Area.

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Australian Gould's Petrel (Pterodroma leucoptera leucoptera)	V	E	PMST-M Bionet - 1	Principal nesting habitat is located within two gullies which are characterised by steeply, sloping rock scree with a canopy of Cabbage Tree Palms. They nest predominantly in natural rock crevices among the rock scree and also in hollow fallen palm trunks, under mats of fallen palm fronds and in cavities among the buttresses of fig trees.	Low. The Study Area does not contain suitable marine or coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Kermadec Petrel (western) (Pterodroma neglecta neglecta)	V	V	PMST-M	Marine Breeds on islands across the South Pacific. In Australia it breeds on Ball's Pyramid and Phillip Island (near Norfolk Island). Nests in a crevice amongst rocks.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Wompoo Fruit-Dove (<i>Ptiinopus magnificus</i>)	V	-	Bionet - 1	Occurs along the coast and coastal ranges from the Hunter River in NSW to Cape York Peninsula. It is rare south of Coffs Harbour. Occurs in, or near rainforest, low elevation moist eucalypt forest and brush box forests. Feeds on a diverse range of tree and vine fruits and is locally nomadic - following ripening fruit. Thought to be an effective medium to long-distance vector for seed dispersal.	Low. The Study Area does not contain suitable mature forest habitat and there have not been any recent records in the region. Therefore, it is unlikely that this species would occur in the Study Area.
Rose-crowned Fruit- Dove (<i>Ptilinopus regina</i>)	V	-	Bionet -3	Coast and ranges of eastern NSW and Queensland, from Newcastle to Cape York. Rose-crowned Fruit-doves occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest, where fruit is plentiful.	Low. The Study Area does not contain sufficient fruit bearing species. Therefore, it is unlikely that this species would occur in the Study Area.
Superb Fruit-Dove (<i>Ptilinopus superbus</i>)	V	-	Bionet - 4	Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit- bearing trees.	Low. The Study Area does not contain suitable rainforest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Little Shearwater (Puffinus assimilis)	V	-	Bionet - 1	Marine, breeding sites at Lord Howe Island include Roach Island, Muttonbird Island, Blackburn Island and on the main Island at Muttonbird Point and Transit Hill.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.

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	Pilotbird (Pycnoptilus floccosus)	-	V	PMST-K Bionet - 5	Pilotbirds are found in the ground level of wet forests on coastal mountain ranges and in moist gullies timbered with mature gumtrees and with a dense understorey of bracken, low shrubs or tree fer	Low. The Study Area does not contain suitable understorey habitat. Therefore, it is unlikely that this species would occur in the Study Area.
	Australian Painted Snipe (Rostratula australis)	E	E	PMST-L	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	Low. The Study Area does not contain suitable swamp or marsh fringe habitat. Therefore, it is unlikely that this species would occur in the Study Area.
	Diamond Firetail (Stagonopleura guttata)	V	V	PMST-M	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland	Low. The Study Area does not contain suitable grassy woodland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
	Australian Fairy Tern (Sternula nereis nereis)	-	V	PMST-L	Within Australia, the Fairy Tern occurs along the coasts of Victoria, Tasmania, South Australia and Western Australia; occurring as far north as the Dampier Archipelago near Karratha.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
	Buller's Albatross, Pacific Albatross (Thalassarche bulleri)	-	V	PMST-M	Occurs in both inshore and offshore waters, including the continental shelf break and pelagic waters.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
	Northern Buller's Albatross, Pacific Albatross (<i>Thalassarche bulleri</i> <i>platei</i>)	-	V	PMST-M	Occurs in both inshore and offshore waters, including the continental shelf break and pelagic waters.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
	Indian Yellow-nosed Albatross (Thalassarche carteri)	-	V	PMST-L	The Indian Yellow-nosed Albatross is a marine bird, located in subtropical and warmer subantarctic waters.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.



Shy Albatross (<i>Thalassarche cauta</i>)	V	E	PMST-L Bionet - 1	This pelagic or ocean-going species inhabits subantarctic and subtropical marine waters, spending the majority of its time at sea.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Campbell Albatross, Campbell Black-browed Albatross (Thalassarche impavida)	-	V	PMST-M Bionet - 1	The Campbell Albatross is a marine sea bird inhabiting sub-Antarctic and subtropical waters from pelagic to shelf-break water habitats.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Black-browed Albatross (Thalassarche melanophris)	V	V	PMST-L Bionet - 3	The Black-browed Albatross is a marine species that inhabits Antarctic, subantarctic and temperate waters and occasionally enters the tropics.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Salvin's Albatross (<i>Thalassarche salvini</i>)	-	V	PMST-L	Salvin's Albatross is a marine species occurring in subantarctic and subtropical waters, reaching the tropics in the cool Humboldt Current, off South America.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
White-capped Albatross (Thalassarche steadi)	-	V	PMST-K	Mostly observed in inshore and offshore waters over the continental shelf and less frequently in pelagic waters off the shelf break. May occasionally enter larger bays.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Eastern Hooded Dotterel (Thinornis cucullatus cucullatus)	E	V	Bionet - 1	Prefer sandy ocean beaches, especially those that are broad and flat, with a wide wave-wash zone for feeding, much beachcast seaweed, and backed by sparsely vegetated sand-dunes for shelter and nesting	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Common Greenshank (Tringa nebularia)	-	E, C,J,K	PMST-L	The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Masked Owl (Tyto novaehollandiae)	V	-	Bionet - 1	Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides.	Low. The Study Area does not contain sufficient habitat or large hollow bearing trees preferred for roosting.

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					Therefore, it is unlikely that this species would occur in the Study Area.
Sooty Owl (<i>Tyto tenebricosa</i>)	V	-	Bionet - 6	Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Nests in very large tree-hollows.	Low. The Study Area does not contain sufficient habitat or large hollow bearing trees preferred for roosting. Therefore, it is unlikely that this species would occur in the Study Area.
Fish/ Sharks					
Grey Nurse Shark (east coast population) (Carcharias taurus (east coast population))	CE	CE	PMST-L	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would not occur in the Study Area.
White Shark, Great White Shark (Carcharodon carcharias)	V	V	PMST-K	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would not occur in the Study Area.
Black Rockcod, Black Cod, Saddled Rockcod (Epinephelus daemelii)	V	V	PMST-L	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would not occur in the Study Area
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark (Galeorhinus galeus)	-	CD	PMST-M	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would not occur in the Study Area
White's Seahorse, Crowned Seahorse, Sydney Seahorse (<i>Hippocampus whitei</i>)	E	E	PMST-L	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would not occur in the Study Area.
Macquarie Perch (Macquaria australasica)	E	E	PMST-M	The Macquarie Perch is a riverine, schooling species. It prefers clear water and deep, rocky holes with lots of cover.	Low. The Study Area does not contain any sufficiently deep, clear water. Therefore, this species is unlikely to occur in the Study Area.

Australian Grayling (Prototroctes maraena)	E	V	PMST-L	Adults (including pre spawning and spawning adults) inhabit cool, clear, freshwater streams with gravel substrate and areas alternating between pools and riffle zones.	Low. The Study Area does not contain any gravel bottomed streams. Therefore, this species is unlikely to occur in the Study Area.
Whale Shark (<i>Rhincodon typus</i>)	-	V	PMSTM	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would not occur in the Study Area.
Blue Warehou (<i>Seriolella brama</i>)	-	CD	PMST-K	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would not occur in the Study Area.
Scalloped Hammerhead (Sphyrna lewini)	-	CD	PMST-M	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Southern Bluefin Tuna (<i>Thunnus maccoyii</i>)	-	CD	PMST-L	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would not occur in the Study Area.
Frog					
Giant Burrowing Frog (Heleioporus australiacus)	V	V	PMST-K Bionet - 3	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Across its range, the Giant Burrowing Frog appears to be dependent on areas with native vegetation	Low. All the vegetation in the Study Area is modified and mixed with exotic species. Therefore, it is unlikely that this species would occur in the Study Area.
Green and Golden Bell Frog (<i>Litoria aurea</i>)	E	V	PMST-K Bionet - 14	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha</i> spp.) or spikerushes (<i>Eleocharis</i> spp.). Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), have a grassy area nearby and diurnal sheltering sites available.	Low. The Study Area lacks <i>Typha spp.</i> and <i>Eleocharis spp.</i> and has <i>Gambusia</i> <i>holbrooki</i> present. Therefore, it is unlikely that this species would occur in the Study Area.
Littlejohn's Tree Frog, Heath Frog	E	E	PMST-L	This species breeds in the upper reaches of permanent streams and in perched swamps.Non-breeding habitat is	Low. The Study Area lacks heath-based forest habitat. Therefore, it is unlikely

(Litoria littlejohni)				heath based forests and woodlands where it shelters under leaf litter and low vegetation, and hunts for invertebrate prey either in shrubs or on the ground.	that this species would occur in the Study Area.
Watson's Tree Frog (<i>Litoria watsoni</i>)	E	E	PMST-M	This species breeds in the upper reaches of permanent streams and in perched swamps. Non-breeding habitat is heath based forests and woodlands where it shelters under leaf litter and low vegetation, and hunts for invertebrate prey either in shrubs or on the ground.	Low. The Study Area lacks heath-based forest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Stuttering Frog, Southern Barred Frog (<i>Mixophyes balbus</i>)	E	V	PMST-L	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor.	Low. The Study Area lacks rainforest habitat and thick understorey. Therefore, it is unlikely that this species would occur in the Study Area
Red-crowned Toadlet (<i>Pseudophryne</i> australis)	V	-	Bionet - 1	Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. Shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter.	Low. The Study Area lacks thick understorey and is not in the vicinity of a sandstone ridge. Therefore, it is unlikely that this species would occur in the Study Area
Reptile					
Loggerhead Turtle (Caretta caretta)	E	E	Bionet – 4 PMST-L	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Green Turtle (Chelonia mydas)	V	V	PMST-K Bionet - 5	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Leatherback Turtle (<i>Dermochelys</i> <i>coriacea</i>)	E	E	PMST-K Bionet - 1	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Hawksbill Turtle (Eretmochelys imbricata)	-	V	PMST-K Bionet - 1	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Broad-headed Snake		V	PMST-L	Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring.	Low. The Study Area lacks rock crevices and exposed cliff edges. Therefore, it is

(Hoplocephalus bungaroides)					unlikely that this species would occur in the Study Area
Flatback Turtle (Natator depressus)	-	V	PMST-K	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Mammal					
New Zealand Fur-seal (Arctocephalus forsteri)	V	-	Bionet - 4	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Australian Fur-seal (Arctocephalus pusillus doriferus)	V	-	Bionet - 7	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Blue Whale (Balaenoptera musculus)	E	E	PMST-M	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Eastern Pygmy-possum (Cercartetus nanus)	V	-	Bionet - 4	Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred.	Low. The Study Area does not contain preferred heath habitat and has only a small amount of suitable feed trees. Therefore, it is unlikely that this species would occur in the Study Area.
Large-eared Pied Bat (Chalinolobus dwyeri)	V	V	PMST-L	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes.	Low. The Study Area does not contain suitable cliff or cave habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Spotted-tail Quoll (Dasyurus maculatus maculatus)	V	E	PMST-L Bionet - 1	Found in a variety of forested habitats. This species creates a den in fallen hollow logs or among rocky outcrops. Generally, does not occur in otherwise suitable habitats that are in close proximity to urban development.	Low. The Study Area does not contain a large amount of forest and is in an urban area. Therefore, it is unlikely that this species would occur in the Study Area.



Southern Right Whale (Eubalaena australis)	E	E	PMST-K	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Eastern False Pipistrelle (Falsistrellus tasmaniensis)	V	-	Bionet - 1	Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	Low. The Study Area does not contain sufficient tall trees or hollows. Therefore, it is unlikely that this species would occur in the Study Area.
Southern Brown Bandicoot (south- eastern) (Isoodon obesulus obesulus)	E	E	PMST-L	They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils. Males have a home range of approximately 5-20 hectares whilst females forage over smaller areas of about 2-3 hectares	Low. The Study Area does not contain forest with a healty understorey and is too small for the required habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Little Bent-winged Bat (<i>Miniopterus australis</i>)	V	-	Bionet – 3	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. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.	Moderate. The Study area contains suitable wet forest and stormwater drains for roosting. Therefore, it is possible that this species would occur in the Study Area
Large Bent-winged Bat (<i>Miniopterus orianae</i> oceanensis)	V	-	Bionet - 8	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young.	Moderate. The Study area contains suitable wet forest and stormwater drains for roosting. Therefore, it is possible that this species would occur in the Study Area
Southern Myotis (<i>Myotis macropus</i>)	V	-	Bionet - 2	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. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	Low. The Study Area does not contain open stream for catching prey. Therefore, it is unlikely that this species would occur in the Study Area.
Parma Wallaby (Notamacropus parma)	V	V	PMST-M	Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest.	Low. The Study Area does not contain suitable dense understorey. Therefore, it is unlikely that this species would occur in the Study Area.

Greater Glider (southern and central) (Petauroides volans)	E	E	PMST-K	Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelter during the day in tree hollows and will use up to 18 hollows in their home range.	Low. The Study Area does not contain suitable tree hollows. Therefore, it is unlikely that this species would occur in the Study Area.
Yellow-bellied Glider (Petaurus australis australis)	V	E	PMST-L	The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils	Low. The Study Area does not contain suitable mature eucalypt forest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Squirrel Glider (Petaurus norfolcensis)	V	-	Bionet - 2	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.	Low. The Study Area does not contain suitable mature eucalypt forest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Brush-tailed Rock- wallaby (Petrogale penicillate)		V	PMST-M	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north.	Low. The Study Area does not contain suitable rocky habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Koala (Phascolarctos cinereus)	E	E	PMST K Bionet - 15	Occurs in forests and woodlands where it requires suitable feed trees (particularly <i>Eucalyptus</i> spp.) and habitat linkages. Will occasionally cross open areas, although it becomes more vulnerable to predator attack and road mortality during these excursions.	Low. The Study Area is isolated with no linkage to further habitat Therefore, it is unlikely that this species would occur in the Study Area.
Sperm Whale (Physeter macrocephalus)	V	-	Bionet - 2	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Long-nosed Potoroo (Potorous tridactylus tridactylus)	V	V	PMST-L	In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 mm. Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature.	Low. The Study Area does not contain dense understorey. Therefore, it is unlikely that this species would occur in the Study Area.

New Holland Mouse (Pseudomys novaehollandiae)	-	V	PMST-L	Known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes	Low. The Study Area does not contain heathland or sand dune habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Grey-headed flying fox (<i>Pteropus</i> poliocephalus)	V	V	PMST-K Bionet - 416	This species forages over a large area for nectar/fruits. Seasonally roosts in communal base camps situated within wet sclerophyll forests or rainforests. Frequently observed to forage in flowering Eucalypts. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	Moderate. There is suitable foraging habitat in the Study Area. Therefore, it is possible that this species would occur in the Study Area.
Yellow-bellied Sheathtail-bat (<i>Saccolaimus</i> <i>flaviventris</i>)	V	-	Bionet - 1	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	Moderate. There is suitable habitat in the Study Area and a recent record in the locality. Therefore, it is possible that this species would occur in the Study Area.
Greater Broad-nosed Bat (<i>Scoteanax rueppellii</i>)	V	-	Bionet - 4	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings.	Low. The Study Area does not contain tall wet forest or hollow bearing trees. Therefore, it is unlikely that this species would occur in the Study Area.
Flora					
Acacia baueri subsp. aspera	V	-	Bionet - 2	Occurs in low, damp heathlands, often on exposed rocky outcrops over a wide range of climatic and topographical conditions. Appears to prefer open conditions; rarely observed where there is any shrub or tree canopy development; and many of the observations of this species have been made following fire, suggesting the species prefers early successional habitats.	Low. The Study Area does not contain heathland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Bynoe's Wattle, Tiny Wattle (<i>Acacia bynoeana</i>)	E	V	PMST-M	Occurs in heath or dry sclerophyll forest on sandy soils. Seems to prefer open, sometimes slightly disturbed sites	Low. This species is only known from limited populations and has not been recorded in the locality of the Study



				such as trail margins, edges of roadside spoil mounds and in recently burnt patches.	Area. Therefore, it is unlikely that this species would occur in the Study Area.
Allocasuarina glareicola	E	E	PMST-M	Grows in Castlereagh woodland on lateritic soil. Found in open woodland with Eucalyptus parramattensis, Eucalyptus fibrosa, Angophora bakeri, Eucalyptus sclerophylla and Melaleuca decora	Low. This species is only known from limited populations and has not been recorded in the locality of the Study Area. Common associated species not present. Therefore, it is unlikely that this species would occur in the Study Area.
Lesser Creeping Fern (Arthropteris palisotii)	E	-	Bionet - 1	Occurs in rainforest, mainly on tree trunks.	Low. The Study Area does not contain suitable rainforest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Thick-lipped Spider- orchid, Daddy Long- legs (<i>Caladenia tessellata</i>)	V	V	PMST-L	Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	Low. This species is only known from limited populations and has not been recorded in the locality of the Study Area. Therefore, it is unlikely that this species would occur in the Study Area.
Pretty Beard Orchid (<i>Calochilus pulchellus</i>)	-	E	PMST-M	At Vincentia the species grows in low Scribbly Gum dominated woodland with a low wet heath understorey. The soil is a sandy loam overlying sandstone. In Booderee National Park it grows in a tall heathy association. In Morton National Park on the Little Forest Plateau it occurs in low heath among scattered clumps of emergent eucalypts and Banksia in shallow coarse white sand over sandstone, in a near-escarpment area subject to strong orographic precipitation.	Low. This species is only known from limited populations and has not been recorded in the locality of the Study Area. Therefore, it is unlikely that this species would occur in the Study Area.
Leafless Tongue-orchid (Cryptostylis hunteriana)	V	V	PMST-L	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum (<i>Eucalyptus sclerophylla</i>), Silvertop Ash (<i>E.</i> <i>sieberi</i>), Red Bloodwood (<i>Corymbia gummifera</i>) and Black Sheoak (<i>Allocasuarina littoralis</i>); appears to prefer open areas in the understorey of this community.	Low. The Study Area has exotic groundcover dominating in potential habitat for this species. Therefore, it is unlikely that this species would occur in the Study Area.

White-flowered Wax Plant <i>(Cynanchum elegans)</i>	E	E	PMST-K Bionet - 6	The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest; Coastal Tea- tree <i>Leptospermum laevigatum</i> – Coastal Banksia <i>Banksia integrifolia subsp. integrifolia</i> coastal scrub; Forest Red Gum <i>Eucalyptus tereticornis</i> aligned open forest and woodland; Spotted Gum <i>Corymbia maculata</i> aligned open forest and woodland; and Bracelet Honeymyrtle <i>Melaleuca armillaris</i> scrub to open scrub.	Low. The Study Area does not contain suitable rainforest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Illawarra Socketwood (Daphnandra johnsonii)	E	E	PMST-M	Occupies the rocky hillsides and gullies of the Illawarra lowlands, occasionally extending onto the upper escarpment slopes. Associated vegetation includes rainforest and moist eucalypt forest.	Low. The Study Area does not contain suitable wet forest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Epacris purpurascens var. purpurascens	V	-	Bionet - 1	Found in a range of habitat types, most of which have a strong shale soil influence.	Low. The Study Area does not contain suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid (<i>Genoplesium baueri</i>)	E	E	PMST-L	Grows in dry sclerophyll forest and moss gardens over sandstone.	Low. The Study Area does not contain suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Gossia acmenoides population in the Sydney Basin Bioregion south of the Georges River	E	-	Bionet - 4	Found in subtropical and dry rainforest on the ranges and coastal plain of eastern Australia	Low. The Study Area does not contain suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Grevillea raybrownii	V	V	PMST-M	Generally occurs on ridgetops and, less often, slopes and benches of Hawkesbury Sandstone and Mittagong Formation It occurs in Eucalyptus open forest and woodland with a shrubby understorey on sandy, gravelly loam soils derived from sandstone that are low in nutrients	Low. The Study Area does not contain suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Wingless Raspwort, Square Raspwort	V	V	PMST-L	Square Raspwort appears to require protected and shaded damp situations in riparian habitats.	Low. The Study Area does not contain suitable protected riparian habitat.

(Haloragis exalata subsp. exalata)					Therefore, it is unlikely that this species would occur in the Study Area.
Woronora Beard-heath (<i>Leucopogon exolasius</i>)	V	V	PMST-M	The Woronora Beard-heath inhabits woodland on sandstone (and sandy alluvium) and prefers rocky hillsides along creek banks. The species occupies areas with low nutrient soils, up to an altitude of 100 m above sea level and between 1000–1400 mm rainfall. It is found in association with Sydney Peppermint (<i>Eucalyptus piperita</i>), Silvertop Ash (<i>E. sieberi</i>) and shrubs including the Graceful Bush Pea (<i>Pultenaea</i> <i>flexilis</i>), Flaky-barked Tea-tree (<i>Leptospermum</i> <i>trinervium</i>) and Eggs and Bacon Pea (<i>Dillwynia retorta</i>).	Low. The Study Area does not contain suitable habitat and this species is known to have a restricted distribution. Therefore, it is unlikely that this species would occur in the Study Area
Biconvex Paperbark (<i>Melaleuca biconvexa</i>)	V	V	PMST-M	Biconvex Paperbark generally grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	Low. This species was not detected in the site inspection. Therefore, it is unlikely that this species would occur in the Study Area.
Knotweed, Tall Knotweed (<i>Persicaria elatior</i>)	V	V	PMST-L	This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	Moderate. The Study Area contains suitable habitat. Therefore, it is possible that his species would occur in the Study Area,
Hairy Geebung, Hairy Persoonia (Persoonia hirsuta)	E	E	PMST-L	The Hairy Geebung is found in clayey and sandy soils in dry sclerophyll open forest, woodland and heath, primarily on the Mittagong Formation and on the upper Hawkesbury Sandstone.	Low. The Study Area does not contain suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Nodding Geebung (Persoonia nutans)	E	E	PMST-K	Restricted to the Cumberland Plain in western Sydney, between Richmond in the north and Macquarie Fields in the south. Southern populations also occupy tertiary alluvium but extend onto shale sandstone transition communities and into Cooks River / Castlereagh Ironbark Forest.	Low. The Study Area does not contain suitable habitat and is outside known distribution. Therefore, it is unlikely that this species would occur in the Study Area.
Spiked Rice-flower (<i>Pimelea spicata</i>)	E	E	PMST-L	the Illlawarra populations usually occur in one of two communities - a woodland or a coastal grassland. Woodland sites are dominated by forest red gum (<i>E.</i> <i>tereticornis</i>) and stringybark (<i>E. eugenioides</i>), with a groundcover dominated by kangaroo grass (<i>Themeda</i> <i>australis</i>) and matrush (<i>Lomandra longifolia</i>)	Low. The Study Area does not contain suitable habitat or co-occurring species. Therefore, it is unlikely that this species would occur in the Study Area.

Jervis Bay Leek Orchid, Culburra Leek-orchid, Kinghorn Point Leek- orchid (Prasophyllum affine)	E	E	PMST-M	Grows on poorly drained grey clay soils that support low heathland and sedgeland communities.	Low. The Study Area does not contain suitable habitat and is outside known distribution. Therefore, it is unlikely that this species would occur in the Study Area.
Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood (<i>Pterostylis gibbosa</i>)	E	E	PMST-L	In the Illawarra region, the species grows in woodland dominated by Forest Red Gum <i>Eucalyptus tereticornis,</i> Woollybutt <i>E. longifolia</i> and White Feather Honey- myrtle <i>Melaleuca decora</i> .	Low. The Study Area does not contain suitable habitat or co-occurring species. Therefore, it is unlikely that this species would occur in the Study Area.
Sydney Plains Greenhood (Pterostylis Saxicola)	E	E	PMST-M	Habitat ranges from grassy woodland on flat to gently sloping landscapes on shale soils, to open-forest on hilly landscapes on transitional soils, and woodland on the rims and steep sides of river valleys on sandstone soils.	Low. The Study Area does not contain suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Prickly Bush-pea (Pultenaea aristate)	V	V	PMST-L Bionet - 34	Prickly Bush-pea is restricted to the Woronora Plateau, a small area between Helensburgh, south of Sydney, and Mt Kiera above Wollongong. The species occurs in either dry sclerophyll woodland or wet heath on sandstone.	Low. The Study Area does not contain suitable habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Eastern Underground Orchid (<i>Rhizanthella slateri</i>)		E	PMST-M	Habitat requirements are poorly understood and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest.	Low. This species has restricted distribution and the sclerophyll forest in the study area is disturbed and doesn't present ideal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Scrub Turpentine (Rhodamnia rubescens)	E	CE	PMST- K Bionet - 30	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland.	Low. The Study Area does not contain suitable rainforest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Native Guava (Rhodomyrtus psidiodes)	E	CE	PMST-M	Populations are typically restricted to coastal and sub- coastal areas of low elevation however the species does occur up to c. 120 km inland in the Hunter and Clarence River catchments and along the Border Ranges in NSW. Pioneer species found in littoral, warm temperate and	Low. The Study Area does not contain suitable rainforest habitat. Therefore, it is unlikely that this species would occur in the Study Area.

				subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines.	
Rainforest Cassia (<i>Senna acclinis)</i>	E	-	Bionet - 3	Grows on the margins of subtropical, littoral and dry rainforests.	Low. The Study Area does not contain suitable rainforest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Solanum celatum	E	-	Bionet - 1	Grows in rainforest clearings, or in wet sclerophyll forests.	
Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry (<i>Syzygium paniculatum</i>)	E	V	PMST-K Bionet - 2	On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest.	Low. This species was not detected in the site inspection and the Study Are doesn't contain rainforest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Kangaloon Sun Orchid (Thelymitra kangaloonica)	CE	CE	PMST-L	It is found in swamps in sedgelands over grey silty grey loam soils	Low. The Study Area does not swamp habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Austral Toadflax (Thesium australe)	V	V	PMST-L	Austral Toad-flax is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast.	Low. The Study Area does not grassland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Swamp Everlasting, Swamp Paper Daisy (Xerochrysum palustre)	-	V	PMST-M	Grows in swamps and bogs which are often dominated by heaths. Also grows at the edges of bog margins on peaty soils with a cover of shrubs or grasses.	Low. The Study Area does not swamp habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Threatened Ecological Co	ommunities				
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	-	E	PMST-L	It is typically found on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. These are typically associated with low-lying coastal alluvial floodplains and alluvial flats	Low. The Study Area does not coastal or wetland habitat. No associated PCT were found in the Study Area. Therefore, it is unlikely that this community would occur in the Study Area.



Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	-	E	PMST-M	The ecological community typically occurs in low-lying coastal alluvial areas with minimal relief, such as swamps, floodplain pockets, depressions, alluvial flats, back-barrier flats, fans, terraces, and behind fore-dunes	Low. The Study Area does not coastal or wetland habitat. Therefore, it is unlikely that this community would occur in the Study Area.
Coastal Upland Swamps in the Sydney Basin Bioregion	E	E	PMST-L	The vegetation of the Coastal Upland Swamp may include tall open scrubs, tall closed scrubs, closed heaths, open graminoid heaths, sedgelands and fernlands. Coastal Upland Swamps occur primarily on impermeable sandstone plateaux with shallow groundwater aquifers in the headwaters and impeded drainage lines of streams, and on standstone benches with abundant seepage moisture.	Low. The Study Area does not swamp habitat. Therefore, it is unlikely that this community would occur in the Study Area.
Illawarra and south coast lowland forest and woodland ecological community	-	CE	PMST-L	The Illawarra and south coast lowland forest and woodland typically occurs within 30 km of the coast in coastal valleys and low-lying foothills on the south coast of NSW. The canopy is typically dominated by Eucalyptus or Angophora trees. The composition of the understorey is variable. Many patches have a sub- canopy of smaller trees as well as a shrub	Low. No associated PCT were found in the Study Area. Therefore, it is unlikely that this community would occur in the Study Area.
Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion	E	CE	PMST-L	Occupies the Illawarra coastal plain and escarpment foothills, rarely extending onto the upper escarpment slopes. Usually found on Permian volcanic rocks, but can occur on a range of rock types. Characteristic tree species include <i>Baloghia inophylla</i> (Brush Bloodwood), <i>Brachychiton acerifolius</i> (Flame Tree), <i>Dendrocnide</i> <i>excelsa</i> (Giant Stinging Tree), <i>Diploglottis australis</i> (Native Tamarind), <i>Ficus spp., Pennantia cunninghamii</i> (Brown Beech), and <i>Toona ciliata</i> (Red Cedar).	Low. No characteristic tree species were found in the Study Area. Therefore, it is unlikely that this community would occur in the Study Area.
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	-	CE	PMST-L	The structure of the ecological community is generally a tall open forest to woodland, but there may be localised areas of closed forest and/or low forest, often associated with disturbance (including flooding). The structure tends to be lower and less dense in the wider floodplains, whereas taller denser forests occur in the more confined floodplains.	Low. Typically found on floodplains and similar wet areas, which are not found in the Study Area. Therefore, it is unlikely that this community would occur in the Study Area.

Subtropical and Temperate Coastal Saltmarsh	-	V	PMST-L	The physical environment for the ecological community is coastal areas under regular or intermittent tidal influence.	Low. No suitable habitat found in the Study Area. Therefore, it is unlikely that this community would occur in the Study Area.		
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion	-	E	PMST-M	The Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion is typically tall open eucalypt forests found on basalt and basalt-like substrates in, or adjacent to, the Sydney Basin Bioregion. The ecological community usually occurs at elevations between 650 m and 1050 m above sea level	Low. The Study Area is at a lower elevation than this TEC is found. Therefore, it is unlikely that this community would occur in the Study Area.		
Migratory Species							
Migratory Marine Birds							
Common Noddy (<i>Anous stolidus</i>)	-	-	PMST-L	During the breeding season, the Common Noddy usually occurs on or near islands, on rocky islets and stacks with precipitous cliffs, or on shoals or cays of coral or sand.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.		
Forked-tailed Swift (<i>Apus pacificus</i>)	-	-	PMST-L	Pacific (Fork-tailed) Swifts, race "pacificus", are non- breeding migrants to Australia from far-eastern Asia. They can appear anywhere along the tropical North coast, from Exmouth, WA, in the West to Fraser Island, QLD, in the East. To the best of our knowledge, Pacific (Fork-tailed) Swifts never set foot on Australian soil.	Low. This migratory species is not known to land in Australia. Therefore, it is unlikely that this species would occur in the Study Area.		
Flesh-footed Shearwater (Ardenna carneipes)	V	-	PMST-L	Marine, nest on Lord Howe Island in forests on sandy soils from Ned's Beach to Clear Place, with smaller colonies below Transit Hill and at Old Settlement Beach	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.		
Sooty Shearwater (Ardenna grisea)	-	-	PMST-L	The Sooty Shearwater forages in pelagic (open ocean) sub-tropical, sub-Antarctic and Antarctic waters.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.		
Streaked Shearwater (Calonectris leucomelas)	-	-	PMST-K	This marine species can be found over both pelagic and inshore waters. It feeds mainly on fish and squid which it catches by surface-seizing and shallow plunges.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.		


Antipodean Albatross (Diomedea antipodensis)	V	V	PMST-L	As Above.	As above.
Southern Royal Albatross (Diomedea epomophora)	-	V	PMST-L	As Above.	As above.
Wandering Albatross (Diomedea exulans)	V	V	PMST-L	As Above.	As above.
Northern Royal Albatross (<i>Diomedea sanfordi</i>)	-	E	PMST-M	As Above.	As above.
Lesser Frigatebird (Fregata ariel)	-	-	PMST-K	The Lesser Frigatebird breeds on small, remote tropical and sub-tropical islands, in mangroves or bushes, and even on bare ground.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Southern Giant Petrel (<i>Macronectes</i> giganteus)	E	E	PMST-M	As Above.	As above.
Northern Giant Petrel (<i>Macronectes halli</i>)	V	V	PMST-L	As Above.	As above.
White-tailed Tropicbird (Phaethon lepturus)	-	-	PMST-M	The white-tailed Tropicbird can be found over pelagic waters and the coasts of tropical and subtropical seas.	Low. The Study Area does not contain suitable marine or coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Sooty Albatross (Phoebetria fusca)	V	V	PMST-M	As Above.	As above.
Little Tern (<i>Sternula albifrons</i>)	E	-	PMST-M	Almost exclusively coastal, preferring sheltered environments; however may occur several kilometres from the sea in harbours, inlets and rivers (with occasional offshore islands or coral cay records).	Low. The Study Area does not contain suitable marine or coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area.

Buller's Albatross, Pacific Albatross (Thalassarche bulleri)	-	V	PMST-M	As Above.	As above.	
Indian Yellow-nosed Albatross (<i>Thalassarche carteri</i>)	-	V	PMST-L	As Above.	As above.	
Shy Albatross (Thalassarche cauta)	V	E	PMST-L	As Above.	As above.	
Chatham Albatross (Thalassarche eremita)	-	E	PMST-M	Marine and pelagic.	Low. The Study Area does not contain suitable marine habitat. Therefore, it is unlikely that this species would occur in the Study Area.	
Campbell Albatross, Campbell Black-browed Albatross (Thalassarche impavida)	-	V	PMST-M	As Above.	As above.	
Black-browed Albatross (Thalassarche melanophris)	V	V	PMST-L	As Above.	As above.	
Salvin's Albatross (Thalassarche salvini)	-	V	PMST-L	As Above.	As above.	
White-capped Albatross (Thalassarche steadi)	-	V	PMST-K	As Above.	As above.	
Migratory Terrestrial Birds						
Oriental Cuckoo (Cuculus optatus)	-	C,J,K	PMST-M	Oriental Cuckoos are winter visitors to Australia and unlike all of our other cuckoos, do not breed here. Mainly seen in northern Australia, occasionally they are sighted as far south as Sydney.	Low. The Study Area does not present high quality habitat that would be utilised by a migratory species due to its size and proximity to better habitat. Therefore, it is unlikely that this species would occur in the Study Area.	

White-throated Needletail (Hirundapus causacutus)	-	V	PMST-K	As above.	As above.
Black-faced Monarch (<i>Monarcha melanopsis</i>)	-	-	PMST-K	The Black-faced Monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest.	Low. The Study Area does not contain suitable rainforest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Yellow Wagtail (<i>Motacilla flava</i>)	-	-	PMST-M	This species occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra. In the north of its range it is also found in large forest clearings.	Low. The Study Area does not contain suitable low vegetation. Therefore, it is unlikely that this species would occur in the Study Area.
Satin Flycatcher (<i>Myiagra cyanoleuca</i>)	-	-	PMST-L	Widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains. Satin Flycatchers inhabit heavily vegetated gullies in eucalypt- dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	Low. The Study Area does not contain suitable heavily vegetated forest habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Rufous Fantail (<i>Rhipidura rufifrons</i>)	-	-	PMST-K	The Rufous Fantail occurs in coastal and near coastal districts of northern and eastern Australia. n east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood (<i>Eucalyptus microcorys</i>), Mountain Grey Gum (<i>E. cypellocarpa</i>), and Narrow-leaved Peppermint, usually with a dense shrubby understorey often including ferns. When on passage, they are sometimes recorded in drier sclerophyll forests and woodlands. They are also recorded from parks and gardens when on passage.	Moderate. The Study Area does not contain the preferred habitat of this species. However, there are recordings in the locality and they utilise a broader range of habitat on passage. Therefore, it is possible that this species would occur in the Study Area.
Spectacled Monarch	-	-	PMST-K	Spectacled Monarchs occur down most of the east coast of Australia in rain forests and wet gullies, south to	Low. The Study Area does not contain suitable wet gully habitat. Therefore, it

(Symposiachrus trivirgatus as Monarcha trivirgatus)				about Newcastle in most years but occasionally as far south as Sydney and rarely to the NSW south coast.	is unlikely that this species would occur in the Study Area.		
Migratory Wetland Species							
Common Sandpiper (<i>Actitis hypoleucos</i>)	-	-	PMST-L	The Common Sandpiper breeds in Europe and Asia. In Australasia it visits New Guinea and Australia, mainly in the north and west. In Australia, the Common Sandpiper is found in coastal or inland wetlands, both saline or fresh.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.		
Ruddy Turnstone (Arenaria interpres)	-	V	РМST-К	As Above.	As Above.		
Sharp-tailed Sandpiper (<i>Calidris acuminata</i>)	-	-	PMST-K	The Sharp-tailed Sandpiper is a summer migrant from Arctic Siberia, being found on wetlands throughout Australia. The Sharp-tailed Sandpiper prefers the grassy edges of shallow inland freshwater wetlands. It is also found around sewage farms, flooded fields, mudflats, mangroves, rocky shores and beaches.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.		
Sanderling (Calidris alba)	V	-	PMST-K	Often found in coastal areas on low beaches of firm sand, near reefs and inlets, along tidal mudflats and bare open coastal lagoons; individuals are rarely recorded in near-coastal wetlands.	Low. The Study Area does not contain suitable coastal habitat. Therefore, it is unlikely that this species would occur in the Study Area		
Red Knot (<i>Calidris canutus</i>)	E	E	РМST-К	As Above.	As above.		
Curlew Sandpiper (Calidris ferruginea)	E	CE	PMST-K	As Above.	As above.		
Pectoral Sandpiper (<i>Calidris melanotos</i>)	-	-	PMST-M	In New South Wales (NSW), the Pectoral Sandpiper is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.		

Double-banded Plover (Charadrius bicinctus)	-	-	PMST-K	The Double-banded Plover is found on littoral, estuarine and fresh or saline terrestrial wetlands and also saltmarsh, grasslands and pasture.	Low. The Study Area does not contain suitable wetland habitat. Therefore, it is unlikely that this species would occur in the Study Area.
Greater Sand Plover (Charadrius leschenaultia)	V	V	PMST-L	As Above.	As above.
Latham's Snipe (Gallinago hardwickii)	-	V, J, K	PMST-L	As Above.	As above.
Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit (<i>Limosa lapponica</i> <i>baueri</i>)	-	V	PMST-K	As Above.	As above.
Eastern Curlew (Numenius madagascariensis)	-	CE	PMST-L	As Above.	As above.
Common Greenshank (Tringa nebularia)	-	E, C,J,K	PMST-L	As Above.	As above.
Migratory Marine Mamm	nals				
Bryde's Whale (Balaenoptera edeni)	-	-	PMST-M	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Blue Whale (Balaenoptera musculus)	E	E	PMST-M	As Above.	As above.
Pygmy Right Whale (Caperea marginata)	-	-	PMST-M	Marine.	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Southern Right Whale	E	E	PMST-K	As Above.	As above.

(Eubalaena australis)							
Dusky Dolphin (Lagenorhynchus obscurus)	-	-	PMST-M	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.		
Humpback Whale (<i>Megaptera</i> novaeangliae)	-	-	PMST-K	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.		
Killer Whale, Orca (<i>Orcinus orca</i>)	-	-	PMST-L	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.		
Migratory marine reptiles	s						
Loggerhead Turtle (<i>Caretta caretta</i>)	E	E	PMST-L	As Above.	As above.		
Green Turtle (<i>Chelonia mydas</i>)	V	V	PMST-K	As Above.	As above.		
Leatherback Turtle (Dermochelys coriacea)	E	E	PMST-K	As Above.	As above.		
Hawksbill Turtle (Eretmochelys imbricata)	-	V	PMST-K	As Above.	As above.		
Flatback Turtle (Natator depressus)	-	V	PMST-K	As Above.	As above.		
Migratory sharks							
Oceanic Whitetip Shark (Carcharhinus Iongimanus)	-	-	PMST-M	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.		
White Shark, Great White Shark (Carcharodon carcharias)	V	V	PMST-K	As Above.	As above.		



Porbeagle, Mackerel Shark (<i>Lamna nasus</i>)	-	-	PMST-L	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Giant Manta Ray (Mobula birostris)	-	-	PMST-M	Marine	None. The Study Area does not contain any marine habitat. Therefore, this species would occur in the Study Area.
Whale Shark (Rhincodon typus)	-	V	PMST-M	As Above.	As above.