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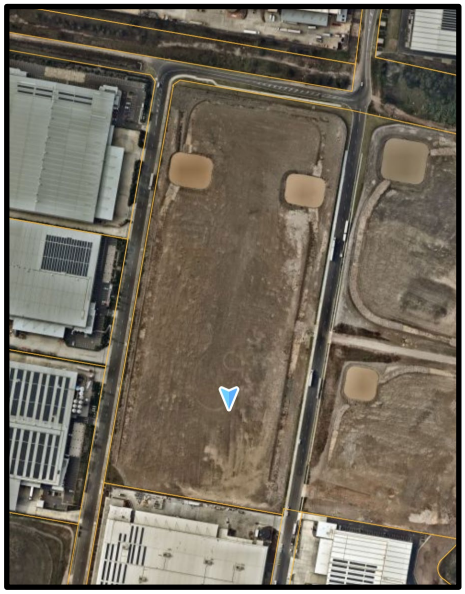
Biodiversity Development Assessment Report

(BDAR)

Waiver Request

3 Johnston Crescent, Horsley Park

(January 2025)



16th January 2025

EXECUTIVE SUMMARY

Fraser Ecological Consulting has been contracted to prepare a Biodiversity Development Assessment Report (BDAR) Waiver Request for the proposed development located at 3 Johnston Crescent, Horsley Park (legally described as Lot 301 in Deposited Plan 124459) located in the Fairfield City Council LGA.

The subject site is located within the former CSR Estate, which was previously used for brickmaking and quarrying. As the land was no longer being utilised for quarrying, CSR has proceeded to subdivide and stage out the future development of its land. Following the undertaking of remediation, fill and benching, various parcels have been sold to developers including ESR. The subject site is located to the north of the recently completed ESR Horsley Logistics Park Stage 1 development. ESR seeks to develop a high-quality warehouse and distribution facility that will complement the industrial operations of the broader Horsley Logistics Park.

The production this BDAR waiver includes a description of the proposed development in accordance with EIS prepared by Urbis dated October 2024.

As described below in Section 2, the project is in a highly modified, urban environment with very limited habitat and no remnant native vegetation within a former quarry site.

The project area is incorrectly mapped on the NSW Sensitive Biodiversity Values Maps (Figure 3).

As such, the applicant requests that the requirement for a Biodiversity Development Assessment Report (BDAR) be formally waived as per section 7.9(2) of the *Biodiversity Conservation Act 2016* (BC Act) on the basis that the project would:

- Not impact any native plant communities (refer to Figure 4 for the location of PCT 3320 to be retained and protected on-site)
- Not result in any threatened species impacts due to a lack of suitable habitat
- Avoid any material impact on microbats as the location(s) where they may occasionally rest would not be directly impacted and associated indirect impacts could be adequately managed
- Mainly impact an existing cleared area that holds no intrinsic ecological value.

The major conclusion arising from this assessment is that the proposed development is unlikely to result in a significant impact on any listed species or communities providing that the applicant actively implements the recommendations from this assessment. Therefore, in

accordance with the EPA Act (1979) and BC Act (2016), a Biodiversity Assessment Report is not required.

Licensing

When conducting flora and fauna surveys, consultants are required to possess licences to ensure that works are completed in an appropriate manner. Fraser Ecological Consulting is licensed under s.132c and s.91 of the NSW National Parks and Wildlife Act (1974) from the NSW NPWS. This allows Alex Fraser to undertake scientific investigations, collect specimens of protected flora and fauna across NSW in service and non-service areas and undertake bushland restoration works in EECs. This licence requires that all survey results are reported to the NSW NPWS for inclusion into the Atlas of NSW Wildlife).

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1. Introduction

Fraser Ecological Consulting has been contracted to prepare a BDAR waiver assessment of the proposed works on the terrestrial ecology located at 3 Johnston Crescent, Horsley Park in the Fairfield City Council LGA.

The project comprises the construction of two warehouse buildings with ancillary offices. The buildings occupy a continuous pad level, with a split hardstand.

The project is in a highly modified, urban environment with very limited habitat and no remnant native vegetation within a former quarry site.

In accordance with the EIS prepared by Urbis dated October 2024, the project comprises the construction of two warehouse buildings with ancillary offices. The two buildings occupy a single lot comprising of a continuous pad level, with hardstand areas. Both buildings will support warehouse and distribution use and have the same owner.

The proposed works are summarised in the following key components:

- Minor site grading works from the current pad levels (ranging from RL80 to RL83) to provide a singular pad level at RL78.9 and filling of the sediment basin.
- Total GFA of 55,900sqm, split across two buildings:

  – Warehouse A (two tenants): 20,250sqm

    - Warehouse A1 GFA: 10,825sqm
    - Office A1 GFA: 520sqm
    - Warehouse A2 GFA: 8,388sqm
    - Office A2 GFA: 517sqm

  – Warehouse B (single tenant): 35,650sqm

    - Warehouse GFA: 33,581sqm
    - Office GFA: 2,069sqm
    - An internal access road, with separate truck and car entry via Johnston Crescent along the eastern boundary.
    - 254 onsite car parking spaces, located on grade and under-croft area.
    - Landscape setbacks along all three street frontages.
    - Outdoor areas for staff.

The proposal will be undertaken in accordance with the Architectural Plans prepared by Nettletontribe at Appendix B of the EIS (provided on the following page).

The project area is incorrectly mapped on the NSW Sensitive Biodiversity Values Map.

As such, the applicant requests that the requirement for a Biodiversity Development Assessment Report (BDAR) be formally waived as per section 7.9(2) of the Biodiversity Conservation Act 2016 (BC Act) on the basis that the project would:

- Not impact any native plant communities (PCT 3320 to be retained and protected on-site)
- Not result in any threatened species impacts due to a lack of suitable habitat
- Avoid any material impact on microbats as the location(s) where they may occasionally rest would not be directly impacted and associated indirect impacts could be adequately managed
- Mainly impact an existing cleared area that holds no intrinsic ecological value.

DEVELOPMENT SUMMARY (GLA)

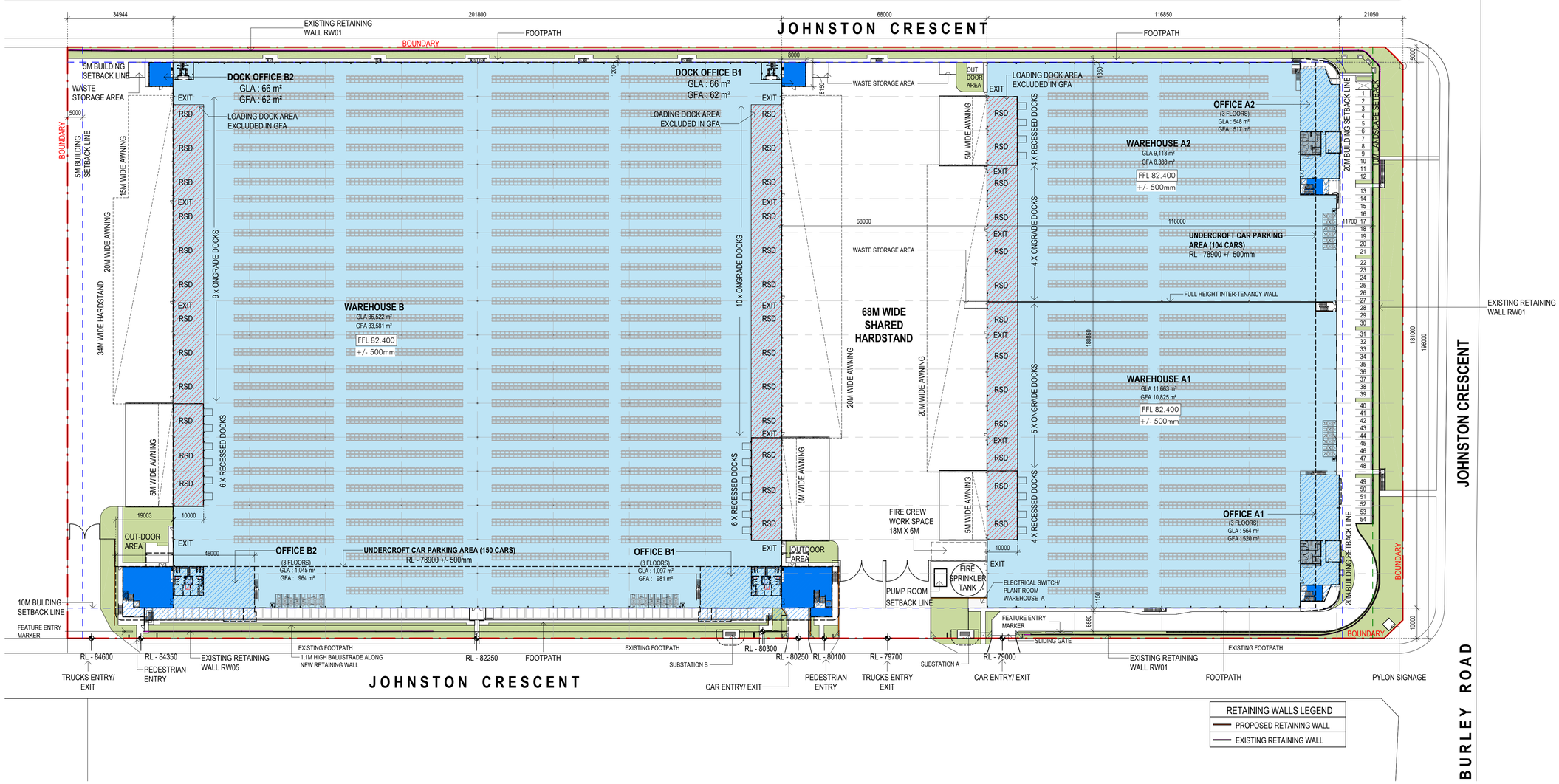
SITE AREA	86,721 m²
TOTAL BUILDING AREA (GLA)	**60,689** m²
SITE EFFICIENCY	70%
TOTAL WAREHOUSE AREA	57,303 m²
TOTAL OFFICES AREA	3,386 m²
BUILDING A	
WAREHOUSE A1	11,663 m²
OFFICE A1	564 m²
WAREHOUSE A2	9,118 m²
OFFICE A2	548 m²
TOTAL BUILDING AREA (GLA)	**21,893 m²**
BUILDING B	
WAREHOUSE B	36,522 m²
OFFICE B INCLUDING DOCK OFFICES INCLUDES AREAS OF BIKE STORAGE AND ELEC/ PLANT ROOMS	2,274 m²
TOTAL BUILDING AREA (GLA)	**38,796 m²**

DEVELOPMENT SUMMARY (GFA)

TOTAL BUILDING AREA (GFA)	**55,900** m²
FLOOR SPACE RATIO	0.64:1
TOTAL WAREHOUSE AREA EXCLUSING LOADING DOCK AREA	52,794 m²
TOTAL OFFICES AREA	3,106 m²
BUILDING A	
WAREHOUSE A1	10,825 m²
OFFICE A1	520 m²
WAREHOUSE A2	8,388 m²
OFFICE A2	517 m²
TOTAL BUILDING AREA (GFA)	**20,250 m²**
BUILDING B	
WAREHOUSE B	33,581 m²
OFFICE B INCLUDING DOCK OFFICES	2,069 m²
TOTAL BUILDING AREA (GFA)	**35,650 m²**

CAR PARKING PROVISIONS

TOTAL CAR PARKING REQUIRED WH 1/300 M² (GFA) OFFICE 1/40 M² (GFA)	254 CARS
TOTAL CAR PARKING PROVIDED	254 CARS



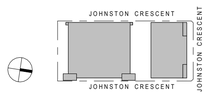
1 DA_SITE PLAN
1 : 750

Client: ESR

Issue	Description	Date
7	ISSUED FOR DA	27.08.2024
6	ISSUED FOR DA	12.07.2024
5	REVISED GLA's	10.07.2024
4	ISSUED FOR SSDA	05.07.2024
3	ISSUED FOR SSDA	03.07.2024
2	ISSUED FOR COORDINATION	14.06.2024
1	DRAFT ISSUE	05.06.2024

FOR SSDA

Key Plan



Project Name
HORSLEY LOGISTICS PARK STAGE 2

Project Address
3 JOHNSTON CRESCENT, HORSLEY PARK, NSW

Bar Scales
0 15000 37500

Drawing Title:
SITE PLAN

Author:	Checker:	Sheet Size:	Scale:
AB	MC	A1	1:750

Drawing Number: **14092_DA011**
Issue: **7**

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1. BDAR Waiver Request – Project Information

Table 1: BDAR Waiver Request – Project Information

Component	Requirement	Response
Administration	Proponent name and contact details. Project ID (information to identify which state significant development or state significant infrastructure project the request relates to and where the project is up to in the assessment process). Name and ecological qualifications of person completing Table 2.	The project is known as the Horsley Logistics Park Stage 2. ESR Australia is the proponent. The project does not have SSDA number. Prepared by Alex Fraser (Fraser Ecological) – CV and qualifications provided in Appendix B.
Site details	Street address, lot and DP, local government area. Description of existing development site – that is, the area of land that is subject to the proposed development application. If any part of the land is considered category 1 – exempt land, information must be provided to demonstrate how the land meets the criteria that apply to category 1 – exempt land. Location map showing the development site in the context of surrounding areas and landscape features. Satellite image of site in context of adjoining sites. Site map (to scale, ideally as a spatial shapefile).	3 Johnston Crescent, Horsley Park Lot 301 DP1244594 Fairfield City Council LGA The project comprises the construction of two warehouse buildings with ancillary offices. The buildings occupy a continuous pad level, with a split hardstand. The site is highly modified absent of vegetation (native and exotic). The site was previously a CSR quarry, which has been filled. Refer Figure 1-3 location maps

Component	Requirement	Response
Proposed development	Project description providing enough information to enable an understanding of the nature and scale of the proposed development and any associated activities, including construction. Proposed site plan.	In accordance with the EIS prepared by Urbis dated October 2024, the project comprises the construction of two warehouse buildings with ancillary offices. The two buildings occupy a single lot comprising of a continuous pad level, with hardstand areas. Both buildings will support warehouse and distribution use and have the same owner. The proposed works are summarised in the following key components: • Minor site grading works from the current pad levels (ranging from RL80 to RL83) to provide a singular pad level at RL78.9 and filling of the sediment basin. • Total GFA of 55,900sqm, split across two buildings: – Warehouse A (two tenants): 20,250sqm • Warehouse A1 GFA: 10,825sqm • Office A1 GFA: 520sqm • Warehouse A2 GFA: 8,388sqm • Office A2 GFA: 517sqm

Component	Requirement	Response
		– Warehouse B (single tenant): 35,650sqm Warehouse GFA: 33,581sqm Office GFA: 2,069sqm An internal access road, with separate truck and car entry via Johnston Crescent along the eastern boundary. 254 onsite car parking spaces, located on grade and under-croft area. Landscape setbacks along all three street frontages. Outdoor areas for staff. **The proposal will be undertaken in accordance with the Architectural Plans prepared by Nettletontribe at Appendix B provided within the EIS.**
Impacts on biodiversity values	Complete Table 2 below on biodiversity values. For each biodiversity value, the proponent must either: explain why the value is not relevant to the proposed development where a biodiversity value may be relevant, provide an explanation of how impacts have been avoided and identify the likelihood and	The site does not contain any vegetation. Reference to the Figures provided show that the site comprises of stockpiles of modified soil profiles subject to bulk earthworks and temporary sediment control basins. The site is not listed on the: • NSW Sensitive Biodiversity land Values map

Component	Requirement	Response
	extent of any remaining impacts of the proposed development, including impacts prescribed under clause 6.1 of the Biodiversity Conservation Regulation. A biodiversity value is not relevant to a proposed development if the value is not present on the development site and there is no potential for direct or indirect impacts on the biodiversity value if it occurs off-site. Where one or more biodiversity values may be relevant to the proposed development, Table 2 is to be completed by a suitably qualified person with tertiary qualifications in natural sciences, including subjects that relate to the observation and description of terrestrial biodiversity and landforms, and at least 3 years of work experience in environmental assessment, including field identification of plant and animal species and habitats. The person does not need to be an accredited person under the Biodiversity Conservation Act; however, relevant qualifications should be attached to the report. Attach additional information where biodiversity values are relevant to the site – for example, a vegetation map (indicating plant community types), ecology reports, water	• NSW Statewide Vegetation type Map (mapped PCTs) • BIONET database as having threatened species records • Outstanding Biodiversity Values list • Form part of a migratory bird flyway information • Contain built structures that could be inhabited by microbats **Refer to Table 2 below.**

Component	Requirement	Response
	quality data, BioNet Atlas, Directory of Important Wetlands, migratory bird flyway information or microbat surveys of built structures.	

2. Impacts of the proposed development on biodiversity values

Table 2 – Impacts of the proposed development on biodiversity values

Biodiversity value	Meaning	Explain and document potential impacts, including additional impacts prescribed under the Biodiversity Conservation Regulation	Response
Vegetation abundance – 1.4(b) BC Regulation	Occurrence and extent or coverage of vegetation at a particular site	Where vegetation is present on the development site, provide a map on digital aerial photography or the best available imagery of the development site showing: • native vegetation (including grasslands and other non-woody vegetation types) and nonnative vegetation • the area of land that is directly impacted by the proposed development, including related infrastructure such as roads, pipelines, access tracks, temporary material stockpiles, asset protection zones and powerlines, if applicable. Describe how the proposed development avoids impacts on native vegetation and identify the likelihood and extent of any remaining impacts including removal of isolated or cultivated native plants.	There is no native vegetation present on the former quarry site. This is evident from the aerial photography and NSW Statewide PCT mapping provided on the following pages. More specifically, no threatened flora or native plant community types (PCTs) exist because there is no natural or remnant native vegetation that would meet the definitions (e.g., it is not possible to assign the planted trees to a PCT, refer to the section below).
Vegetation integrity 1.5(2)(a) BC Act	Degree to which the habitat needs of	Describe how the proposed development avoids impacts on habitat suitability and	None of the vegetation identified is considered remnant or in its near-natural

Biodiversity value	Meaning	Explain and document potential impacts, including additional impacts prescribed under the Biodiversity Conservation Regulation	Response
	threatened species are present at a particular site Identify any threatened species or ecological communities or their habitat on the development site.	identify the likelihood and extent of any remaining impacts including the impacts of development on the following habitat of threatened species or ecological communities: 1. karst, caves, crevices, cliffs and other geological features of significance 2. rocks 3. human-made structures 4. non-native vegetation (prescribed under clause 6.1(1)(a) of the BC Regulation). Impacts may include the removal or modification (e.g. noise, light, etc.) of the habitat of threatened species or ecological communities. It is not possible to assess the vegetation integrity against a benchmark score by undertaking an assessment of the composition, structure, and function under the Biodiversity Assessment Method (BAM). Therefore, no native PCTs would be impacted by the project.	state (in composition, structure, and function) due to the highly modified nature of the site being a former quarry. Therefore, it is not possible to assess the vegetation integrity against a benchmark score by undertaking an assessment of the composition, structure, and function under the Biodiversity Assessment Method (BAM). Therefore, no native PCTs would be impacted by the project. None of the vegetation identified is considered remnant or in its near-natural state (in composition, structure, and function) due to the highly modified state of the site.
Habitat suitability 1.5(2)(b) BC Act	Degree to which the habitat needs of threatened species are present at a particular site	Identify any threatened species or ecological communities or their habitat on the development site. Describe how the proposed development avoids impacts on habitat suitability and identify the likelihood and extent of any	The proposed development does not contain any of the following potential habitat features for threatened species or ecological communities: 1. karst, caves, crevices, cliffs and other geological features of significance 2. rocks

Biodiversity value	Meaning	Explain and document potential impacts, including additional impacts prescribed under the Biodiversity Conservation Regulation	Response
		remaining impacts including the impacts of development on the following habitat of threatened species or ecological communities: 1. karst, caves, crevices, cliffs and other geological features of significance 2. rocks 3. human-made structures 4. non-native vegetation (prescribed under clause 6.1(1)(a) of the BC Regulation). Impacts may include the removal or modification (e.g. noise, light, etc.) of the habitat of threatened species or ecological communities.	3. human-made structures It is an existing cleared area. It is highly degraded and provides no habitat features. The only threatened species known to occur in the locality that may use the habitat features mentioned above are microchiropteran bats. However, due to the lack of habitat and any foraging resources these species would not use the site even as marginal foraging habitat let alone use the site as an important breeding habitat site. Regarding impacts to non-native vegetation: Whilst some small areas of introduced vegetation may have colonised the soil surface following previous disturbance (or whilst development approval is being sought) it is considered that non-native vegetation as prescribed under clause 6.1(1)(a) of the BC Regulation) does not provide any habitat suitability for threatened species or communities on the subject site.

Biodiversity value	Meaning	Explain and document potential impacts, including additional impacts prescribed under the Biodiversity Conservation Regulation	Response
			The proposed development will include provide landscaping that will attract insects and insectivores (insect eating species). The proposal will also include lighting. Both these attributes may provide marginal and potential foraging habitat for microchiropteran bats post development. There are no known local populations of threatened species or communities that would rely upon the modification of a highly degraded soil surface area for their survival in the locality.
Threatened species abundance 1.4(a) BC Regulation	Occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site	Describe how the proposed development avoids impacts on threatened species abundance and identify the likelihood and extent of any remaining impacts including; • Impacts of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community (prescribed under clause 6.1(1)(f) of the Regulation). • Impacts on threatened species, for example, microbats, associated with	No threatened flora was recorded onsite or are considered likely to occur due to the absence of natural or remnant native vegetation. There are no habitat features suitable for fauna. There are no threatened ecological communities (TEC) in the area and no urban exotic/planted trees provide limited habitat for urban adapted native an exotic fauna.

Biodiversity value	Meaning	Explain and document potential impacts, including additional impacts prescribed under the Biodiversity Conservation Regulation	Response
		the demolition of human-made structures (prescribed by 6.1 (1) a (iii) of the Regulation). • Impacts on threatened species habitat associated with non-natural water bodies (prescribed by 6.1 (1) a (iii) of the Regulation). For example, threatened frogs such as the green and golden bell frog in landfill areas, drains and brick pits • impacts on threatened species habitat associated with non-native vegetation (prescribed by 6.1 (1) a (iv) of the Regulation).	A Likelihood of Occurrence (LoS) table has been prepared (refer to Appendix A) from background searches of the BioNet and Protected Matters Search Tool (PMST) databases. This lists the species protected under the BC Act and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) that have been recorded within 10 kilometres of the site. Within this area there are records of: • 66 threatened species and 37 TECs protected under State legislation as identified from the BioNet search • 105 threatened species and 12 TECs protected under Commonwealth legislation as identified from the PMST search. No threatened flora was recorded onsite or are considered likely to occur due to the absence of natural or remnant native vegetation. Fauna and associated habitat.

Biodiversity value	Meaning	Explain and document potential impacts, including additional impacts prescribed under the Biodiversity Conservation Regulation	Response
			In summary, the subject site does not contain any potential habitat for threatened flora and fauna. Regarding impacts to non-native vegetation: Whilst some small areas of introduced vegetation may have colonised the soil surface following previous disturbance (or whilst development approval is being sought) it is considered that non-native vegetation as prescribed under clause 6.1(1)(a) of the BC Regulation) does not provide any habitat suitability for threatened species or communities on the subject site. The proposed development will include provide landscaping that will attract insects and insectivores (insect eating species). The proposal will also include lighting. Both these attributes may provide marginal and potential foraging habitat for microchiropteran bats post development. There are no known local populations of threatened species or communities that would rely upon the modification of a highly

Biodiversity value	Meaning	Explain and document potential impacts, including additional impacts prescribed under the Biodiversity Conservation Regulation	Response
			degraded soil surface area for their survival in the locality.
Habitat connectivity 1.4(c) BC Regulation	Degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range	Identify whether the development site contributes to habitat connectivity. Describe how the proposed development avoids impacts on habitat connectivity and identify the likelihood and extent of any remaining impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range (prescribed under clause 6.1(1)(b) of the BC Regulation).	The modified soil profile is absent of vegetation, therefore, the project area does not contribute to connectivity with other habitats as it exists within the highly urbanised and fragmented landscape.
Threatened species movement 1.4(d) BC Regulation	Degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle Describe how the proposed development avoids impacts on threatened species movement and	Identify the likelihood and extent of any remaining impacts of development on movement of threatened species that maintains their lifecycle (prescribed under clause 6.1(1)(c) BC Regulation).	As determined in Appendix A, the vegetation onsite is not suitable as breeding or roosting habitat for any threatened species. It is therefore highly unlikely the project would impact species to inhibit movement between breeding areas that could prevent their lifecycle maintenance.

Biodiversity value	Meaning	Explain and document potential impacts, including additional impacts prescribed under the Biodiversity Conservation Regulation	Response
Flight path integrity	1.4(e) Biodiversity Conservation Regulation Degree to which the flight paths of protected animals over a particular site are free from interference.	Identify whether flight paths of protected animals occur over the development site. Protected animals are animals of a species listed or referred to in Schedule 5 of the Biodiversity Conservation Act. They include any species of birds, mammals, amphibians or reptiles that are native to Australia or that periodically or occasionally migrate to Australia. Describe how the proposed development avoids impacts on flight path integrity and identify the likelihood and extent of any remaining impacts. Note: The impacts of wind turbine strikes on protected animals are prescribed under clause 6.1(1)(e) of the Biodiversity Conservation Regulation. It is, therefore, unlikely that a Biodiversity Development Assessment Report waiver would be issued for a proposed wind farm.	The project would not significantly increase the height of buildings compared to adjacent structures, and therefore, would not cause any additional disturbance to flight path integrity.

Biodiversity value	Meaning	Explain and document potential impacts, including additional impacts prescribed under the Biodiversity Conservation Regulation	Response
Water sustainability	1.4(f) Biodiversity Conservation Regulation Degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site	Describe how the proposed development avoids impacts on water sustainability and identify the likelihood and extent of any remaining impacts of development on water quality, water bodies (natural or derived) and hydrological processes that sustain threatened species and threatened ecological communities (including from subsidence or upsidence resulting from underground mining or other development) (prescribed under clause 6.1(1)(d) of the Biodiversity Conservation Regulation).	The project area does not contain any groundwater dependant ecosystems or waterbodies. Furthermore, there is no water quality, water bodies or hydrological processes that could sustain threatened species and threatened ecological communities at the site.

3. Conclusion

Overall, there is no indication that the project would have any material or significant biodiversity impact, which is the purpose of progressing with a BDAR waiver.

Accordingly, in accordance with Section 7.9 of the BC Act, it is reasonable that the impacts could be assessed within the wider EIS/ SOE.

Therefore, it is reasonable to request a waiver for the BDAR requirements, as the project is consistent with the provisions of Section 7.9(2) of the BC Act.

Appendix A - Likelihood of Occurrence Table

Appendix A - Likelihood of Occurrence Table

Table A1 – Likelihood of Occurrence Table

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Anseranas semipalmata	Magpie Goose	V,P	-	The Magpie Goose is still relatively common in the Australian northern tropics but had disappeared from south-east Australia by 1920 due to drainage and overgrazing of reed swamps used for breeding. Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges	Negligible	Bionet The project area lacks appropriate habitat
Anthochaera phrygia	Regent Honeyeater	E4A,P	CE	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. 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	Bionet & PMST Highly unlikely the species would forage in the project area
Arctocephalus forsteri	New Zealand Fur-seal	V,P	-	Occurs in Australia and New Zealand. Reports of non-breeding animals along southern NSW coast particularly on Montague Island, but also at other isolated locations to north of Sydney. Prefers rocky parts of islands with jumbled terrain and boulders	Negligible	PMST The project area lacks appropriate habitat
Arctocephalus pusillus doriferus	Australian Fur-seal	V,P	-	Reported to have bred at Seal Rocks, near Port Stephens and Montague Island in southern NSW. Haul outs are observed at isolated places along the NSW coast. Prefers rocky parts of islands with flat, open terrain. They occupy flatter areas than do New Zealand Fur-seals where they occur together	Negligible	Bionet The project area lacks appropriate habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Artamus cyanopterus	Dusky Woodswallow	V,P	-	Dusky wood swallows are widespread in eastern, southern and southwestern Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris.	Low	Bionet The species may rarely forage within the project area
Balaenoptera borealis	Sei Whale	-	V, M	Prefers deep offshore water, avoiding polar and tropical waters and semi enclosed waterbodies.	Negligible	PMST The project area lacks appropriate habitat
Balaenoptera musculus	Blue Whale	-	E, M	Oceanic within Southern Hemisphere between 20 degrees to 70 degrees South including NSW waters. Breeds in warm water at low latitudes, preferring open seas rather than coastal waters. Often feeds during spring and summer on krill close to the ice edge.	Negligible	PMST The project area lacks appropriate habitat
Balaenoptera physalus	Fin Whale	-	V, M	The Fin whale is found in all major oceans from polar waters to the tropics. It is however absent from water close to the ice pack (North and South poles). Most dense areas include waters surrounding equatorial regions.	Negligible	PMST The project area lacks appropriate habitat
Botaurus poiciloptilus	Australasian Bittern	E1,P	E	Australasian Bitterns are widespread but uncommon over south-eastern Australia. 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.	Negligible	Bionet and PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Burhinus grallarius	Bush Stone-curlew	E1,P	-	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber.	Negligible	Bionet The project area lacks appropriate habitat
Calidris canutus	Red Knot, Knot	-	E, M	The Red Knot is a non-breeding migratory visitor from Arctic regions of Siberia. It can fly non-stop between north-eastern China and northern Australia. In NSW it is recorded in small numbers along some of the major river estuaries and sheltered embayment of the coastline, in particular the Hunter River estuary. In NSW the Red Knot mainly occurs in small numbers on intertidal mudflats, estuaries, bays, inlets, lagoons, harbours and sandflats and sandy beaches of sheltered coasts. It is occasionally found on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms and is a rare visitor to terrestrial saline wetlands and freshwater swamps.	Negligible	PMST The project area lacks suitable habitat
Calidris ferruginea	Curlew Sandpiper	E1,P	CE,C, J,K	The Curlew Sandpiper is distributed around most of the Australian coastline (including Tasmania). It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration. The Curlew Sandpiper breeds in Siberia and migrates to Australia (as well as Africa and Asia) for the non-breeding period, arriving in Australia between August and November, and departing between March and mid-April. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts.	Negligible	Bionet and PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Calidris tenuirostris	Great Knot	V	CE, M	In NSW, the species has been recorded at scattered sites along the coast down to about Narooma. Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons.	Negligible	PMST The project area lacks suitable habitat
Callocephalon fimbriatum	Gang-gang Cockatoo	-	E	The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. 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. May also occur in sub-alpine Snow Gum (*Eucalyptus pauciflora*) woodland and occasionally in temperate rainforests. Favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 10 cm in diameter or larger in eucalypts.	Negligible	PMST The project area lacks suitable habitat
Calyptorhynchus lathami	Glossy Black-Cockatoo	V,P,2	-	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. An isolated population exists on Kangaroo Island, South Australia. Inhabits	Negligible	PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				open forest and woodlands of the coast and the Great Dividing Range where stands of she oak occur.		
Carcharias taurus (east coast population)	Grey Nurse Shark (east coast population)	-	CE	Grey Nurse Sharks inhabits subtropical and temperate waters worldwide. Its range includes the continental shelf, from the shorelines to submerged reefs (including depths up to 191m). Japan, Australia and South African waters are prevalent (Atlantic, Pacific and Indian Ocean). Breeding occurs in the Northern Hemisphere (August to December) and Southern Hemisphere (August to October).	Negligible	PMST The project area lacks appropriate habitat
Carcharodon carcharias	White Shark, Great White Shark	-	V, M	The Great White Shark occupies the coastal surface waters of all major oceans. Greater concentrations occur in United States (Northeast and California), South Africa, Japan, Oceania, Chile.	Negligible	PMST The project area lacks appropriate habitat
Caretta	Loggerhead Turtle	E1,P	E, M	Loggerhead Turtles are found in tropical and temperate waters off the Australian coast. In NSW they are seen as far south as Jervis Bay and have been recorded nesting on the NSW north coast and feeding around Sydney. Loggerhead Turtles are ocean-dwellers, foraging in deeper water for fish, jellyfish and bottom-dwelling animals.	Negligible	Bionet and PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Chalinolobus dwyeri	Large-eared Pied Bat	V,P	V	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. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin *Petrochelidon ariel*, frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20 - 40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. The relatively short, broad wing combined with the low weight per unit area of wing indicates manoeuvrable flight. This species probably forages for small, flying insects below the forest canopy. Likely to hibernate through the coolest months. It is uncertain whether mating occurs early in winter or in spring.	Moderate	Bionet and PMST Numerous records were found within the locality. Given the context, structure, and location, it is unlikely the habitat is utilised as key breeding or roosting habitat however precautionarily it may be utilised on occasion for roosting. They are unlikely to utilise the structures within the project for breeding.
Charadrius leschenaultii	Greater Sand Plover, Large Sand Plover	-	V, M	The Greater Sand-plover breeds in central Asia from Armenia to Mongolia, moving further south for winter. 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. Almost entirely restricted to coastal areas in NSW, occurring mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks.	Negligible	PMST The project area lacks appropriate habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Charadrius mongolus	Lesser Sand Plover, Mongolian Plover	-	E, M	The Lesser Sand-plover breeds in central and north eastern Asia, migrating further south for winter. In Australia the species is found around the entire coast but is most common in the Gulf of Carpentaria, and along the east coast of Queensland and northern NSW. Individuals are rarely recorded south of the Shoalhaven estuary, and there are few inland records. Almost entirely coastal in NSW, favouring the beaches of sheltered bays, harbours and estuaries with large intertidal sandflats or mudflats; occasionally occurs on sandy beaches, coral reefs and rock platforms	Negligible	PMST The project area lacks appropriate habitat
Chelonia mydas	Green Turtle	-	V, M	Widely distributed in tropical and sub-tropical seas. Usually found in tropical waters around Australia but also occurs in coastal waters of NSW, where it is generally seen on the north or central coast, with occasional records from the south coast.	Negligible	PMST The project area lacks appropriate habitat
Dasyornis brachypterus	Eastern Bristlebird	-	E	The distribution of the Eastern Bristlebird has contracted to three disjunct areas of south-eastern Australia. There are three main populations: Northern - southern Queensland/northern NSW, Central - Barren Ground NR, Budderoo NR, Woronora Plateau, Jervis Bay NP, Booderee NP and Beecroft Peninsula and Southern - Nadgee NR and Croajingalong NP in the vicinity of the NSW/Victorian border. 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.	Negligible	PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Dasyurus maculatus (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)	-	E	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites. Mostly nocturnal, although will hunt during the day; spend most of the time on the ground, although also an excellent climber and will hunt possums and gliders in tree hollows and prey on roosting birds.	Negligible	PMST The project area lacks appropriate habitat
Dendronephthya australis	Cauliflower Soft Coral	-	E	A soft temperate coral endemic to Eastern Australia. It is only known to occur in abundance in Port Stephens and the Brisbane Water area of the Hawkesbury River, NSW.	Negligible	PMST The project area lacks appropriate habitat
Dermochelys coriacea	Leatherback Turtle	E1,P	E, M	Throughout the world's tropical and temperate seas and in all coastal waters of Australia. Occurs in inshore and offshore marine waters.	Negligible	Bionet and PMST The project area lacks suitable habitat
Diomedea antipodensis	Antipodean Albatross	-	V, M	The species ranges across the southern Pacific Ocean, east to the coast of Chile and west to eastern Australia.	Negligible	PMST The project area lacks appropriate habitat
Diomedea antipodensis gibsoni	Gibson's Albatross	-	V	Essentially endemic to the Auckland Islands of New Zealand.	Negligible	PMST The project area lacks appropriate habitat
Diomedea epomophora	Southern Royal Albatross	-	V, M	Inhabits terrestrial and marine environments - grasslands and marine neritic and marine oceanic. Nests on tussock grassland slopes, ridges, and	Negligible	PMST The project area lacks appropriate habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				plateaus. Feeds primarily on squid and fish, supplemented by scallops, crustacea and carrion.		
Diomedea exulans	Wandering Albatross	E1,P	E	The Wandering Albatross visits Australian waters extending from Fremantle, Western Australia, across the southern water to the Whitsunday Islands in Queensland between June and September. It has been recorded along the length of the NSW coast. At other times birds roam the southern oceans and commonly follow fishing vessels for several days. Wandering albatross spend the majority of their time in flight, soaring over the southern oceans.	Negligible	Bionet and PMST The project area lacks appropriate habitat
Diomedea sanfordi	Northern Royal Albatross	-	E, M	The Northern Royal Albatross primarily forages in inshore and offshore waters over the continental shelf to the shelf edge.	Negligible	PMST The project area lacks appropriate habitat
Epinephelus daemelii	Black Rockcod, Black Cod, Saddled Rockcod	-	V	The species is particularly found in warm temperate water and the subtropical parts of the south-western pacific. In NSW, it occurs primarily along the coast including Lorde Howe Island.	Negligible	PMST The project area lacks appropriate habitat
Epthianura albifrons	White-fronted Chat	V,P	-	The White-fronted Chat is found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas. Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	Negligible	Bionet The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Epthianura albifrons	White-fronted Chat population in the Sydney Metropolitan Catchment Management Area	E2,V, P	-	The White-fronted Chat is found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas. Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	Low	Bionet The project area lacks suitable habitat
Eretmochelys imbricata	Hawksbill Turtle	-	V, M	Major nesting of Hawksbill Turtles in Australia occurs at Varanus Island and Rosemary Island in Western Australia (Pendoley 2005), and in the northern Great Barrier Reef and Torres Strait (Dobbs et al. 1999; Limpus et al. 1989), Queensland.	Negligible	PMST The project area lacks appropriate habitat
Erythrotriorchis radiatus	Red Goshawk	CE	V	This unique Australian endemic raptor is distributed sparsely through northern and eastern Australia, from the western Kimberley Division of northern Western Australia to north-eastern Queensland and south to far north-eastern NSW, and with scattered records in central Australia. The species is very rare in NSW. Red Goshawks inhabit open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands.	Low	PMST and Bionet The project area lacks appropriate habitat
Eubalaena australis	Southern Right Whale	E1,P	E, M	Temperate and subpolar waters of the Southern Hemisphere, with a circumpolar distribution between about 20°S and 55°S with some records further south to 63°S.	Negligible	Bionet and PMST The project area lacks suitable habitat
Fregetta grallaria	White-bellied Storm-Petrel (Tasman Sea), White-bellied	-	V	A wide oceanic distribution in the south Pacific and Atlantic Oceans, ranging into tropical waters from various breeding grounds. Known to breed at various island groups including Lord Howe Island. In	Negligible	PMST The project area lacks appropriate habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
	Storm-Petrel (Australasian)			Australia breeds only on offshore islands in the Lord Howe Island group.		
Glossopsitta pusilla	Little Lorikeet	V,P	-	The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. 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.	Low	Bionet The species may rarely forage within the project area
Grantiella picta	Painted Honeyeater	V,P	-	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland.	Negligible	Bionet The project area lacks suitable habitat
Haematopus longirostris	Pied Oystercatcher	E1,P	-	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. 'Pied' Oystercatchers are occasionally recorded on Lord Howe Island but it is uncertain which species is involved. Favours intertidal flats of inlets and bays, open beaches and sandbanks. Forages on exposed sand, mud and rock at low tide, for molluscs, worms, crabs and small fish. The chisel-like bill is used to pry open or break into shells of oysters and other shellfish. Nests mostly on coastal or estuarine beaches although occasionally they use saltmarsh or grassy areas. Nests are shallow scrapes in sand above the high tide mark,	Negligible	Bionet The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				often amongst seaweed, shells and small stones. Two to three eggs are laid between August and January. The female is the primary incubator, and the young leave the nest within several days.		
Haliaeetus leucogaster	White-bellied Sea-Eagle	V,P	-	The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. 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. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'.	Negligible	Bionet The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Heleioporus australiacus	Giant Burrowing Frog	-	V	The Giant Burrowing Frog is distributed in south eastern NSW and Victoria, and appears to exist as two distinct populations: a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria. Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Spends more than 95% of its time in non-breeding habitat in areas up to 300 m from breeding sites. Whilst in non-breeding habitat it burrows below the soil surface or in the leaf litter.	Negligible	PMST The project area lacks appropriate habitat
Hieraaetus morphnoides	Little Eagle	V,P	-	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.	Low	Bionet The species may rarely forage within the project area
Hippocampus whitei	White's Seahorse, Crowned Seahorse, Sydney Seahorse	-	E	The White's Seahorse is endemic to the East Coast of Australia. It favours the shallow water estuarine habitats, occurring in eight (8) estuaries on the NSW coat. It is found in abundance in Port Stephens, Sydney Harbour and Port Hacking. Northern limit is Hervey Bay in Qld with the Southern known limit being St Georges Basin, NSW.	Negligible	PMST The project area lacks appropriate habitat
Hirundapus caudacutus	White-throated Needletail	P	V,C,J, K	Migratory and usually seen in eastern Australia from October to April. Breeds in forests in south-eastern Siberia, Mongolia, the Korean Penninsula and northern Japan June-August. Most often seen in eastern Australia before storms, low pressure troughs and approaching cold fronts and occasionally bushfire. These conditions are often used by insects to swarm (eg termites and ants) or tend to lift insects away from the surface which favours sighting of	Negligible	Bionet and PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				White-throated Needletails as they feed. More common in coastal areas, less so inland.		
Hoplocephalus bungaroides	Broad-headed Snake	-	V	The Broad-headed Snake is largely confined to Triassic and Permian sandstones, including the Hawkesbury, Narrabeen and Shoalhaven groups, within the coast and ranges in an area within approximately 250 km of Sydney. Nocturnal. Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. Moves from the sandstone rocks to shelters in cervices or hollows in large trees within 500m of escarpments in summer.	Negligible	PMST The project area lacks appropriate habitat
Isoodon obesulus	Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern)	-	E	The Southern Brown Bandicoot has a patchy distribution. It is found in south-eastern NSW, east of the Great Dividing Range south from the Hawkesbury River, southern coastal Victoria and the Grampian Ranges, south-eastern South Australia, south-west Western Australia and the northern tip of Queensland. Southern Brown Bandicoots are largely crepuscular (active mainly after dusk and/or before dawn). They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils.	Negligible	PMST The project area lacks suitable habitat
Ixobrychus flavicollis	Black Bittern	V,P	-	The Black Bittern has a wide distribution, from southern NSW north to Cape York and along the north coast to the Kimberley region. The species also occurs in the south-west of Western Australia. In NSW, records of the species are scattered along the east coast, with individuals rarely being recorded south of Sydney or inland. Inhabits both terrestrial and	Negligible	Bionet The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				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		
Lathamus discolor	Swift Parrot	E1,P,3	CE	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. Migrates to the Australian south-east mainland between February 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 robusta,* Spotted Gum *Corymbia maculata,* Red Bloodwood *C. gummifera,* Forest Red Gum *E. tereticornis,* Mugga Ironbark *E. sideroxylon,* and White Box *E. albens*.	Negligible	Bionet and PMST The project area lacks appropriate habitat
Limosa lapponica baueri	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit	-	V	The Bar-tailed Godwit is a migratory wader which undertakes the largest non-stop flight of any bird. 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.	Negligible	PMST The project area lacks appropriate habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Litoria aurea	Green and Golden Bell Frog	E1,P	V	Formerly distributed from the NSW north coast near Brunswick Heads, southwards along the NSW coast to Victoria where it extends into east Gippsland. Records from west to Bathurst, Tumut and the ACT region. Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations. These locations occur over the species' former range, however they are widely separated and isolated. Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast (one an island population). There is only one known population on the NSW Southern Tablelands. Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spike rushes (*Eleocharis* spp.). Optimum habitat includes waterbodies that are unshaded, free of predatory fish such as Plague Minnow *Gambusia holbrooki*, have a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region occur in highly disturbed areas.	Negligible	Bionet and PMST The project area lacks suitable habitat
Lophoictinia isura	Square-tailed Kite	V,P,3	-	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	Low	Bionet Highly unlikely the species would forage in the project area
Macquaria australasica	Macquarie Perch	-	E	The Murray Perch are found exclusively in the Murray-Darling Basin. (particularly in upstream reaches). Known locations include Lachlan, Murrumbidgee and Murray Rivers, and in parts of the	Negligible	PMST The project area lacks appropriate habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				South-Eastern Coastal area of NSW (Hawksbury/Nepean and Shoalhaven Catchments.		
Macronectes giganteus	Southern Giant-Petrel, Southern Giant Petrel	-	E, M	The Southern Giant Petrel has a circumpolar pelagic range from Antarctica to approximately 20° S and is a common visitor off the coast of NSW.	Negligible	PMST The project area lacks appropriate habitat
Macronectes halli	Northern Giant Petrel	-	V, M	The Northern Giant-Petrel has a circumpolar pelagic distribution, usually between 40-64ºS in open oceans. Their range extends into subtropical waters (to 28ºS) in winter and early spring, and they are a common visitor in NSW waters, predominantly along the south-east coast during winter and autumn. Breeding in Australian territory is limited to Macquarie Island and occurs during spring and summer.	Negligible	PMST The project area lacks appropriate habitat
Megaptera novaeangliae	Humpback Whale	V,P	V	Oceanic and coastal waters worldwide.	Negligible	Bionet and PMST The project area lacks suitable habitat
Meridolum maryae	Maroubra Woodland Snail, Maroubra Land Snail	-	E	This species is confined to a narrow band of habitat along the coast from the north-eastern corner of the Royal National Park to Palm Beach in Sydney. Records of the species are generally within 1 km of the ocean but occur up to 5 km inland. The species is found in the leaf litter of coastal vegetation communities, most commonly in heathland on foredunes also from areas of podsolised dunes/sand plains that support taller heath communities including Eastern Suburbs Banksia Scrub. Can dig several centimetres into soil during dry conditions. The species is typically active at night but can also move about on overcast or rainy days. The ability for individuals to disperse is expected to be similar to closely related.	Negligible	PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V,P	-	The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also occasionally roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous.	Moderate	Bionet Numerous records were found within the locality, however, are concentrated on Cockatoo Island. The project may provide some suitable habitat in the form of man-made structures however they prefer hollows. They are unlikely to utilise the structures within the project for breeding.
Miniopterus australis	Little Bent-winged Bat	V,P	-	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. They often share roosting sites with the Common Bent-wing bat and, in winter, the two species may form mixed clusters. In NSW the largest maternity colony is in close association with a large maternity colony of Eastern Bent-wing bats *Miniopterus schreibersii* and appears to depend on the large colony to provide the high temperatures needed to rear its young. Maternity colonies form in spring and birthing occurs in early summer. Males and juveniles disperse in summer. Only five nursery sites /maternity colonies are known in Australia.	Moderate	Bionet Numerous records were found within the locality. Given the context, structure, and location, it is unlikely the habitat is utilised as key breeding or roosting habitat however precautionarily it may be utilised on occasion for roosting. They are unlikely to utilise the structures within the project for breeding.

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Miniopterus orianae oceanensis	Large Bent-winged Bat	V,P	-	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. They form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes. At other times of the year, populations disperse within about 300 km range of maternity caves. Cold caves are used for hibernation in southern Australia. Breeding or roosting colonies can number from 100 to 150,000 individuals. They hunt in forested areas, catching moths and other flying insects above the tree tops.	Moderate	Bionet Numerous records were found within the locality. Given the context, structure, and location, it is unlikely the habitat is utilised as key breeding or roosting habitat however precautionarily it may be utilised on occasion for roosting. They are unlikely to utilise the structures within the project for breeding.
Mixophyes balbus	Stuttering Frog, Southern Barred Frog (in Victoria)	-	V	Stuttering Frogs occur along the east coast of Australia from southern Queensland to north-eastern Victoria. They have undergone considerable range contraction in NSW, particularly in south-east NSW. It is the only *Mixophyes* species that occurs in south-east NSW and in recent surveys it has only been recorded at three locations south of Sydney. The Dorrigo region, in north-east NSW, appears to be a stronghold for this species. 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. Feed on insects and smaller frogs. Breed in streams during summer after heavy rain.	Negligible	PMST The project area lacks suitable habitat
Myotis macropus	Southern Myotis	V,P	-	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. Generally roost in groups of 10 - 15 close to water in caves, mine shafts,	Moderate	Bionet Numerous records were found within the locality. Given the context,

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.		structure, and location, it is unlikely the habitat is utilised as key breeding or roosting habitat however precautionarily it may be utilised on occasion for roosting. They are unlikely to utilise the structures within the project for breeding.
Natator depressus	Flatback Turtle	-	V, M	The Flatback Turtle is endemic to Australia. All known breeding sites are in Australia. Feeds primarily in the northern coastal regions of Australia, which also extends further north to Indonesia archipelago and Papua New Guinea coast. Prefer shallow, soft bottomed sea bed habitats away from reefs.	Negligible	PMST The project area lacks appropriate habitat
Neophema chrysogaster	Orange-bellied Parrot	-	CE	The Orange-bellied Parrot breeds in the south-west of Tasmania and migrates in autumn to spend the winter on the mainland coast of south-eastern South Australia and southern Victoria. There are occasional reports from NSW, with the most recent records from Shellharbour and Maroubra in May 2003. 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.	Low	PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Ninox connivens	Barking Owl	V,P,3	-	The Barking Owl is found throughout continental Australia except for the central arid regions. Although still common in parts of northern Australia, the species has declined greatly in southern Australia and now occurs in a wide but sparse distribution in NSW. Core populations exist on the western slopes and plains and in some northeast coastal and escarpment forests. 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.	Negligible	Bionet The project area lacks suitable habitat
Ninox strenua	Powerful Owl	V,P,3	-	The Powerful Owl is endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. Now at low densities throughout most of its eastern range, rare along the Murray River and former inland populations may never recover. Recent increases in population density across Sydney and some other semi-urban areas do not seem to be solely due to increased awareness of this flagship species. The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. 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	Negligible	Bionet The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	-	CE, M	The Eastern Curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. Eastern Curlews are rarely recorded inland. In NSW the species occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River, and ICOLLs of the south coast. It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts.	Negligible	PMST The project area lacks suitable habitat
Numenius madagascariensis	Eastern Curlew	P	CE,C, J,K	Within Australia, the Eastern Curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. Eastern Curlews are rarely recorded inland. In NSW the species occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast. It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed. It roosts on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves.	Negligible	PMST and Bionet The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Onychoprion fuscata	Sooty Tern	V,P	-	The Sooty Tern is found over tropical and sub-tropical seas and on associated islands and cays around Northern Australia. In NSW only known to breed at Lord Howe Island. Occasionally seen along coastal NSW, especially after cyclones. Large flocks can be seen soaring, skimming and dipping but seldom plunging in off shore waters. Breeds in large colonies in sand or coral scrapes on offshore islands and cays including Lord Howe and Norfolk Islands.	Negligible	Bionet The project area lacks suitable habitat
Pachyptila turtur subantarctica	Fairy Prion (southern)	-	V	Breeds on Macquarie Island and a number of other subantarctic islands outside of Australia. In Australia, breeding is recorded on two rock stacks off Macquarie Island and on the nearby Bishop and Clerk Island.	Negligible	PMST The project area lacks appropriate habitat
Perameles nasuta	Long-nosed Bandicoot population in inner western Sydney	E2,P	-	The exact area occupied by the population is not clearly defined, and includes the LGAs of Marrickville and Canada Bay, with the likelihood that it also includes Canterbury, Ashfield and Leichhardt LGAs. Future research may better define the population and possibly indicate a wider distribution. This population is disjunct from the nearest records of the Long-nosed Bandicoot, which occur north of the Parramatta River or much further south at Holsworthy Military Reserve.	Negligible	Bionet The project area lacks suitable habitat and is outside the natural distribution of this population.
Petalura gigantea	Giant Dragonfly	E1	-	The Giant Dragonfly is found along the east coast of NSW from the Victorian border to northern NSW. It is not found west of the Great Dividing Range. There are known occurrences in the Blue Mountains and Southern Highlands, in the Clarence River catchment, and on a few coastal swamps from north of Coffs Harbour to Nadgee in the south. Live in permanent swamps and bogs with some free water and open vegetation.	Negligible	Bionet The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Petauroides volans	Greater Glider	-	V	Arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. 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. Typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. Favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species. Home range is < 5 ha and typically 1 to 3 ha.	Negligible	PMST The project area lacks suitable habitat
Petaurus norfolcensis	Squirrel Glider	V,P	-	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. 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. Prefers mixed species stands with a shrub or Acacia midstory. Live in family groups of a single adult male one or more adult females and offspring. Require abundant tree hollows for refuge and nest sites	Negligible	Bionet The project area lacks suitable habitat
Petrogale penicillata	Brush-tailed Rock-wallaby	-	V	The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. However the distribution of the species across its original range has declined significantly in the west and south and has become more fragmented. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night when foraging. Browse on vegetation	Negligible	PMST The project area lacks appropriate habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees.		
Petroica boodang	Scarlet Robin	V,P	-	The Scarlet Robin is found from south east Queensland to south east South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs	Low	Bionet The project area lacks suitable habitat,
Phascolarctos cinereus	Koala	E1,P	E	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night. Spend most of their time in trees, but will descend and traverse open ground to	Negligible	Bionet and PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				move between trees. Home range size varies with quality of habitat, ranging from less than two hectares to several hundred hectares in size.		
Phoebetria fusca	Sooty Albatross	-	V, M	The Sooty Albatross occurs in the South Atlantic and southern Indian Oceans, and has not been recorded in the Pacific Ocean between Australia and South America. In Australian waters, this species is generally recorded in winter off the south coast from Tasmania to Western Australia, while there are occasional sightings off the NSW coast, north of Grafton. The species has not been recorded in any NSW conservation reserves.	Negligible	PMST The project area lacks appropriate habitat
Pommerhelix duralensis	Dural Land Snail	-	E	The species is a shale-influenced-habitat specialist, which occurs in low densities along the western and northwest fringes of the Cumberland IBRA subregion on shale-sandstone transitional landscapes. The species has a strong affinity for communities in the interface region between shale-derived and sandstone-derived soils, with forested habitats that have good native cover and woody debris. It favours sheltering under rocks or inside curled-up bark. It does not burrow nor climb. The species has also been observed resting in exposed areas, such as on exposed rock or leaf litter, however it will also shelter beneath leaves, rocks and light woody debris.	Negligible	PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Prototroctes maraena	Australian Grayling	-	V	The Australian Grayling is endemic to south-eastern Australia, including VIC, TAS, and NSW. Northern limit is the Clyde River.	Negligible	PMST The project area lacks suitable habitat
Pseudomys gracilicaudatus	Eastern Chestnut Mouse	V,P	-	In NSW the Eastern Chestnut Mouse mainly occurs north from the Hawkesbury River area as scattered records along to coast and eastern fall of the Great Dividing Range extending north into Queensland. There are however isolated records in the Jervis Bay area. In NSW the Eastern Chestnut Mouse is mostly found, in low numbers, in heathland and is most common in dense, wet heath and swamps. In the tropics it is more an animal of grassy woodlands	Negligible	Bionet The project area lacks suitable habitat
Pseudomys novaehollandiae	New Holland Mouse, Pookila	-	V	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Genetic evidence indicates that the New Holland Mouse once formed a single continuous population on mainland Australia and the distribution of recent subfossils further suggest that the species has undergone a large range contraction since European settlement. Known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes.	Negligible	PMST The project area lacks suitable habitat
Pseudophryne australis	Red-crowned Toadlet	V,P	-	The Red-crowned Toadlet has a restricted distribution. It is confined to the Sydney Basin, from Pokolbin in the north, the Nowra area to the south, and west to Mt Victoria in the Blue Mountains. Occurs in open forests, mostly on Hawkesbury and Narrabeen Sandstones. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or capping. Shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter.	Negligible	Bionet The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Pterodroma leucoptera	Gould's Petrel, Australian Gould's Petrel	-	E	Breeds on both Cabbage Tree Island, 1.4 km offshore from Port Stephens and on nearby Boondelbah island. The range and feeding areas of non-breeding petrels are unknown. The first arrival of Gould's petrel on cabbage tree Island occurs from mid to late September. 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.	Negligible	PMST The project area lacks suitable habitat and is out of its natural known distribution
Pterodroma neglecta neglecta	Kermadec Petrel (western)	-	V	Ranges over subtropical and tropical waters of the South Pacific. Balls Pyramid (near Lord Howe Island) and Phillip Island (near Norfolk Island) are the only known breeding sites in Australian waters. Marine. Breeds on islands across the South Pacific. In Australia it breeds on Ball's Pyramid and Phillip Island (near Norfolk Island)	Negligible	PMST The project area lacks suitable habitat and is out of its natural known distribution
Pteropus poliocephalus	Grey-headed Flying-fox	V,P	V	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	Moderate	Bionet and PMST The species has a low to moderate likelihood to utilise the project area as foraging habitat on occasion, given the number of records and proximity. There are more suitable foraging resources nearby than those within the project area. The project area would not provide adequate camp habitat.

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Ptilinopus superbus	Superb Fruit-Dove	V,P	-	The Superb Fruit-dove occurs principally from north-eastern in Queensland to north-eastern NSW. It is much less common further south, where it is largely confined to pockets of suitable habitat as far south as Moruya. There are records of vagrants as far south as eastern Victoria and Tasmania. 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	Bionet The project area lacks suitable habitat
Pycnoptilus floccosus	Pilotbird	-	V	The Pilotbird is endemic to south-eastern Australia. Primarily found from Wollemi National Park and Blue Mountains National Park through to the Dandenong Ranges, near Melbourne VIC. Habitat preference are temperate wet sclerophyll forests and occasionally temperate rainforests.	Negligible	PMST The project area lacks suitable habitat
Rhincodon typus	Whale Shark	-	V, M	Whale Shark primarily occurs in open waters of the tropical oceans.	Negligible	PMST The project area lacks appropriate habitat
Rostratula australis	Australian Painted Snipe	-	E	The Australian Painted Snipe is restricted to Australia. Most records are from the southeast, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	Negligible	PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V,P	-	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows	Low	Bionet Although the species may occasionally roost in buildings, given that only one record was found in the locality, there is a low likelihood the species would occur within the structures of the project area.
Stagonopleura guttata	Diamond Firetail	V,P	-	The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River. 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. Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects	Low	Bionet The species may rarely forage within the project area

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Sternula albifrons	Little Tern	E1,P	C,J,K	Migrating from eastern Asia, the Little Tern is found on the north, east and south-east Australian coasts, from Shark Bay in Western Australia to the Gulf of St Vincent in South Australia. In NSW, it arrives from September to November, occurring mainly north of Sydney, with smaller numbers found south to Victoria. 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).	Negligible	Bionet and PMST The project area lacks suitable habitat
Sternula nereis	Australian Fairy Tern	-	V	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. The subspecies has been known from New South Wales (NSW) in the past, but it is unknown if it persists there (Birdlife International 2010; Garnett & Crowley 2000). The Fairy Tern (Australian) nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. The subspecies has been found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline (Higgins & Davies 1996; Lindsey 1986a). The bird roosts on beaches at night (Higgins & Davies 1996).	Negligible	PMST The project area lacks suitable habitat
Stictonetta naevosa	Freckled Duck	V,P	-	The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and	Negligible	Bionet The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				Victoria during such times. It prefers permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree.		
Thalassarche bulleri	Buller's Albatross, Pacific Albatross	-	V, M	This albatross only nests on islands off New Zealand. Occurs in both inshore and offshore waters, including the continental shelf break and pelagic waters.	Negligible	PMST The project area lacks appropriate habitat
Thalassarche bulleri platei	Northern Buller's Albatross, Pacific Albatross	-	V	Only nests on islands off New Zealand. Occurs in both inshore and offshore waters, including the continental shelf break and pelagic waters.	Negligible	PMST The project area lacks appropriate habitat
Thalassarche carteri	Indian Yellow-nosed Albatross	-	V, M	Breeds primarily on Prince Edward Island, Crozet Islands, Kerguelen Island, Amsterdam Island, and St Pauls Islands in the Indian Ocean. Ranges at sea between South African to the Pacific, and New Zealand.	Negligible	PMST The project area lacks appropriate habitat
Thalassarche cauta	Shy Albatross	-	E, M	This species is circumpolar in distribution, occurring widely in the southern oceans. Islands off Australia and New Zealand provide breeding habitat. This pelagic or ocean-going species inhabits subantarctic and subtropical marine waters, spending the majority of its time at sea.	Negligible	PMST The project area lacks appropriate habitat
Thalassarche eremita	Chatham Albatross	-	E, M	This albatross principally breeds on Pyramid Rock in the Chatham Islands with one pair nesting on the Western Chain in the Snares Islands. Occasional individuals are encountered both in inshore and	Negligible	PMST The project area lacks appropriate habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				offshore over the continental shelf and in pelagic waters off the shelf break.		
Thalassarche impavida	Campbell Albatross, Campbell Black-browed Albatross	-	V, M	This species nests only at Campbell Island and the adjacent Isle de Jeanette Marie south of New Zealand, with a total population estimated at 24,600 pairs. It ranges widely in Australasian seas. Occurs in both inshore and offshore waters, including the continental shelf break and pelagic waters	Negligible	PMST The project area lacks appropriate habitat
Thalassarche melanophris	Black-browed Albatross	-	V, M	The Black-browed Albatross has a circumpolar range over the southern oceans, and are seen off the southern Australian coast mainly during winter. This species migrates to waters off the continental shelf from approximately May to November and is regularly recorded off the NSW coast during this period. The species has also been recorded in Botany Bay National Park.	Negligible	PMST The project area lacks appropriate habitat
Thalassarche salvini	Salvin's Albatross	-	V, M	This species principally nests on the Bounty Islands, with small numbers on the Western Chain Islets in the Snares Islands and a few pairs nesting on Pyramid Rock and The Forty-Fours in the Chatham Islands of New Zealand.	Negligible	PMST The project area lacks appropriate habitat
Thalassarche steadi	White-capped Albatross	-	V, M	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. Breeds on a number of islands in New Zealand waters. Virtually the entire population nests in the Auckland Islands, comprising between 75,000 and 117,000 breeding pairs. In NSW waters it is probably frequently overlooked due to the difficulties of separating it from the Shy Albatross. However, it appears to be a regular visitor principally occurring between March and December.	Negligible	PMST The project area lacks appropriate habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Xenus cinereus	Terek Sandpiper	V,P	C,J,K	A rare migrant to the eastern and southern Australian coasts, being most common in northern Australia, and extending its distribution south to the NSW coast in the east. The two main sites for the species in NSW are the Richmond River estuary and the Hunter River estuary. The latter has been identified as nationally and internationally important for the species.	Negligible	Bionet and PMST The project area lacks suitable habitat
Agnes Banks Woodland in the Sydney Basin Bioregion	Agnes Banks Woodland in the Sydney Basin Bioregion	E4B	E	A low woodland community with Scribbly Gum (*Eucalyptus sclerophylla*), Narrow-leaved Apple (*Angophora bak*eri) and Old Man Banksia (*Banksia serrata*) as the dominant canopy trees. Occurs in western Sydney and originally extended over about 615 hectares, but now has only 98 hectares remaining intact, mostly near Agnes Banks on the east bank of the Hawkesbury River, in the Penrith LGA. A good example can be seen at the Agnes Banks Nature Reserve, near Richmond. The community occurs on areas of wind-blown sand which overlay Tertiary Alluvium deposits from ancient river systems. Depending on drainage conditions, there is great variation within the community, from low woodland on higher ridges to sedge-type vegetation in low lying depressions.	Negligible	Bionet and PMST The project area lacks remnant native vegetation and is out of its naturally occurring distribution
Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions	Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions	E3	-	Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions typically has a dense to open tree canopy, approximately 5 - 20 m tall, depending on exposure and disturbance history. The most common tree species include Bangalay (*Eucalyptus botryoides*) and Coast Banksia (*Banksia integrifolia* subsp. *integrifoli*a). Currently known from parts of the LGAs of Sutherland, Wollongong, Shellharbour, Kiama, Shoalhaven, Eurobodalla and Bega Valley but may occur elsewhere in these bioregions. It is known to occur within a number of conservation reserves, including Royal, Seven Mile Beach, Conjola, Meroo, Murramarang, Eurobodalla and Biamanga National	Negligible	Bionet The project area lacks remnant native vegetation

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				Parks, though these areas are often exposed to degradation by visitor overuse due to their proximity to popular beaches and camping areas.		
Blue Gum High Forest in the Sydney Basin Bioregion	Blue Gum High Forest in the Sydney Basin Bioregion	E4B	-	A moist, tall open forest community, with dominant canopy trees of Sydney Blue Gum (*Eucalyptus saligna*) and Blackbutt (*E. pilularis*). Originally restricted to the ridgelines in Sydney's north from Crows Nest to Hornsby, and extending west along the ridges between Castle Hill and Eastwood. Occurs only in areas where rainfall is high (above 1100 millimetres per year) and the soils are relatively fertile and derived from Wianamatta shale. In lower rainfall areas, it grades into Sydney Turpentine-Ironbark Forest.	Negligible	Bionet and PMST The project area lacks remnant native vegetation and is out of its naturally occurring distribution
Blue Mountains Shale Cap Forest in the Sydney Basin Bioregion	Blue Mountains Shale Cap Forest in the Sydney Basin Bioregion	E3		Blue Mountains Shale Cap Forest is found on deep fertile soils formed on Wianamatta Shale, on moist sheltered sites at lower to middle altitudes of the Blue Mountains and Wollemi areas. Extensive occurrences of shale are at Springwood, Berambing to Kurrajong Heights, Mountain Lagoon and Colo Heights. Known from the LGAs of Blue Mountains and Hawkesbury, both within the Sydney Basin Bioregion. It may occur elsewhere in the Bioregion, and communities within Wollondilly LGA certainly show similarities to this community.	Negligible	Bionet and PMST The project area lacks remnant native vegetation and is out of its naturally occurring distribution

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion	Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion	V2	E	Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion is dominated by *Eucalyptus parramattensis* subsp. *parramattensis*, *Angophora bakeri* and *E. sclerophylla*. Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion is to occur within the LGAs of Bankstown, Blacktown, Campbelltown, Hawkesbury, Liverpool and Penrith (James 1997), but may occur elsewhere within the Sydney Basin Bioregion. The main occurrence of Castlereagh Scribbly Gum Woodland in the Sydney Basin Bioregion is in the Castlereagh area of the Cumberland Plain, with small patches occurring at Kemps Creek and Longneck Lagoon. It is also present around Holsworthy, however the floristic composition in this area shows stronger similarities to Castlereagh Ironbark Forest than at other localities (Tozer 2003). Occurs almost exclusively on soils derived from Tertiary alluvium, or on sites located on adjoining shale or Holocene alluvium	Negligible	Bionet and PMST The project area lacks remnant native vegetation and is out of its naturally occurring distribution
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	-	Coastal Saltmarsh occurs in the intertidal zone on the shores of estuaries and lagoons that are permanently or intermittently open to the sea. It is frequently found as a zone on the landward side of mangrove stands. This community occurs in the intertidal zone along the NSW coast.	Negligible	Bionet The project area lacks remnant native vegetation and or suitable habitat for this TEC.

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	-	E	The ecological community occurs in sub-tropical, sub-humid and temperate climatic zones from Curtis Island, north of Gladstone, in Queensland to Bermagui in southern New South Wales. The ecological community is found within the South Eastern Queensland (SEQ), NSW North Coast (NNC), Sydney Basin (SYB) and South East Corner (SEC). The ecological community occurs in coastal catchments, mostly at elevations of less than 20 m above sea-level (ASL) that are typically found within 30 km of the coast. However, this distance varies by catchment; for example, low elevations can occur as far as 40 km inland on the Hawkesbury River, or more than 100 km on the Clarence River. On the mid and north coast of NSW the ecological community may also occur up to 50 m ASL on floodplains of, or coastland flats associated with, former or current coastal river systems (DECC, 2007). The ecological community is typically found where groundwater is saline or brackish, but can occur in areas where groundwater is relatively fresh. 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 (Keith and Scott, 2005).	Negligible	PMST The project area lacks remnant native vegetation

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Coastal Upland Swamp in the Sydney Basin Bioregion	Coastal Upland Swamp in the Sydney Basin Bioregion	E3	E	The Coastal Upland Swamp in the Sydney Basin Bioregion includes open graminoid heath, sedgeland and tall scrub associated with periodically waterlogged soils on the Hawkesbury sandstone plateaux. The Coastal Upland Swamp is generally associated with soils that are acidic and vary from yellow or grey mineral sandy loams with a shallow organic horizon to highly organic spongy black peat soils with pallid subsoils. The Coastal Upland Swamp is endemic to NSW and confined to the Sydney Basin Bioregion. It occurs in the eastern Sydney Basin from the Somersby district in the north to the Robertson district in the south. In the north it occurs on the Somersby-Hornsby plateaux, in the south it occurs on the Woronora plateau. It occurs in elevations from 20 metres to over 600 metres above sea level, with the majority of swamps occurring within 200 and 450 metres elevation.	Negligible	Bionet and PMST The project area lacks remnant native vegetation

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Cooks River/Castlereagh Ironbark Forest in the Sydney Basin Bioregion	Cooks River/Castlereagh Ironbark Forest in the Sydney Basin Bioregion	E3	CE	Ranges from open forest to low woodland, with a canopy dominated by Broad-leaved Ironbark (Eucalyptus fibrosa) and Paperbark (Melaleuca decora). The canopy may also include other eucalypts such as Woolybutt (*E. longifolia*). The dense shrubby understorey consists of Prickly-leaved Paperbark (*Melaleuca nodosa*) and Peach Heath (*Lissanthe strigosa*), with a range of 'pea' flower shrubs, such as Dillwynia tenuifolia, Hairy Bush-pea (*Pultenaea villosa*) and Gorse Bitter Pea (*Daviesia ulicifolia*) (can be locally abundant). The sparse ground layer contains a range of grasses and herbs. Contains many more species and other references should be consulted to identify these. Occurs in western Sydney, and the extent of intact remnants is now reduced to 1011 hectares, with the most extensive stands occurring in the Castlereagh and Holsworthy areas. Smaller remnants occur in the Kemps Creek area and in the eastern section of the Cumberland Plain. Good examples can be seen at the Castlereagh and Windsor Downs Nature Reserves. Has a very restricted natural distribution and mainly occurs on clay soils derived from the deposits of ancient river systems (alluvium), or on shale soils of the Wianamatta Shales. Can intergrade into Shale-Gravel Transition Forest (where the alluvium is shallow), Castlereagh Swamp Woodland (in moist depressions) and Castlereagh Scribbly Gum Woodland (on sandier soils). Most species in the community are able to regenerate from lignotubers and buds beneath the bark as well as seeds stored in the soil.	Negligible	Bionet and PMST The project area lacks remnant native vegetation and is out of its naturally occurring distribution

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Cumberland Plain Woodland in the Sydney Basin Bioregion	Cumberland Plain Woodland in the Sydney Basin Bioregion	E4B	-	The dominant canopy trees of Cumberland Plain Woodland are Grey Box (*Eucalyptus moluccana*) and Forest Red Gum (*E. tereticornis*), with Narrow-leaved Ironbark (E. *crebra*), Spotted Gum (*Corymbia maculat*a) and Thin-leaved Stringybark (*E.eugenioides*) occurring less frequently. The shrub layer is dominated by Blackthorn (*Bursaria spinosa*), and it is common to find abundant grasses such as Kangaroo Grass (*Themeda australis*) and Weeping Meadow Grass (*Microlaena stipoides* var. *stipoides*). Contains many more species and other references should be consulted to identify these. Occurs on soils derived from Wianamatta Shale, and throughout the driest part of the Sydney Basin. Before European settlement, was extensive across the Cumberland Plain, western Sydney. Today, only 9 percent of the original extent remains intact, with the remnants scattered widely across the Cumberland Plain. Good examples can be seen at Scheyville National Park and Mulgoa Nature Reserve.	Negligible	Bionet The project area lacks remnant native vegetation and is out of its naturally occurring distribution
Duffys Forest Ecological Community in the Sydney Basin Bioregion	Duffys Forest Ecological Community in the Sydney Basin Bioregion	E3	-	Occurs in association with shale lenses and lateritic soils in Hawkesbury Sandstone. Rock outcrops are usually absent from this community, except on the fringes, where it adjoins typical sandstone vegetation, generally characterised by extensive sandstone outcrops. Situated on ridgetops, plateaus and upper slopes, but may also occur on mid-slopes or benches downslope of Sydney Sandstone Ridgetop Woodland. Extensively fragmented distribution, occurring primarily within Warringah, and Ku-ring-gai LGAs with minor occurrences in the Pittwater (Ingleside and Bilgola Plateau), Manly (Seaforth Oval) and Hornsby (South Turramurra and Epping North) LGAs. Estimated original extent was approximately 1450 ha, of which less than 16%, or approximately 240 ha, remains.	Negligible	Bionet The project area lacks remnant native vegetation and occurs outside of distribution

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Eastern Suburbs Banksia Scrub in the Sydney Basin Bioregion	Eastern Suburbs Banksia Scrub in the Sydney Basin Bioregion	E4B	CE	Once occupied around 5,300 hectares of land between North Head and Botany Bay in Sydney's eastern suburbs. Surviving stands totalling approximately 146 hectares have been recorded from the LGAs of Botany, Randwick, Waverley, and Manly. Occurs on disjunct patches of nutrient poor aeolian (windblown) dune sand.	Low	Bionet and PMST The project area lacks remnant native vegetation
Elderslie Banksia Scrub Forest	Elderslie Banksia Scrub Forest	E4B	-	Occurs only in the Elderslie area, near Camden, in Sydney's south-west. Remaining remnants are 15 ha in total.	Negligible	Bionet The project area lacks remnant native vegetation and occurs outside of distribution
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	-	Associated with coastal areas subject to periodic flooding and in which standing fresh water persists for at least part of the year in most years. Typically occurs on silts, muds or humic loams in low-lying parts of floodplains, alluvial flats, depressions, drainage lines, backswamps, lagoons and lakes but may also occur in back barrier landforms where floodplains adjoin coastal sandplains. Generally occur below 20 m elevation on level areas. Known from along the majority of the NSW coast. However, it is distinct from Sydney Freshwater Wetlands which are associated with sandplains in the Sydney Basin bioregion.	Negligible	Bionet The project area lacks remnant native vegetation and appropriate habitat
Hygrocybeae Community of Lane Cove Bushland Park in the Sydney Basin Bioregion	Hygrocybeae Community of Lane Cove Bushland Park in the Sydney Basin Bioregion	E4B	-	An assemblage of more than 20 species of fungi in the family Hygrophoraceae. Lane Cove Bushland Park, Lane Cove LGA, Sydney Basin Bioregion.	Negligible	Bionet The project area lacks remnant native vegetation, appropriate habitat and is outside its distribution area.

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Kurnell Dune Forest in the Sutherland Shire and City of Rockdale	Kurnell Dune Forest in the Sutherland Shire and City of Rockdale	E3	-	A low open sclerophyll forest community with a distinctive moist forest component in its flora. The community occupies coastal dune sand and is often found in association with areas of sclerophyll heath and scrub. Occurs within the LGAs of Sutherland and Rockdale. Within Sutherland LGA, major occurrences of the community are found on the Kurnell Peninsula, with other stands near Bundeena. Within Rockdale LGA, the community is recorded from Leo Smith Reserve.	Negligible	Bionet The project area lacks remnant native vegetation, appropriate habitat and is outside its distribution area.
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	-	Littoral Rainforest is generally a closed forest, the structure and composition of which is strongly influenced by its proximity to the ocean. The plant species of this community are predominantly rainforest species. Several species have compound leaves, and vines may be a major component of the canopy. Littoral Rainforest occurs only on the coast and is found at locations in the NSW North Coast Bioregion, Sydney Basin Bioregion and South East Corner Bioregion. Littoral Rainforest is very rare and occurs in many small stands. In total, it comprises less than one percent of the total area of rainforest in NSW. The largest known stand occurs in Iluka Nature Reserve, which is about 136 hectares in size. Not all stands of this community have been included in mapping for the Environmental Planning Policy 26, Littoral rainforest.	Negligible	Bionet The project area lacks remnant native vegetation, appropriate habitat and is outside its distribution area.

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E3	-	Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions is an ecological community of subtropical rainforest and some related, structurally complex forms of dry rainforest. Lowland Rainforest, in a relatively undisturbed state, has a closed canopy, characterised by a high diversity of trees whose leaves may be mesophyllous and encompass a wide variety of shapes and sizes. Typically, the trees form three major strata: emergents, canopy and sub-canopy which, combined with variations in crown shapes and sizes results in an irregular canopy appearance. The trees are taxonomically diverse at the genus and family levels, and some may have buttressed roots. A range of plant growth forms are present in Lowland Rainforest, including palms, vines and vascular epiphytes. In disturbed stands of this community the canopy cover may be broken, or the canopy may be smothered by exotic vines. The Hawkesbury River notionally marks the southern limit of Lowland Rainforest in the NSW North Coast and Sydney Basin bioregions. South of the Sydney metropolitan area, Lowland Rainforest is replaced by Illawarra Subtropical Rainforest of the Sydney Basin Bioregion, which is listed as an endangered ecological community.	Negligible	Bionet The project area lacks remnant native vegetation

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Moist Shale Woodland in the Sydney Basin Bioregion	Moist Shale Woodland in the Sydney Basin Bioregion	E3	CE	Similar to Cumberland Plain Woodland. It differs in having a shrub understorey that contains plants from moist habitats. Dominant canopy trees include Forest Red Gum *Eucalyptus tereticornis*, Grey Box *E. moluccana*, Narrow-leaved Ironbark *E. crebra* and Spotted Gum *Corymbia maculata*. Small trees, such as Hickory Wattle *Acacia implexa* and Sydney Green Wattle *A. parramattensis* subsp. *parramattensis* are also common. The shrub layer includes *Breynia oblongifolia*, Hairy Clerodendrum *Clerodendrum tomentosum* and Indian Weed *Siegesbeckia orientalis* subsp. *orientalis*. Contains many more species and other references should be consulted to identify these. This community is listed as Critically Endangered under the Western Sydney Dry Rainforest and Moist Woodland on Shale in the EPBC Act. Usually occurs on soils derived from Wianamatta Shale on high country in the southern half of the Cumberland Plain, and occurs mainly in Wollondilly LGA. Also occurs in smaller amounts further north in the Camden, Campbelltown, Fairfield, Liverpool and Penrith LGAs. There are 604 ha remaining intact. A small remnant can be seen in Western Sydney Regional Park.	Negligible	Bionet and PMST The project area lacks remnant native vegetation and occurs outside of distribution
Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	Pittwater and Wagstaffe Spotted Gum Forest in the Sydney Basin Bioregion	E3	-	General structural form is open-forest but may now exist as woodland or remnant trees. The tree canopy layer is characterised by Spotted Gum (*Corymbia maculata*) and Grey Ironbark (*Eucalyptus paniculata*) and is associated with Smooth-barked Apple (*Angophora costata*), Red Bloodwood (*Corymbia maculata*), Broad-leaved White Mahogany (*E. umbra*), Grey Gum (*E. punctata*), Turpentine (*Syncarpia glomulifera*), Bangalay (*E. botryoides*), and Rough-barked Apple (*Angophora floribunda*). Occurs entirely within the Pittwater LGA, on the Barrenjoey Peninsula and Western Pittwater	Negligible	Bionet The project area lacks remnant native vegetation and occurs outside of distribution

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				Foreshores. Remnants are typically small and on private property, however there are a few remnants in Council reserves and one remnant within Ku-ring-gai Chase National Park.		

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	-	CE	The River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria is found in the South East Corner (SEC) and Sydney Basin (SYB) IBRA bioregions. This encompasses the area from around Sale on the south-east coast of Victoria to around Raymond Terrace, just north of Newcastle on the New South Wales east coast. The ecological community occurs on alluvial landforms related to coastal river floodplains and associated sites where transient water accumulates, including floodplains, river-banks, riparian zones, lake foreshores, creek lines (including the floors of tributary gullies), floodplain pockets, depressions, alluvial flats, fans, terraces, and localised colluvial fans. Floodplains may be occasionally or more often saturated, water-logged or inundated. The ecological community is typically found below 50 metres above sea-level (m ASL), although it can occur up to 250 m ASL (e.g. on floodplain pockets and plateaus above nick points). The ecological community occurs on alluvial soils of various textures, including silts, clay loams and sandy loams, gravel and cobbles. Alluvial soils are very diverse and usually reflect the properties of their parent material in the upper catchment. They may include in-situ subsoils, fluvial sediments, and colluvial fans where they overlay the alluvial floodplain.	Negligible	PMST The project area lacks remnant native vegetation and occurs outside of distribution

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	-	As the name suggests, this EEC is found on the river flats of the coastal floodplains. It has a tall open tree layer of eucalypts, which may exceed 40 m in height, but can be considerably shorter in regrowth stands or under conditions of lower site quality. While the composition of the tree stratum varies considerably, the most widespread and abundant dominant trees include *Eucalyptus tereticornis* (forest red gum), *E. amplifolia* (cabbage gum), *Angophora floribunda* (rough-barked apple) and *A. subvelutina* (broad-leaved apple). *Eucalyptus baueriana* (blue box), *E. botryoides* (bangalay) and *E. elata* (river peppermint) may be common south from Sydney, *E. ovata* (swamp gum) occurs on the far south coast, *E. saligna* (Sydney blue gum) and *E. grandis* (flooded gum) may occur north of Sydney, while *E. benthamii* is restricted to the Hawkesbury floodplain.	Negligible	Bionet The project area lacks remnant native vegetation and occurs outside of distribution

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Shale Gravel Transition Forest in the Sydney Basin Bioregion	Shale Gravel Transition Forest in the Sydney Basin Bioregion	E3	-	Has an open forest structure with a canopy dominated by Broad-leaved Ironbark *Eucalyptus fibrosa*, with Grey Box *E. moluccana* and Forest Red Gum *E. tereticornis* occurring less frequently. Paperbark *Melaleuca decora* is common in the small tree layer. A sparse shrub layer is usually present which includes Blackthorn *Bursaria spinosa*, *Daviesia ulicifolia* and Peach Heath *Lissanthe strigosa*. Contains many more species and other references should be consulted to identify these. Mainly found in the northern section of the Cumberland Plain, western Sydney, in the Richmond, Marsden Park and Windsor districts. Also appears in the Liverpool / Holsworthy area, and there are small occurrences at Bankstown, Yennora and Villawood and the Kemps Creek area. There are 1,721 ha remaining intact. Good examples can be seen at Windsor Downs Nature Reserve and Kemps Creek Nature Reserve.	Negligible	Bionet The project area lacks remnant native vegetation and occurs outside of distribution
Shale Sandstone Transition Forest in the Sydney Basin Bioregion	Shale Sandstone Transition Forest in the Sydney Basin Bioregion	E4B	CE	Occurs at the edges of the Cumberland Plain, where clay soils from the shale rock intergrade with earthy and sandy soils from sandstone, or where shale caps overlay sandstone. The boundaries are indistinct, and the species composition varies depending on the soil influences. The main tree species include Forest Red Gum (*Eucalyptus tereticornis),* Grey Gum (*E. punctata*), stringybarks (*E. globoid*ea, *E. eugenioides*) and ironbarks (*E. fibrosa* and *E. crebra*). Areas of low sandstone influence (more clay-loam soil texture) have an understorey that is closer to Cumberland Plain Woodland. Shale Sandstone Transition Forest in the Sydney Basin Bioregion contains many more species than described for the canopy (above) and other references should be consulted to identify these.	Negligible	Bionet and PMST The project area lacks remnant native vegetation and occurs outside of distribution

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Southern Sydney sheltered forest on transitional sandstone soils in the Sydney Basin Bioregion	Southern Sydney sheltered forest on transitional sandstone soils in the Sydney Basin Bioregion	E3	-	Southern Sydney sheltered forest on transitional sandstone soils is an open forest dominated by eucalypts with scattered subcanopy trees, a diverse shrub layer and a well-developed groundcover of ferns, forbs, grasses and graminoids. Southern Sydney sheltered forest on transitional sandstone soils is found within an estimated total extent of less than 45 000 ha, bounded approximately by Hurstville, Carss Park, Bundeena, Otford, Stanwell Tops, Darkes Forest, Punchbowl Creek and Menai.	Negligible	Bionet The project area lacks remnant native vegetation and occurs outside of distribution
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	-	This community is found on the coastal floodplains of NSW. It has a dense to sparse tree layer in which *Casuarina glauca* (swamp oak) is the dominant species northwards from Bermagui. Other trees including *Acmena smithii* (lilly pilly), *Glochidion* spp. (cheese trees) and *Melaleuca* spp. (paperbarks) may be present as subordinate species, and are found most frequently in stands of the community northwards from Gosford. Tree diversity decreases with latitude, and *Melaleuca ericifolia* is the only abundant tree in this community south of Bermagui. The understorey is characterised by frequent occurrences of vines, *Parsonsia straminea, Geitonoplesium cymosum* and *Stephania japonic*a var. *discolor*, a sparse cover of shrubs, and a continuous groundcover of forbs, sedges, grasses and leaf litter. The composition of the ground stratum varies depending on levels of salinity in the groundwater.	Negligible	Bionet The project area lacks remnant native vegetation

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	-	This swamp community has an open to dense tree layer of eucalypts and paperbarks although some remnants now only have scattered trees as a result of partial clearing. The trees may exceed 25 m in height, but can be considerably shorter in regrowth stands or under conditions of lower site quality where the tree stratum is low and dense	Negligible	Bionet The project area lacks remnant native vegetation
Sydney Freshwater Wetlands in the Sydney Basin Bioregion	Sydney Freshwater Wetlands in the Sydney Basin Bioregion	E3	-	Occurs on sand dunes and low-nutrient sandplains along coastal areas in the Sydney Basin bioregion. It is known from the Lake Macquarie, Wyong, Gosford, Pittwater, Warringah, Woollahra, Waverley, Botany, Rockdale, Randwick, Sutherland and Wollongong LGAs, but is likely to occur elsewhere within the bioregion. Has been extensively cleared and filled and remnants are often small and disturbed. Largely restricted to freshwater swamps in swales and depressions on sand dunes and low nutrient sandplains such as those of the Warriewood and Tuggerah soil landscapes. Swampy areas on alluvium with a saline influence do not fall within this community.	Negligible	Bionet The project area lacks remnant native vegetation
Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion	Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion	E4B	-	Occurs in Sydney and is heavily fragmented, with only 0.5 percent its original extent remaining intact. Remnants mostly occur in the Baulkham Hills, Hornsby, Ku-ring-gai, Parramatta, Ryde, Sutherland and Hurstville LGAs. Good examples can be seen in small reserves such as Wallumatta Nature Reserve and Newington Nature Reserve. Occurs close to the shale/sandstone boundary on the more fertile shale influenced soils, in higher rainfall areas on the higher altitude margins of the Cumberland Plain, and on the shale ridge caps of	Negligible	Bionet The project area lacks remnant native vegetation

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				sandstone plateaus. A transitional community, between Cumberland Plain Woodland in drier areas and Blue Gum High Forest on adjacent higher rainfall ridges.		
Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E3	-	Themeda Grassland on sea cliffs and coastal headlands is found on a range of substrates in the NSW North Coast, Sydney Basin and South East Corner bioregions. Stands on sandstone are infrequent and small. Larger stands are found on old sand dunes above cliffs, as for example at Cape Banks and Henry Head in Botany Bay National Park, and on metasedimentary headlands, as for example at McCauleys Headland in Coffs Coast Regional Park, Look-at-me-now Headland, Dammerels Head and Bare Bluff in Moonee Beach Nature Reserve and Wilson's Headland in Yuraygir National Park. Individual stands of the community are often very small, a few square metres, but at some sites larger stands of up to several hectares or tens of hectares occur. Overall, the community has a highly restricted geographic distribution comprising small, but widely scattered patches. The community is found on a range of substrates, although stands on sandstone are infrequent and small	Negligible	Bionet The project area lacks remnant native vegetation

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Umina Coastal Sandplain Woodland in the Sydney Basin Bioregion	Umina Coastal Sandplain Woodland in the Sydney Basin Bioregion	E3	-	Occurs on sandy soils (iron podzols) of the Woy Woy Soil Landscape which are distinguished from the humus podosols generally associated with foothill talus slopes further away from the coast on which *Angophora costata* predominates. Largely restricted to coastal sands on the Umina, Woy Woy and Ettalong Sandplain, a beach ridge system within the Gosford LGA. Including ecotonal areas, less than 10% (being less than 10 hectares) of the community's estimated original cover of about 80 hectares remains. This comprises four main remnants at Umina, while a few smaller remnant patches and scattered trees around Pearl Beach and Patonga and elsewhere on the 'Peninsula' indicate its former distribution.	Negligible	Bionet The project area lacks remnant native vegetation

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion	Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion	-	E	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 (a.s.l.) (Keith & Benson, 1988), although outliers may occur at elevations as low as 350 m (e.g. closer to the coast) or as high as 1200 m a.s.l. (e.g. on higher plateaux). The ecological community occurs in areas of high rainfall, generally ranging from 1000 to 1800 mm/year (NSW Scientific Committee, 2004). The structure of the ecological community varies from tall open forest to woodland depending on aspect, slope, soil conditions, soil depth, and previous disturbance (Fisher et al., 1995). Typically, the ecological community has a sparse to dense layer of shrubs and vines, and a diverse understorey of native grasses, forbs, twiners and ferns (Keith, 2004). With increasing distance from the coast (and a corresponding decrease in rainfall), the understorey tends to grade from relatively mesic (significant component of rainforest species), to relatively scleric (more drought and fire-tolerant shrubs and a more prominent grass layer) (Benson & Howell, 1994; Fisher et al., 1995).	Negligible	PMST The project area lacks remnant native vegetation

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Western Sydney Dry Rainforest and Moist Woodland on Shale	Western Sydney Dry Rainforest and Moist Woodland on Shale	-	CE	The Western Sydney Dry Rainforest and Moist Woodland on Shale ecological community covers two vegetation units, Western Sydney Dry Rainforest and Moist Shale Woodland, described by Tozer (2003) and Tozer et al. (2010) and listed as endangered under the New The ground stratum of the dry rainforest form typically is comprised of a mixture of fern and forb species with grasses being absent to uncommon and mosses also rare.	Negligible	PMST The project area lacks remnant native vegetation and occurs outside the natural distribution of the community

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Western Sydney Dry Rainforest in the Sydney Basin Bioregion	Western Sydney Dry Rainforest in the Sydney Basin Bioregion	E3	-	The Western Sydney Dry Rainforest and Moist Woodland on Shale ecological community covers two vegetation units, Western Sydney Dry Rainforest and Moist Shale Woodland, described by Tozer (2003) and Tozer et al. (2010) and listed as endangered under the New The ground stratum of the dry rainforest form typically is comprised of a mixture of fern and forb species with grasses being absent to uncommon and mosses also rare.	Negligible	Bionet The project area lacks remnant native vegetation and occurs outside the natural distribution of the community

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Acacia bynoeana	Bynoe's Wattle, Tiny Wattle	-	V	Bynoe's wattle is found in central eastern NSW, from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains; The species is currently known from about 30 locations, with the size of the populations at most locations being very small (1-5 plants) has recently been found in the Colymea and Parma Creek areas west of Nowra. Occurs in heath or dry sclerophyll forest on sandy soils. Seems to prefer open, sometimes slightly disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches. Associated overstorey species include Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple.	Negligible	PMST The project area lacks suitable habitat
Acacia pubescens	Downy Wattle, Hairy Stemmed Wattle	-	V	Concentrated around the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. Occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravely soils, often with ironstone. Occurs in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland.	Negligible	PMST The project area lacks suitable habitat
Acacia terminalis subsp. *Terminalis*	Sunshine wattle	E1	E	Very limited distribution, mainly in near-coastal areas from the northern shores of Sydney Harbour south to Botany Bay, with most records from the Port Jackson area and the eastern suburbs of Sydney. Recorded from- North Head, Middle Head, Dover Heights, Parsely Bay, Nielsen Park, Cooper Park, Chifley, Watsons Bays, Wollstonecraft and Waverley. Coastal scrub and dry sclerophyll woodland on sandy soils.	Negligible	Bionet & PMST The project area lacks suitable habitat
Allocasuarina glareicola	null	-	E	Primarily restricted to the Richmond (NW Cumberland Plain) district, but with an outlier	Negligible	PMST The project area is

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				population found at Voyager Point, Liverpool. Grows in Castlereagh woodland on lateritic soil.		outside known distribution
Allocasuarina portuensis	Nielsen Park She-oak	-	E	The original known habitat of the Neilsen Park She-oak is at Nielsen Park, in Woollahra LGA. There are no plants left at the original site where it was discovered. The original habitat is tall, closed woodland.	Negligible	PMST The project area is outside known distribution
Amperea xiphoclada var. *pedicellata*		E4	X	Is known only from the type specimen collected in 1892 from Sydney, NSW. The species has not been observed since and is presumed to be extinct. Was previously widespread in heath, woodland and forest in low-fertility, sandy soils.	Negligible	Bionet Extinct
Asterolasia elegans	null	-	E	Occurs north of Sydney, in the Baulkham Hills, Hawkesbury and Hornsby LGAs. Also likely to occur in the western part of Gosford LGA. Known from only seven populations, only one of which is wholly within a conservation reserve. Occurs on Hawkesbury sandstone. Found in sheltered forests on mid- to lower slopes and valleys, e.g. in or adjacent to gullies which support sheltered forest.	Negligible	PMST The project area lacks suitable habitat
Caladenia tessellata	Thick Lip Spider Orchid	E1,P,2	V	The Thick Lip Spider Orchid is known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct. It was also recorded in the Huskisson area in the 1930s. The species occurs on the coast in Victoria from east of Melbourne to almost the NSW border. Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	Negligible	Bionet and PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Cryptostylis hunteriana	Leafless Tongue-orchid	-	V	The Leafless Tongue Orchid has been recorded from as far north as Gibraltar Range National Park south into Victoria around the coast as far as Orbost. It is known historically from a number of localities on the NSW south coast and has been observed in recent years at many sites between Batemans Bay and Nowra (although it is uncommon at all sites). Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland.	Negligible	PMST The project area lacks suitable habitat
Darwinia biflora	null	-	V	Recorded in Ku-ring-gai, Hornsby, Baulkham Hills and Ryde LGAs. The northern, southern, eastern and western limits of the range are at Maroota, North Ryde, Cowan and Kellyville, respectively. Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone	Negligible	PMST The project area lacks suitable habitat
Dichanthium setosum	Bluegrass	V	V	Bluegrass occurs on the New England Tablelands, North West Slopes and Plains and the Central Western Slopes of NSW, extending northern Queensland. It occurs widely on private property, including in the Inverell, Guyra, Armidale and Glen Innes areas. Flowering time is mostly in summer. Associated with heavy basaltic black soils and red-brown loams with clay subsoil. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. (Often collected from disturbed open grassy woodlands on the northern tablelands, where the habitat has been variously grazed, nutrient-enriched and water-enriched). It is open to question whether the species tolerates or is promoted by a certain amount of disturbance, or whether this is indicative of the threatening processes behind its depleted habitat.	Negligible	Bionet The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Doryanthes palmeri	Giant Spear Lily	V,P	-	Giant Spear Lily occurs in far north-east NSW and south-east Queensland. In NSW, it occurs on the coastal ranges that are part of the Mt Warning Caldera. Giant Spear Lily occurs on exposed rocky outcrops on infertile soils or on bare rock	Negligible	Bionet The project area lacks suitable habitat
Eucalyptus camfieldii	Camfield's Stringybark	V	V	Restricted distribution in a narrow band with the most northerly records in the Raymond Terrace area south to Waterfall. Localised and scattered distribution includes sites at Norah Head (Tuggerah Lakes), Peats Ridge, Mt Colah, Elvina Bay Trail (West Head), Terrey Hills, Killara, North Head, Menai, Wattamolla and a few other sites in Royal National Park. Occurs in poor coastal country in shallow sandy soils overlying Hawkesbury sandstone. Coastal heath mostly on exposed sandy ridges	Low	Bionet and PMST No nearby records, no suitable habitat within the project area
Eucalyptus nicholii	Narrow-leaved Black Peppermint	V	V	This species is sparsely distributed but widespread on the New England Tablelands from Nundle to north of Tenterfield, being most common in central portions of its range. Typically grows in dry grassy woodland, on shallow soils of slopes and ridges	Low	Bionet Numerous nearby records. Although the project are does not contain suitable habitat, the species is often planted. Following the site inspection, it is unlikely the species occurs
Eucalyptus pulverulenta	Silver-leafed Gum	V	V	The Silver-leafed Gum is found in two quite separate areas, the Lithgow to Bathurst area and the Monaro (Bredbo to Bombala). Grows in shallow soils as an understorey plant in open forest, typically dominated by Brittle Gum *Eucalyptus mannifera*, Red Stringybark *E. macrorhynca*, Broad-leafed Peppermint *E. dives*.	Low	Bionet One nearby record. Although the project are does not contain suitable habitat, the species is often planted. Following the site inspection, it is

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
						unlikely the species occurs
Eucalyptus scoparia	Wallangarra White Gum	E1	V	In NSW it is known from only three locations near Tenterfield, including Bald Rock National Park. In Queensland it is equally rare, occurring at three sites on the Stanthorp Plateau including one population in Girrawween National Park. Only one Queensland population has more than a dozen trees.	Low	Bionet One nearby record. Although the project are does not contain suitable habitat, the species is often planted. Following the site inspection, it is unlikely the species occurs
Genoplesium baueri	Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid	-	E	The species has been recorded from locations between Ulladulla and Port Stephens. About half the records were made before 1960 with most of the older records being from Sydney suburbs including Asquith, Cowan, Gladesville, Longueville and Wahroonga. The species has been recorded at locations now likely to be within the following conservation reserves: Berowra Valley Regional Park, Royal National Park and Lane Cove National Park. May occur in the Woronora, O'Hares, Metropolitan and Warragamba Catchments. Grows in dry sclerophyll forest and moss gardens over sandstone	Negligible	PMST The project area lacks suitable habitat and is out of its natural known distribution
Haloragodendron lucasii	Hal	-	E	The known locations of this species are confined to a very narrow distribution on the north shore of Sydney. Associated with dry sclerophyll forest.	Negligible	PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Hibbertia puberula	Hibbertia puberula	E1	-	Recent work on this species (Toelken & Miller 2012) and its relatives have shown it to be widespread, but never common. It extends from Wollemi National Park south to Morton National Park and the south coast near Nowra. Early records of this species are from the Hawkesbury River area and Frenchs Forest in northern Sydney, South Coogee in eastern Sydney, the Hacking River area in southern Sydney, and the Blue Mountains. It favours low heath on sandy soils or rarely in clay, with or without rocks underneath (Toelken & Miller 2012). Occurs on sandy soil often associated with sandstone, or on clay. Habitats are typically dry sclerophyll woodland communities, although heaths are also occupied.	Negligible	Bionet The project area lacks suitable habitat
Lasiopetalum joyceae	null	-	V	Has a restricted range occurring on lateritic to shaley ridgetops on the Hornsby Plateau south of the Hawkesbury River. It is currently known from 34 sites between Berrilee and Duffys Forest. Seventeen of these are reserved. Grows in heath on sandstone	Negligible	PMST The project area lacks suitable habitat
Leptospermum deanei	Deane's Tea-tree	-	V	Rare, only on forested slopes near watershed of Lane Cove R., Sydney. Flowers October to November.	Negligible	PMST The project area lacks suitable habitat
Melaleuca biconvexa	Biconvex Paperbark	-	V	Biconvex Paperbark is only found in NSW, with scattered and dispersed populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north. Biconvex Paperbark generally grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	Low	PMST The project area lacks suitable habitat and is outside its natural distribution
Melaleuca deanei	Deane's Paperbark	V	V	Deane’s Paperbark occurs in two distinct areas, in the Ku-ring-gai/Berowra and Holsworthy/Wedderburn areas respectively. There are also more isolated occurrences at Springwood (in the Blue Mountains), Wollemi National Park, Yalwal (west of Nowra) and Central Coast (Hawkesbury River) areas. The species	Negligible	Bionet and PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				occurs mostly in ridgetop woodland, with only 5% of sites in heath on sandstone.		
Persicaria elatior	Knotweed, Tall Knotweed	-	V	Tall Knotweed has been recorded in south-eastern NSW (Mt Dromedary (an old record), Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertson, Bermagui, and Picton Lakes. In northern NSW it is known from Raymond Terrace (near Newcastle) and the Grafton area (Cherry Tree and Gibberagee State Forests). The species also occurs in Queensland. This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	Negligible	PMST The project area lacks suitable habitat
Persoonia hirsuta	Hairy Geebung	E1,P,3	E	*Persoonia hirsuta* has a scattered distribution around Sydney. The species is distributed from Singleton in the north, along the east coast to Hilltop in the south west, Dombarton in the south east and the Blue Mountains to the west. 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	Negligible	Bionet and PMST The project area lacks suitable habitat and is outside its natural distribution
Pimelea curviflora var. *curviflora*	null	-	V	Confined to the coastal area of the Sydney and Illawarra regions. Populations are known between northern Sydney and Maroota in the north-west. New population discovered at Croom Reserve near Albion Park in Shellharbour LGA in August 2011. Formerly recorded around the Parramatta River and Port Jackson region including Five Dock, Bellevue Hill and Manly. Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Also	Negligible	PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				recorded in Illawarra Lowland Grassy Woodland habitat at Albion Park on the Illawarra coastal plain.		
Pimelea spicata	Spiked Rice-flower	-	E	Once widespread on the Cumberland Plain, the Spiked Rice-flower occurs in two disjunct areas; the Cumberland Plain (Marayong and Prospect Reservoir south to Narellan and Douglas Park) and the Illawarra (Landsdowne to Shellharbour to northern Kiama). In both the Cumberland Plain and Illawarra environments this species is found on well-structured clay soils. On the Cumberland Plain sites it is associated with Grey Box communities (particularly Cumberland Plain Woodland variants and Moist Shale Woodland) and in areas of ironbark.	Negligible	PMST The project area lacks suitable habitat
Prostanthera densa	Villous Mintbush	-	V	This species has been recorded from the Currarong area in Jervis Bay, Royal National Park (Marley), Cronulla, Helensburgh and Port Stephens (Nelson Bay). The Sydney and Royal National Park populations were thought possibly extinct, but the species is now known to occur at Bass and Flinders Point in Cronulla. *Prostanthera densa* generally grows in sclerophyll forest and shrubland on coastal headlands and near coastal ranges, chiefly on sandstone, and rocky slopes near the sea.	Negligible	PMST The project area lacks suitable habitat
Prostanthera junonis	Somersby Mintbush	-	E	Has a north-south range of approximately 19 km on the Somersby Plateau in the Gosford and Wyong LGAs. The species is restricted to the Somersby Plateau. It occurs on both the Somersby and Sydney Town soil landscapes on gently undulating country	Negligible	PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				over weathered Hawkesbury sandstone within open forest/low woodland/open scrub. It occurs in both disturbed and undisturbed sites.		
Prostanthera marifolia	Seaforth Mintbush	E4A,3	CE	Currently only known from the northern Sydney suburb of Seaforth and has a very highly restricted distribution within the Sydney Basin Bioregion. The single population is fragmented by urbanisation into three small sites. All known sites are within an area of 2x2 km. The sites are within the LGA of Northern Beaches Council. Occurs in localised patches in or in close proximity to the endangered Duffys Forest ecological community. Located on deeply weathered clay-loam soils associated with ironstone and scattered shale lenses, a soil type which only occurs on ridge tops and has been extensively urbanised.	Negligible	Bionet and PMST The project area lacks remnant native vegetation and occurs outside of distribution
Pterostylis saxicola	Sydney Plains Greenhood	-	E	Restricted to western Sydney between Freemans Reach in the north and Picton in the south. There are very few known populations and they are all very small and isolated. Two populations occur within a conservation reserve (Georges River National Park; Scheyville NP). Most commonly found growing in small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines. The vegetation communities above the shelves where *Pterostylis saxicola* occurs are sclerophyll forest or woodland on shale/sandstone transition soils or shale soils.	Negligible	PMST The project area lacks suitable habitat

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
Rhizanthella slateri	Eastern Underground Orchid	-	E	Occurs from south-east Queensland to south-east NSW. In NSW, currently known from fewer than 10 locations, including near Bulahdelah, the Watagan Mountains, the Blue Mountains, Wiseman's Ferry area, Agnes Banks and near Nowra. 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.	Negligible	PMST The project area lacks suitable habitat and is out of its natural known distribution
Rhodamnia rubescens	Scrub Turpentine	E4A	CE	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. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Negligible	Bionet and PMST The project area lacks suitable habitat
Rhodomyrtus psidioides	Native Guava	-	CE	Occurs from Broken Bay, approximately 90 km north of Sydney, New South Wales, to Maryborough in Queensland. 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 subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines. This species is characterised being extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.	Low	PMST Although the project area lacks suitable habitat and occurs outside the natural distribution of the species, it can be commonly planted in backyards/reserves. It is unlikely the species would occur in the project areas setting
Syzygium paniculatum	Magenta Lilly Pilly	E1	V	The Magenta Lilly Pilly is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest. On the central coast Magenta Lilly Pilly occurs on gravels, sands, silts and clays in riverside	Low	Bionet and PMST Although the project are does not contain suitable habitat, the species is often planted. Following the site inspection, it is unlikely the species occurs

Scientific Name	Common Name	BC ACT	EPBC ACT	Habitat Ecology and Distribution	Likelihood of Occurrence	Justification
				gallery rainforests and remnant littoral rainforest communities.		
Tetratheca glandulosa	-	V	-	Restricted to the following LGAs: Baulkham Hills, Gosford, Hawkesbury, Hornsby, Ku-ring-gai, Pittwater, Ryde, Warringah, and Wyong. Associated with shale-sandstone transition habitat where shale-capping occur over sandstone, with associated soil landscapes such as Lucas Heights, Gymea, Lambert and Faulconbridge. Topographically, the plant occupies ridgetops, upper-slopes and to a lesser extent mid-slope sandstone benches. Soils are generally shallow, consisting of a yellow, clayey/sandy loam	Negligible	Bionet The project area lacks suitable habitat and is out of its natural known distribution
Tetratheca juncea	Black-eyed Susan	V	V	Confined to the northern portion of the Sydney Basin bioregion and the southern portion of the North Coast bioregion in the LGAs of Wyong, Lake Macquarie, Newcastle, Port Stephens, Great Lakes and Cessnock. It is usually found in low open forest/woodland with a mixed shrub understorey and grassy groundcover. However, it has also been recorded in heathland and moist forest.	Negligible	Bionet The project area lacks suitable habitat
Thesium australe	Austral Toadflax, Toadflax	-	V	Austral Toad-flax is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Although originally described from material collected in the SW Sydney area, populations have not been seen in a long time. It may persist in some areas in the broader region. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast.	Negligible	PMST project area lacks suitable habitat

APPENDIX B: RELEVANT QUALIFICATIONS & EXPERIENCE OF THE AUTHOR

Alex Fraser (Fraser Ecological Consulting) has over 25 years experience in ecological assessment and on-ground bushland restoration management. Previous work roles include ecological consulting with Parsons Brinckerhoff (large infrastructure), NPWS (biodiversity surveys), NSW Department of Environment and Climate Change (SIS DGRs) and Hornsby Shire Council (residential and light industrial development) have focussed primarily on ecological survey, development assessment, project management and policy development for consent authorities. Alex also has practical experience in landscape construction, bushland restoration and property management. A full list of flora and fauna assessments previously undertaken can be provided upon request.

Professional Affiliations include the Australian Association of Bush Regenerators, Ecological Society of Australia, Royal Zoological Society of NSW, Birds Australia, Australasian Bat Society, Urban Feral Animal Action Control Group (Sydney North Councils), Surfrider Foundation & Fred Hollows Foundation.

Relevant qualifications and training:

- Bachelor of Applied Science – Coastal Resource Management (Honours)
- Certificate 3 Natural Area Restoration (Ryde Horticultural College)
- Chemcert (Department of Natural Resources)
- Chainsaw Cross Cutting Techniques (Ryde Horticultural College)
- Certificate 3 Vertebrate Animal Pest Control (NSW DPI, Orange)
- OH&S General Induction for Construction Work (Work Cover NSW)
- Senior First Aid (St. Johns Ambulance Australia)
- Project Management 'the hard and soft skills' (NPWS- 2004)
- Frog, Bat and Reptile: species identification and survey skills (Forests NSW)
- Certificate 3&4 Japanese language proficiency (The Japan Foundation)
- Advanced Open Water SCUBA diver (PADI Australia)
- State Rail Contractor Safety Awareness (State Rail Authority)
- NPWS Scientific Licence - S10445 (Department of Environment Climate Change and Water)
- Accredited under the Biodiversity Assessment Methodology - BAM (Accreditation No. BAAS18156)

Alexander Fraser

alohafraser@gmail.com | 0423238193 | 665 The Scenic Rd Macmasters Beach, NSW 2251

Key skills

- 12+ years private ecological consulting (Fraser Ecological Consulting)
- 15 + years local government ecological assessment for DAs (Hornsby Shire Council – current employer)
- 10 + years Land & Environment Court expert witness experience
- 2 years state government ecological assessment (NSW OEH)
- High level botanical field identification skills, plot surveys and project management
- Fauna survey and field assistant experience
- Biodiversity Assessment Reporting (BDAR) preparation and Stewardship Site (BSAR) under the NSW BOS Credit Scheme

Qualifications

Bachelor Environmental Science (Honours) Southern Cross University

Certificate 3 Natural Area Restoration

Certificate 3 Vertebrate Animal Pest Control (NSW DPI, Orange)

NPWS Scientific Licence - S10445

Animal Ethics Authority - 11/4299

Accredited under the Biodiversity Assessment Methodology - BAM (Accreditation No. BAAS18156)

Practising member of NSW Ecological Consultants Association (ECA)

Summary

Alex Fraser (Principal Ecologist, Fraser Ecological) has extensive experience in DA related ecological assessment as both an assessor (Hornsby Shire Council) and private consultancy (Fraser Ecological) which actively and currently involve a wide array projects. Fraser Ecological is based locally on the Central Coast, however, project experience extends to South Coast, Blue Mountains, Mid-north Coast and mainly in the Sydney Basin Bioregion.

Previous work roles include ecological consulting for Parsons Brinckerhoff (large infrastructure), NPWS threatened species unit (biodiversity surveys), former NSW Department of Climate Change/ OEH (SIS DGRs and major projects assessment) and Hornsby Shire Council (DA assessment officer) have focussed primarily on ecological survey, development assessment, project management and policy development for consent authorities.

Alex offers high level botanical ID and field survey skills which includes targeted surveys and BAM plot surveys. Fraser Ecological has extensive experience in the preparation of over 15 BDARs under the new BC Act 2016 BOS credit trading scheme. Alex has experience dealing with consent authorities including Council, Crown Lands, Metropolitan Land Council, RFS, Biodiversity Conservation Trust and Department of Planning for major projects including SSDI proposals.

Fraser Ecological has established a wide network of ecological specialists including the Royal Botanic Gardens and Australian Museum as well academic institutions for expert advice when required. Alex is a current member of the North Sydney Regional Land Managers Group that includes staff from Central Coast Council, Northern Beaches, Ku-ring-gai Council, Hornsby Council (HSC), NPWS and Crown Lands) as project manager developing the Natural Area Recreation Strategy for HSC. Current main role at Council is development assessment and review of Flora and Fauna Reports and Biodiversity Assessment Reports.

Fraser Ecological has been engaged by various Councils (Central Coast, Ku-ring-gai, Liverpool City, Blacktown City Council, Hornsby Shire Council and Hawkesbury City Council) to undertake biodiversity assessments for major civil works projects. He is continuously providing biodiversity assessments for private clients for a range od development proposals across coastal and western NSW. We have also undertaken threatened flora and fauna species survey and monitoring for the NSW OEH Save our Species grants.

Key skills:

- Targeted flora and fauna surveys
- BAM plots in accordance with the BAM
- Ecological monitoring & Opportunity and Constraints mapping
- Preparation of BDARs, BAM calculator and credit reporting
- Retirement of credits for approved projects via BCT and brokers
- Establishment of stewardship sites and other offset packages
- Expert witness reporting and attendance in the LAEC
- Compliance investigations and auditing
- Preparation of Vegetation Management Plans
- Preparation of Nestbox Monitoring Plans

CERTIFICATE OF ACCREDITATION AS A BIODIVERSITY ASSESSMENT METHOD ASSESSOR under the *Biodiversity Conservation Act 2016* (NSW)

BAM Assessor		
Alex FRASER		
Accreditation number	**Accreditation date (Date of issue)**	**Expiry Date of**
BAAS18156	October 18, 2024	October 17, 2027

The person named above is accredited under section 6.10 of the *Biodiversity Conservation Act 2016* (NSW) (**BC Act**) as a Biodiversity Assessment Method Assessor to apply the Biodiversity Assessment Method in connection with the preparation of biodiversity stewardship site assessment reports, biodiversity development assessment reports and biodiversity certification assessment reports pursuant to Part 6 of the BC Act.

The accreditation is in force until and including the Expiry Date. The accreditation is subject to the conditions set out in the *Accreditation Scheme for the Application of the Biodiversity Assessment Method*, under the BC Act, and the conditions specified on the reverse of this certificate.

STEEN GYRN

Senior Team Leader, Accreditation and Training
Biodiversity and Conservation Division | Department of Climate Change, Energy, the Environment and Water

NOTES

- DCCEEW maintains a register of Accredited Biodiversity Assessment Method (BAM) Assessors accessible from the DCCEEW website.
- The BAM Assessor's accreditation expires on the Expiry Date unless renewed in accordance with the *Accreditation Scheme for the Application of the Biodiversity Assessment Method*. It is the BAM Assessor's responsibility to monitor the Expiry Date of their accreditation, and apply for any renewal with sufficient time for the application to be processed prior to the Expiry Date.
- Words and expressions used in this accreditation instrument and which are also used in the Act have the same meaning.

SUMMARY OF CONDITIONS UNDER SCHEME

The following are conditions of all accreditations granted under the Scheme:

1. an accredited person must prepare Biodiversity Assessment Reports (and conduct surveys and other activities in connection with the preparation of such reports) in accordance with:
   a. the Biodiversity Assessment Method Manual,
   b. the Credit Calculator Operational Manual,
   c. Accredited Person Code of Conduct.
   d. this Scheme,
   e. any guidance materials published by the Department of Climate Change, Energy, the Environment and Water in connection with preparation of Biodiversity Assessment Reports or the application of the BAM
   f. any accreditation requirements notified by the Department of Climate Change, Energy, the Environment and Water to the accredited assessor from time to time.
2. an accredited person must maintain a detailed and up to date working knowledge of, and comply with, all relevant legislation.
3. an accredited person must maintain records of surveys and assessments, including field data sheets and targeted flora and fauna surveys, undertaken and used as part of the preparation of a Biodiversity Assessment Report, for at least ten years after certification of the relevant Biodiversity Assessment Report.
4. all records required to be kept by an accredited person must be in legible form, or in a form that can be readily reduced to a legible form.
5. an accredited person must provide to the Department of Climate Change, Energy, the Environment and Water any information related to biodiversity assessment reports required to be provided by all accredited persons, or by a group of accredited persons, by way of a notice specified on a website maintained by it, in the form and within the time frames required in that notice.
6. an accredited person must comply with any scientific licence conditions relating to survey records.
7. an accredited person must possess, or operate under, an appropriate scientific licence as required for the type work, they are completing in the Biodiversity Offsets Scheme.

Note. Information that the Environment Agency Head (EAH) may require to be provided may include information collected during the application of the BAM such as site specific survey data.

Note. In addition to the conditions above, accredited persons must comply with obligations under the BC Act and regulations, including Part 6 Division 3 of the BC Act. Failure to comply with any of the conditions above may result in the EAH exercising the power to vary, suspend or cancel that accreditation under Part 5 of this Scheme.

ADDITIONAL CONDITIONS TO WHICH THIS ACCREDITATION IS SUBJECT

Nil

Issued by the Department of Climate Change, Energy, the Environment and Water
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ECA

ECOLOGICAL CONSULTANTS ASSOCIATION of NSW Inc

2024

PRACTISING MEMBER