



**Sydney Metro West:
Major civil construction work between The Bays and Sydney CBD**

Biodiversity Development Assessment Report Waiver Request

V1.0

May 2021

Sydney Metro

Sydney Metro West: Major civil construction works between The Bays and Sydney CBD

Project No: IA199800
 Document Title: Biodiversity Development Assessment Report Waiver Request
 Revision: V1
 Document Status: Final
 Date: 28/05/2021
 Client Name: Sydney Metro
 Project Manager: Nikki Wallace
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 File Name: SMW_Stage 2 The Bays to Sydney CBD_BDAR Waiver Request_v5-Final_Clean

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Document history and status

Revision	Date	Description	Author	Reviewed	Approved
Draft v.1	01/04/2021	Draft 1	T. Maher & J. Bayada	C. Thomson & C. Scholefield	N. Wallace
Draft v.2	20/04/2021	Draft 1	T. Maher & J. Bayada	C. Thomson & C. Scholefield	N. Wallace
Draft v.3	14/05/2021	Draft 3	J. Bayada	C. Thomson	N. Wallace
Draft v.4	27/05/2021	Draft 4	T. Maher	C. Scholefield	N. Wallace
Final V1	28/05/2021	Finalised document	C. Scholefield	N. Wallace	N. Wallace

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Appendix A. Likelihood of occurrence assessment

Executive Summary

This summary provides the detail required in Table 1 and Table 2 of the document *How to apply for a biodiversity assessment report waiver for a major project* (NSW Department of Planning, Industry and the Environment (DPIE) 2019).

Table 1: Biodiversity Development Assessment Report waiver request information requirements	
Admin	<ul style="list-style-type: none"> Proponent name and contact details – Sydney Metro, contact: Anna Scott, Manager, Planning Approvals, 0418 660 071 Project ID – SSI-19238057. Name and ecological qualifications of person completing Table 2 – Timothy Maher, Bachelor of Advanced Science (Biology) and Master of Research (Plant Ecology) and Julia Bayada, Bachelor of Environmental Science and Management (Ecosystems and Biodiversity). A full list of contributor's qualifications is provided in Section 2.1.
Site details	<ul style="list-style-type: none"> Street address, Lot and DP, local government area – <u>Pymont Station development sites</u> Address: 37-69 Union Street and 26-32 Pymont Bridge Road in Pymont. Lot and DP: Lot 1 in DP 620352 and Lot 1 in DP 657429 at 37-69 Union Street; and Lot 10 in DP 1028280 at 26-32 Pymont Bridge Road, Pymont. Local Government Area: City of Sydney <u>Hunter Street Station (Sydney central business district (CBD)) development sites</u> Address: 314-318, 312, 300, 296 George Street, 5, 7-13, 9, 48 Hunter Street, 5010 De Mestre Place, De Mestre Place (public laneway), 28 O'Connell Street, 37 and 33 Bligh Street in Sydney. Lot and DP: Lot 1 in DP 1107981, Lot 1 in DP 217112, and Lot 1 in DP 536538 at 28-34 O'Connell Street; Lot 1 in DP 626651 at 20-26 O'Connell Street (33 Bligh Street); Lot 1 in DP 59871 and Lot 2 in DP 217112 at 44-48 Hunter Street; SP 58859 SP61852, SP61922, SP61923, SP63146, SP63147, SP74004, SP87437 at 50-58 Hunter Street (37 Bligh Street); Lot 1 in DP 438188 at 296 George Street; Lot CP in SP 596 at 298-302 George Street (300 George Street); Lot CP in SP 71068 at 304-308 George Street (Leda Hunter Arcade); Lot 1 in DP 211120 at 312 George Street; Lot 13 in DP 622968 at 314-318 George Street; Lot CP in SP 65054, Lot CP in SP 77889 at 5 Hunter Street (Leda House); Lot CP in SP 50276, Lot CP in SP 61007, Lot CP in SP 60441, Lot CP in SP 62889, Lot CP in SP 69300, Lot CP in SP 77409 at 7-13 Hunter Street (Hunter Connection); Lot 2 in DP 850895 at 9-13 Hunter Street and; Lot 1 in DP 1003818 at 5010 De Mestre Place, Sydney (Overpass); Public laneway, no title particulars at De Mestre Place, Sydney Local Government Area: City of Sydney <ul style="list-style-type: none"> Description of existing development sites – The proposed location of this proposal is within the approved Concept Plan for Sydney Metro West (SSI-10038), extending from The Bays to Sydney CBD. The location of the proposal is shown on Figure 1-2 below. Location maps showing the development sites in the context of surrounding areas and landscape features are shown on Figure 1-2 The proposed locations of the construction sites for this proposal, which comprise the development sites for this request, are displayed on Figure 1-3 and Figure 1-4 below.
Proposed development	<p>The planning process for Sydney Metro West is being assessed as a staged infrastructure application under section 5.20 of the <i>Environment Planning and Assessment Act 1979</i> (EP&A Act). The Sydney Metro West Concept and the major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process for Sydney Metro West), application number SSI-10038, were approved on 11 March 2021. Sydney Metro</p>

Table 1: Biodiversity Development Assessment Report waiver request information requirements

	<p>(the proponent) are now seeking approval for the major civil construction works including station excavation and tunnelling between The Bays and Sydney CBD (the proposal).</p> <p>The location of the work covered by this proposal is shown on Figure 1-2.</p> <ul style="list-style-type: none"> ▪ The major civil construction work between The Bays and Sydney CBD would involve: <ul style="list-style-type: none"> ▪ Launch of two tunnel boring machines from the approved The Bays station box (the box excavation is included in the Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD (Sydney Metro, 2020a), as amended by the Sydney Metro West Westmead to The Bays and Sydney CBD – Amendment Report (Sydney Metro, 2020b)) heading east towards the Sydney CBD. ▪ Removal of tunnel and other excavated spoil from the tunnel boring machines launch and support site, and other construction sites. ▪ Tunnelling of twin underground running tunnels between The Bays and the Sydney CBD using the tunnel boring machines, with roadheaders and/or rock breakers to excavate other track features including all cross passages, crossovers / turnbacks, sidings or stub tunnels. ▪ Delivery of precast concrete segments and lining of tunnels. ▪ Development sites and provision of support services for the tunnel boring machines launch sites and other shafts including adequate power, water, ventilation, material handling areas and other services. ▪ Excavation of access shafts and station cavern for Pyrmont station with temporary ground support (piling, rock bolting, ground anchor installation, rock excavation and muck away, logistics supply, possible craneage). ▪ Excavation of access shafts and station cavern for Hunter Street Station (Sydney CBD), with temporary ground support (piling, rock bolting, ground anchor installation, rock excavation and muck away, logistics supply, possible craneage). ▪ Optional retrieval of tunnel boring machines from the access shaft within the Hunter Street Station (Sydney CBD) eastern development site. <p>The proposed locations of the development sites for this proposal are displayed on Figure 1-3 and Figure 1-4.</p>
Impacts on biodiversity values	<p>Refer to the completed Table 2 below on biodiversity values.</p> <p>Biodiversity values in the development sites are shown on Figure 3-2.</p>

Table 2: Impacts of the proposal on biodiversity values

Biodiversity value	Meaning	Relevant (✓ or NA)	Explain and document potential impacts including additional impacts prescribed under the BC Regulation Attach additional supporting documentation where appropriate
Vegetation abundance - 1.4(b) <i>Biodiversity Conservation Regulation 2017</i> (BC Regulation)	Occurrence and abundance of vegetation at a particular site	NA	<p>There is some native vegetation (according to the definition of native vegetation provided in the <i>Local Land Services Act 2013</i>) present within the development sites. Any native vegetation present has been historically planted at the development sites, however, for aesthetic purposes as street trees and landscaping (see Section 3.4). This planted vegetation consists of a mixture of mainly non-native with some native tree species that do not naturally occur together and, as such, do not form an ecosystem. Therefore, this vegetation cannot be assigned to a Plant Community Type (PCT) as identified in the DPIE BioNet Vegetation Classification.</p> <p>Vegetation abundance (as it would apply to a PCT) would not be impacted by removal of vegetation within the Pyrmont Station or Hunter Street Station (Sydney CBD) development sites. For the Pyrmont Station development site, impacts are limited to the removal of:</p> <ul style="list-style-type: none"> ▪ Five exotic trees, ▪ Seven native trees ▪ About 245 m² of exotic vegetation. <p>For the Hunter Street Station (Sydney CBD) development site, impacts are limited to the removal of four exotic trees. No native trees are present within the Hunter Street Station (Sydney CBD) development site.</p>
Vegetation integrity 1.5(2)(a) <i>Biodiversity Conservation Act 2016</i> (BC Act)	Degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state	NA	<p>As the native vegetation cannot be assigned to a native PCT, it is not possible to assess vegetation integrity against benchmark scores by undertaking an assessment of the composition, structure or function of the vegetation according to the field methods outlined in Section 5.3 of the Biodiversity Assessment Method 2020 (BAM). This is because the vegetation within the subject land is planted. A vegetation integrity score cannot be determined in accordance with Section 5.4 of the BAM as there are no PCTs that will be impacted by this proposal.</p> <p>There would be no loss of vegetation composition, structure, or function (as assessed in accordance to the BAM) as a result of this proposal.</p>

Table 2: Impacts of the proposal on biodiversity values

Biodiversity value	Meaning	Relevant (✓ or NA)	Explain and document potential impacts including additional impacts prescribed under the BC Regulation Attach additional supporting documentation where appropriate
Habitat suitability 1.5(2)(b) BC Act	Degree to which the habitat needs of threatened species are present at a particular site	✓	<p>Existing planted native vegetation within and next to the development sites may provide some limited foraging resources for species such as Grey-headed Flying Fox, Powerful Owl and Little Lorikeet.</p> <p>The planted native vegetation does not provide any suitable breeding habitat for these threatened species. The planted trees form a relatively small portion of the available amount of foraging resources in the locality (particularly considering the nearby Grey-headed Flying Fox camps at Centennial Park and Gladesville) and the similar quality planted vegetation surrounding the development sites. Impacts to the local occurrence of this marginal foraging habitat is unlikely to significantly impact these species.</p> <p>Considering the extent of higher quality foraging resources in the locality, the following vegetation removals would be unlikely to significantly impact threatened species:</p> <ul style="list-style-type: none"> ▪ One native tree adjacent to the Pyrmont Station western development site ▪ Three native trees within the Pyrmont Station western development site ▪ Two exotic trees adjacent to the Pyrmont Station western development site ▪ Three native tree species within the Pyrmont Station eastern development site ▪ About 245 m² of exotic vegetation within the Pyrmont Station eastern development site ▪ Three exotic trees adjacent to the Pyrmont Station eastern development site ▪ One exotic tree adjacent to the Hunter Street Station (Sydney CBD) western development site ▪ Three exotic trees adjacent to the Hunter Street Station (Sydney CBD) eastern development site. <p>The clearing of planted exotic vegetation as part of this proposal constitutes a minimal impact to marginal foraging habitat for threatened species. Site assessment of the human-made structures was carried out by an ecologist on 24 May 2021.</p>

Table 2: Impacts of the proposal on biodiversity values			
Biodiversity value	Meaning	Relevant (✓ or NA)	Explain and document potential impacts including additional impacts prescribed under the BC Regulation Attach additional supporting documentation where appropriate
			Based on this assessment, the human-made structures do not appear to be old or derelict enough to offer potential suitable roosting habitat for threatened microbats. While it is possible that these human-made structures may provide potential roosting habitat, the human-made structures appear to be in good external condition with no obvious signs of damage or openings where threatened microbats could regularly access and the development sites are not in proximity to large expanses of natural vegetation.
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	✓	<p>The Grey-headed Flying Fox, Powerful Owl and Little Lorikeet were assessed in association with Table 2-2 as having a potential likelihood of occurring within the development sites and foraging in or around the planted native vegetation on occasion.</p> <p>A visual inspection and assessment of the development sites was carried out as part of this assessment and no high-quality threatened species habitats have been identified on the development sites. Additionally, visual inspection and assessment was undertaken of the human-made structures within the development sites. During this assessment, no suitable roosting habitat for threatened microbats was identified. This is due to the good structural integrity of the human-made structures displaying no obvious openings where threatened microbats could regularly access (see Section 3.5 for further discussion).</p> <p>Considering the extent of higher quality foraging resources in the locality, the following vegetation removals would be unlikely to significantly impact threatened species:</p> <ul style="list-style-type: none"> ▪ One native tree adjacent to the Pymont Station western development site ▪ Three native trees within the Pymont Station western development site ▪ Two exotic trees adjacent to the Pymont Station western development site ▪ Three native tree species within the Pymont Station eastern development site

Table 2: Impacts of the proposal on biodiversity values			
Biodiversity value	Meaning	Relevant (✓ or NA)	Explain and document potential impacts including additional impacts prescribed under the BC Regulation Attach additional supporting documentation where appropriate
			<ul style="list-style-type: none"> About 245 m² of exotic vegetation within the Pyrmont Station eastern development site Three exotic trees adjacent to the Pyrmont Station eastern development site One exotic tree adjacent to the Hunter Street Station (Sydney CBD) western development site Three exotic trees adjacent to the Hunter Street Station (Sydney CBD) eastern development site. <p>Also, considering the development sites are currently bounded by industrial areas, roads, and buildings in this location with high levels of human activity, the proposal would be unlikely to increase any impacts on native species in the immediate area, including that of vehicle strikes.</p> <p>Furthermore, this proposal would be unlikely to have an appreciable impact on threatened species abundance.</p>
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	✓	<p>The development sites are located within a highly urbanised landscape where the majority of natural habitats have been cleared. The habitats that do remain are fragmented and primarily limited to planted urban vegetation. However, planted urban vegetation does provide a role in facilitating the movement of some highly mobile threatened species across the landscape. There is no obvious physical habitat connectivity associated with the development sites.</p> <p>However, functional connectivity exists for flying animals such as birds and bats that use the airspace above the development sites to move between habitats and the planted vegetation is likely used as a foraging or perching resource as part of daily movements. In terms of threatened species, a portion of the Grey-headed Flying-fox population (particularly those from the nearby camps at Centennial Park 5.2 kilometres south east of the development and Gladesville 6.4 kilometres north west of the development) will pass over the development sites as the animal's head to foraging grounds. The Powerful Owl and Little Lorikeet may move through the area and</p>

Biodiversity value	Meaning	Relevant (✓ or NA)	Explain and document potential impacts including additional impacts prescribed under the BC Regulation Attach additional supporting documentation where appropriate
			<p>forage on the planted native vegetation on occasion.</p> <p>This proposal is considered unlikely to have a detrimental effect on habitat connectivity. The habitats in the development sites are not important or unique in the landscape for the Grey-headed Flying-fox, Powerful Owl and Little Lorikeet, and this proposal would have a negligible effect on the current dispersal and movement of this species through the locality.</p>
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	✓	<p>Threatened species in the locality, particularly the Grey-headed Flying-fox, Powerful Owl and Little Lorikeet are powerful flyers capable of covering large distances between habitat patches. Threatened microbats are also capable of covering a somewhat smaller distance. The landscape of the locality in its current form is permeable to these species and this landscape permeability will not be affected by this proposal. The movement patterns of these species are not rigid.</p> <p>No barriers to movement will be introduced and no further fragmentation of natural habitats will occur. The development sites are not part of a recognised movement corridor between breeding grounds, foraging grounds, or other habitats important for the lifecycle of species such as staging points for migration.</p> <p>This proposal would therefore not impact the movement of threatened species.</p>
Flight path integrity 1.4(e) BC Regulation	Degree to which the flight paths of protected animals over a particular site are free from interference	✓	<p>This proposal is located within a predominately urban landscape. However, the development sites are located in an area surrounded by White Bay, Elizabeth Macarthur Bay, Rozelle Bay, Jones Bay, Johnstons Bay, Blackwattle Bay, Tumbalong Bay, Cockle Bay, Darling Harbour and Pyrmont Bay, parts of which are known to contain habitat and species sightings for threatened and migratory birds.</p> <p>It is likely that these migratory bird species will fly over the development sites on occasion, however, considering the current disturbance on the sites, this proposal would be unlikely to increase the current barrier to flight paths and no new barriers will be introduced.</p>

Table 2: Impacts of the proposal on biodiversity values			
Biodiversity value	Meaning	Relevant (✓ or NA)	Explain and document potential impacts including additional impacts prescribed under the BC Regulation Attach additional supporting documentation where appropriate
Water sustainability 1.4(f) BC Regulation	Degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.	NA	No threatened species or threatened ecological communities have been identified on the development sites that are being sustained by water quality, water bodies and hydrological processes.

1. Introduction

1.1 Project background

The planning process for Sydney Metro West is being assessed as a staged infrastructure application under section 5.20 of the *Environment Planning and Assessment Act 1979* (EP&A Act). The Sydney Metro West Concept and major civil construction work for Sydney Metro West between Westmead and The Bays (Stage 1 of the planning approval process for Sydney Metro West), application number SSI-10038, were approved on 11 March 2021.

The approved Sydney Metro West Concept is a new 24-kilometre underground metro rail line that will connect Greater Parramatta with the Sydney central business district (CBD) (refer to **Figure 1-1**). Confirmed stations include Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Sydney CBD. Sydney Metro West will double the rail capacity between Greater Parramatta to Sydney CBD, with a target travel time between the two centres of about 20 minutes.

Sydney Metro (the proponent) is now seeking approval for Stage 2 of the planning approval process (this proposal). This proposal includes all major civil construction work including station excavation and tunnelling between The Bays and Sydney CBD. The location of this proposal, including the underground tunnel and construction sites (referred to as development sites in this request, defined in Section 1.4) for the stations and ancillary infrastructure are shown on **Figure 1-2**.

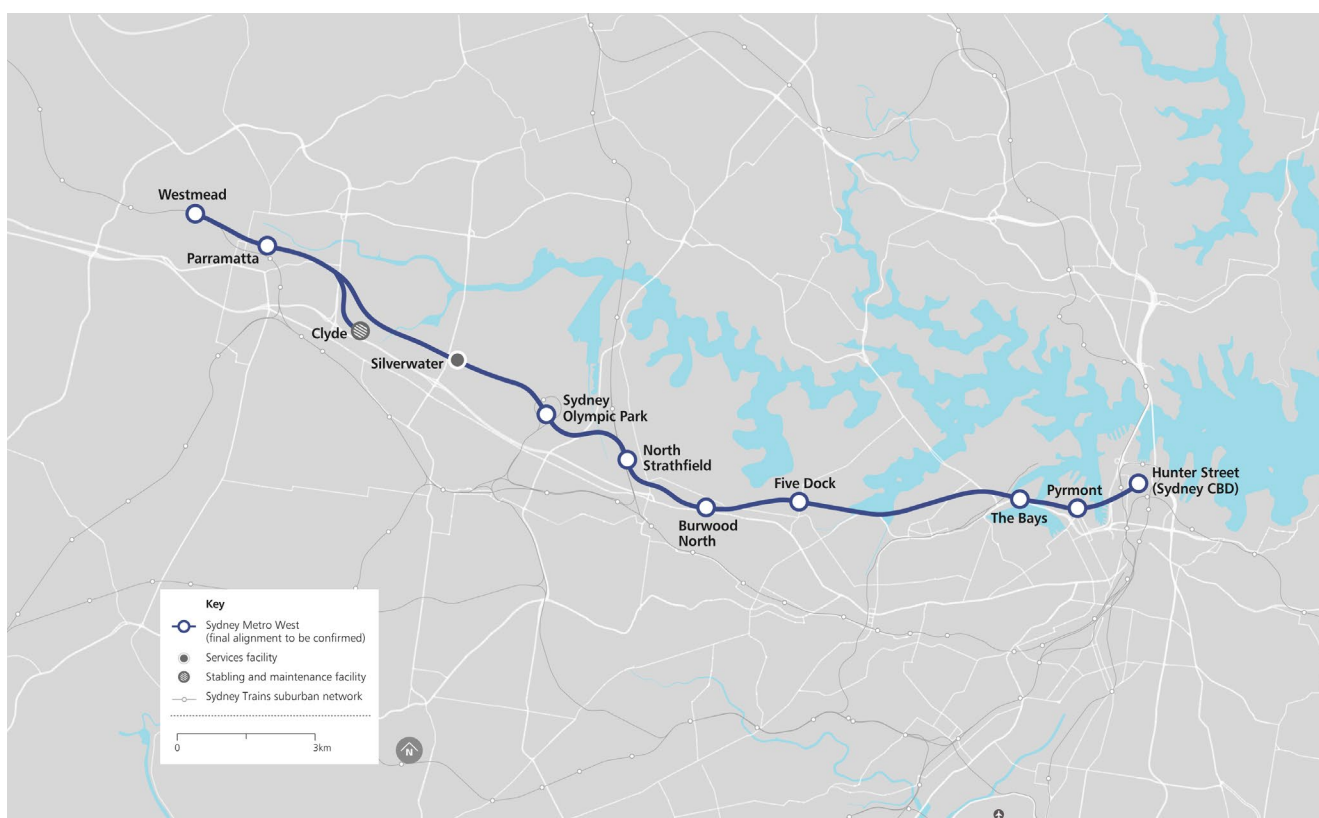


Figure 1-1 Sydney Metro West



Figure 1-2 Location and context of this proposal

1.2 Overview of Proposed Development

This major civil construction work between The Bays and Sydney CBD would involve:

- Enabling works such as demolition of structures, utility adjustments, supply of utilities such as power and water to development sites, and modifications to the existing transport network, including modifications to the road network, public transport and active transport, as may be required.
- Launch of two tunnel boring machines from the approved The Bays station box (included in the Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD (Sydney Metro, 2020a), as amended by the Amendment Report) heading east towards the Sydney CBD.
- Removal of tunnel and other excavated spoil from the tunnel boring machines launch and support site, and other development sites.
- Tunnelling of twin underground running tunnels between The Bays and the Sydney CBD using the tunnel boring machines, with roadheaders and/or rock breakers to excavate other track features including all cross passages, crossovers / turnbacks, sidings or stub tunnels.
- Delivery of precast concrete segments and lining of tunnels.
- Development sites and provision of support services for the tunnel boring machines launch sites and other shafts including adequate power, water, ventilation, material handling areas and other services.
- Excavation of access shafts and station cavern for Pyrmont station with temporary ground support (piling, rock bolting, ground anchor installation, rock excavation and muck away, logistics supply, possible craneage).

- Excavation of access shafts and station cavern for Hunter Street Station (Sydney CBD), with temporary ground support (piling, rock bolting, ground anchor installation, rock excavation and muck away, logistics supply, possible craneage)
- Optional retrieval of tunnel boring machines from the access shaft within the Hunter Street Station (Sydney CBD) eastern development site.

The proposed locations of the development sites for this proposal are displayed on **Figure 1-3** and **Figure 1-4**.

1.3 Purpose of this report

This document supports the State Significant Infrastructure (SSI) application to the Minister for Planning and Public Spaces under section 5.15 of the EP&A Act, to obtain the Secretary's Environmental Assessment Requirements for the Environmental Impact Statement for major civil construction work between The Bays and Sydney CBD.

This report is a Biodiversity Development Assessment Report (BDAR) Waiver Request, which will be submitted to the Department of Planning, Industry and Environment (DPIE) to enable the Department to determine whether the proposal is not likely to have any significant impact on biodiversity values, in accordance with section 7.9(2) of the *Biodiversity Conservation Act 2016* (BC Act) and whether the Biodiversity Offset Scheme should apply if a BDAR is required. The waiver request addresses the impacts on biodiversity values from the proposal to which the Biodiversity Offset Scheme applies under section 6.3 of the BC Act. Biodiversity values are defined in the BC Act and the *Biodiversity Conservation Regulation 2017* (BC Regulation).

1.4 Site location

This proposal, which is subject of this assessment, extends from The Bays to Sydney CBD (refer to **Figure 1-2**). The development sites for this proposal includes Pyrmont Station construction sites and Hunter Street Station (Sydney CBD) construction sites as identified in **Figure 1-3** and **Figure 1-4**, respectively. The proposal also includes the underground tunnel excavation from The Bays to Sydney CBD.

The following areas are discussed throughout the report and are defined as:

- Development sites: this area comprises the limits of the Pyrmont Station and Hunter Street Station (Sydney CBD) construction sites (see **Figure 1-3** and **Figure 1-4**). Also known as the 'subject land' in accordance with the Biodiversity Assessment Method 2020 (BAM)
- Study area: includes the development sites and surrounding area that may be used for site access
- Locality: This is defined as the area within a 5-kilometre radius surrounding the development sites
- Bioregion: The study area is located in the Sydney Basin bioregion and within the Pittwater subregion, as recognised by the Interim Biogeographic Regionalisation for Australia (IBRA).

The Bays

The approved The Bays Station construction site is located along Robert Street, Sommersville Road and 165 Victoria Road in Rozelle. The site is located approximately 5 kilometres west of the Sydney CBD, within the Inner West Local Government Area.

The potential biodiversity impacts of the approved The Bays Station construction site have been assessed as part of the Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD (Sydney Metro, 2020a), as amended by Sydney Metro West Westmead to The Bays and Sydney CBD – Amendment Report (Sydney Metro, 2020b). This proposal includes the proposed use of the eastern and southern part of the approved The Bays Station construction site to launch and support two tunnel boring machines for the drive east to the Hunter Street Station (Sydney CBD) development sites. Therefore, direct impacts on biodiversity associated with this site have been excluded from this assessment. The only aspect of this site considered in this

assessment is the use of the site for tunnel launch and support activities (i.e. transport of spoil from site, from tunnel boring activities, and potential spread of weeds).

Pymont and Hunter Street (Sydney CBD)

The locations of the two development sites for proposed works at Pymont Station (Pymont Station eastern development site and Pymont Station western development site) and the two development sites for proposed works at Hunter Street Station (Sydney CBD) (Hunter Street Station (Sydney CBD) western development site and Hunter Street Station (Sydney CBD) eastern development site) are described in **Table 1-1**. All development sites are located within the City of Sydney Local Government Area.

Table 1-1 Proposed development sites

Proposed development site	Location	Lot and deposited plans
Pymont Station western development site	26-32 Pymont Bridge Road, Pymont	<ul style="list-style-type: none"> Lot 10 in DP 1028280
Pymont Station eastern development site	37-69 Union Street, Pymont	<ul style="list-style-type: none"> Lot 1 in DP 620352 Lot 1 in DP 657429
Hunter Street Station (Sydney CBD) western development site	314-318, 312, 300, 296 George Street, 5, 7-13, 9, 48 Hunter Street, 5010 De Mestre Place, De Mestre Place (public laneway), 28 O'Connell Street, 37 and 33 Bligh Street in Sydney.	<ul style="list-style-type: none"> Lot 1 in DP 438188 Lot CP in SP 596 Lot CP in SP 71068 Lot 1 in DP 211120 Lot 13 in DP 622968 Lot CP in SP 65054 Lot CP in SP 77889 Lot CP in SP 50276 Lot CP in SP 61007 Lot CP in SP 60441 Lot CP in SP 62889 Lot CP in SP 69300 Lot CP in SP 77409 Lot 2 in DP 850895 Lot 1 in DP 1003818 Public Laneway, no title particulars at De Mestre Place, Sydney
Hunter Street Station (Sydney CBD) eastern development site	20-26 and 28-34 O'Connell Street, and 44-48 and 50-58 Hunter Street in Sydney	<ul style="list-style-type: none"> Lot 1 in DP 1107981 Lot 1 in DP 59871 Lot 1 in DP 217112 Lot 1 in DP 536538 Lot 1 in DP 626651 SP 58859, SP 61852, SP 61922, SP 61923, SP 63146, SP 63147, SP7 4004, SP 87437

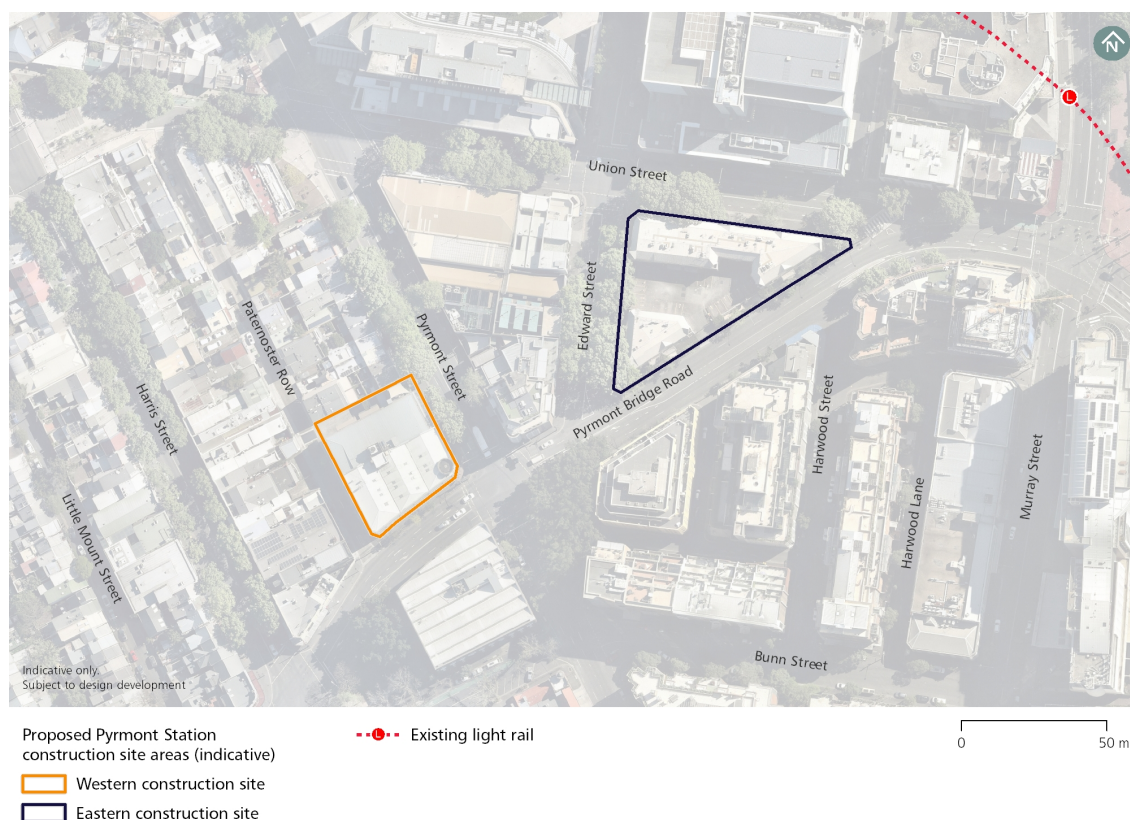


Figure 1-3 Pymont Station construction sites, which comprise the Pymont Station development site for this request

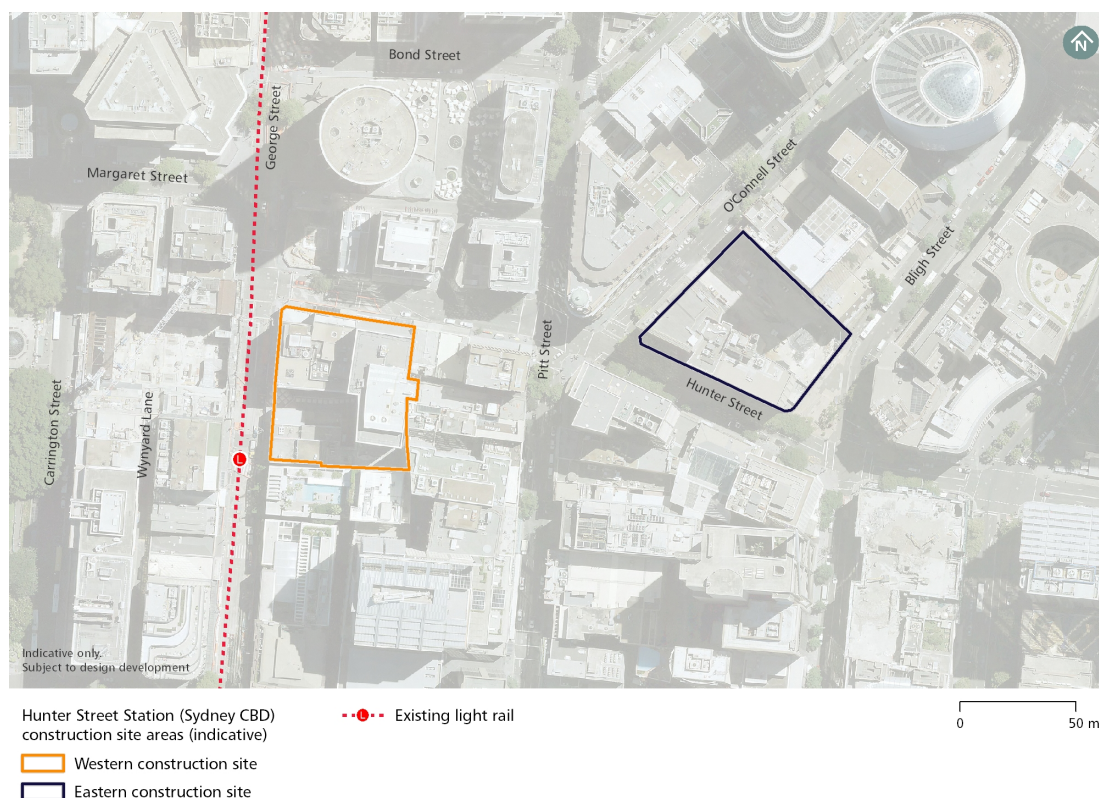


Figure 1-4 Hunter Street Station (Sydney CBD) construction sites, which comprise the Hunter Street Station (Sydney CBD) development site for this request

2. Methodology

2.1 Personnel

This biodiversity assessment was undertaken and prepared by suitably qualified and experienced ecologists (refer to **Table 2-1**).

Table 2-1: Personnel, roles, and experience

Name	Role	Qualifications	Experience
Chris Thomson	Principal Ecologist – Technical review	Graduate Certificate in Natural Resources Bachelor of Applied Science Accredited under Section 6.10 of the BC ACT as a Biodiversity Assessment Method Assessor (No. BAAS18058)	25 years' experience in ecological assessment of major infrastructure projects in NSW.
Tim Maher	Ecologist – Report lead	Bachelor of Advanced Science (Biology) Master of Research (Plant Ecology)	3 years' experience in ecological assessment of major infrastructure projects in NSW.
Julia Bayada	Ecologist – Report assistant	Bachelor of Environmental Science and Management (Ecosystems and Biodiversity)	2 years' experience as a project officer working for government and 1 years' experience in ecological assessment of major infrastructure projects in NSW.

2.2 Background research

A background review of existing information was undertaken to identify the existing environment of the study area within a search area of five kilometres by five kilometres around the development sites. The review focussed on database searches, relevant reports pertaining to the study area, property boundaries, and relevant GIS layers. The review was used to prepare a list of threatened species, populations, and communities as well as important habitat for migratory species, to undertake a likelihood of occurrence assessment in the development sites.

The following information and database searches were reviewed as part of this study:

- Sydney Metro West Environmental Impact Statement – Westmead to The Bays and Sydney CBD, Technical Paper 10: BDAR (Jacobs 2020)
- BioNet Atlas of NSW Wildlife (BioNet) and Threatened Biodiversity Data Collection (TBDC) (accessed 18 March 2021)
- BioNet Vegetation Classification database and threatened species profiles (accessed 18 March 2021)
- Department of Agriculture, Water and the Environment (DoAWE) Protected Matters Search Tool (PMST) (accessed 18 March 2021)
- Register of Declared Areas of Outstanding Biodiversity Value (AOBV) (accessed 18 March 2021)
- NSW Biodiversity Values Map and Threshold Tool (accessed 18 March 2021)
- Important Area Maps
- NSW DPI WeedWise (accessed 18 March 2021)
- Regional vegetation mapping of the *Native Vegetation of the Sydney Metropolitan Area - Version 3.1* (VIS_ID 4489) (State Government of NSW and Office of Environment and Heritage 2016).

Preliminary and provisional determinations to list species and ecological communities as threatened under the BC Act were viewed on the NSW Threatened Species Scientific Committee website. There were no preliminary or provisional listings of relevance to this proposal.

The annual Final Priority Assessment List of nominated species and ecological communities that have been approved for assessment by the Minister responsible for the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), was reviewed. None of the nominated species and ecological communities on this list are of relevance to this proposal.

2.2.1 Habitat assessment

A habitat assessment was undertaken within the study area on the identified list of threatened flora and fauna species known or predicted to occur in the Pittwater IBRA subregion that have been recorded within a five-kilometre radius of both the Pyrmont Station and Hunter Street Station (Sydney CBD) development sites. (see **Appendix A** for the habitat assessment results). This list was identified from databases and literature as well as past surveys. The habitat assessment compared the preferred habitat features for these species with the type and quality of the habitats identified in the study area. This habitat assessment was completed to assess the likelihood of the species being present in the study area (i.e. subject species). The criteria used in the habitat assessment are detailed in **Table 2-2**. The results of the habitat assessment are provided in **Appendix A**.

Table 2-2: Likelihood of occurrence classification and criteria

Likelihood	Criteria
Recorded	The species was observed in the study area during the field survey.
High	It is highly likely that a species inhabits the study area and is dependent on identified suitable habitat (i.e. for breeding or important life cycle periods such as winter flowering resources), recent records in the locality (five kilometres) are numerous and/or widespread and is known or likely to maintain resident populations in the study area. Also includes species known or likely to visit the study area during regular seasonal movements or migration.
Moderate	Potential habitat is present in the study area. Species unlikely to maintain sedentary populations, however, may seasonally use resources within the study area opportunistically or during migration. The species is unlikely to be dependent (i.e. for breeding or important life cycle periods such as winter flowering resources) on habitat within the study area, or habitat is in a modified or degraded state. May include cryptic flora species that have little or no records in the locality though can occur in disturbed areas.
Low	It is unlikely that the species inhabits the study area and has not been recorded recently in the locality (5 kilometres). It may be an occasional visitor, but habitat similar to the study area is widely distributed in the local area, meaning that the species is not dependent (i.e. for breeding or important life cycle periods such as winter flowering resources) on available habitat. Specific habitat features are not present in the study area.
Unlikely	Suitable habitat is absent from the study area.

2.2.2 Site inspection

A plot-based vegetation survey of the study area was not undertaken as there are no Plant Community Types (PCTs) present in the development sites and hence vegetation zones could not be established. A vegetation integrity assessment was not undertaken.

Targeted threatened species surveys were not undertaken for preparation of this report. Instead, threatened species presence was based on database records, and a visual assessment of habitat features within the development sites carried out during a site visit on 24 May 2021. Threatened species identified from recent database records were assessed to determine the likelihood of occurrence within the locality using the criteria represented in **Table 2-2**.

2.2.3 Limitations

Threatened species records are often subject to geographical error and may not have been recorded where the point exists. For example, BioNet records of threatened species can be submitted by any member of the public and hence cannot be confidently verified. These information sources typically provide a preliminary assessment of what is likely to be on a site to direct the survey methods of onsite investigations.

3. Existing environment

3.1 Landscape context

A summary of landscape context is provided below in **Table 3-1**.

Table 3-1: Summary of landscape context

Landscape feature	Details
IBRA bioregions and IBRA subregions	The study area is located within the Pittwater subregion of the Sydney Basin Bioregion as defined by Thackway and Cresswell (1995).
Mitchell landscapes	The development sites are within the Port Jackson Basin Mitchell Landscape as mapped by the NSW National Parks and Wildlife Service (2003) and described by the NSW Department of Environment and Climate Change (2008).
Rivers, streams and estuaries	The development sites are located entirely within the Sydney Metro catchment (Port Jackson). The development sites are surrounded by White Bay, Elizabeth Macarthur Bay, Rozelle Bay, Jones Bay, Johnstons Bay, Blackwattle Bay, Tumbalong Bay, Cockle Bay, Darling Harbour and Pyrmont Bay. However, there are no rivers, streams and estuaries present in the development sites.
Wetlands	There are no important wetlands (SEPP Coastal Management or Ramsar sites) present in the development sites or within a 1,500-metre buffer of the development sites.
Connectivity of different areas of habitat	The development sites are located within a highly modified landscape where fauna habitats have been largely cleared. The habitats that do remain are fragmented and highly isolated. Planted urban vegetation can provide a role in facilitating the movement of threatened species across the landscape. However, there is no obvious physical habitat connectivity associated with the development sites, so a discreet corridor cannot be drawn on a map. However, flying animals such as birds and bats use the airspace to move between habitats and the planted vegetation has the potential to be used as a foraging or perching resource as part of regular movements.
Areas of geological significance and soil hazard features	There are no areas of geological significance (e.g. karst, caves, crevices, cliffs) associated with the development sites or within a 1,500-metre buffer of the development sites.
Areas of outstanding biodiversity value	There are no areas of outstanding biodiversity value within the development sites.
Native vegetation cover	Under the BAM, native vegetation has the same meaning as in section 1.6 of the BC Act. Under section 1.6 of the BC Act, native vegetation has the same meaning as in Part 5A of the <i>Local Land Services Act 2013</i> (LLS Act). Part 5A section 60B of the LLS Act outlines the following meaning of "native vegetation": For the purposes of this Part, native vegetation means any of the following types of plants native to New South Wales: a) trees (including any sapling or shrub or any scrub), b) understorey plants, c) groundcover (being any type of herbaceous vegetation), d) plants occurring in a wetland.

Landscape feature	Details
	<p>The proposal would require the removal of seven trees that are native to New South Wales located within or adjacent to the Pymont Station development sites. However, this vegetation cannot be assigned to a PCT for the purposes of the BAM.</p> <p>Percent native vegetation cover within the 1,500-metre landscape buffer has not been calculated, however Figure 3-1 shows the extent of regional vegetation mapping. Considering the very low cover of mapped PCTs, the percent native vegetation cover is likely to score the lowest category of 0-10%.</p>
Patch size	<p>Under the BAM a patch size is assigned to each vegetation zone. A vegetation zone means an area of native vegetation on the subject land (development sites) that is the same PCT and has a similar broad condition state.</p> <p>The development sites do not contain any naturally occurring native vegetation, woody or non-woody, that can be assigned to a PCT (see Section 4). As there are no PCTs on the development sites there are no vegetation zones for which a patch size can be determined.</p>

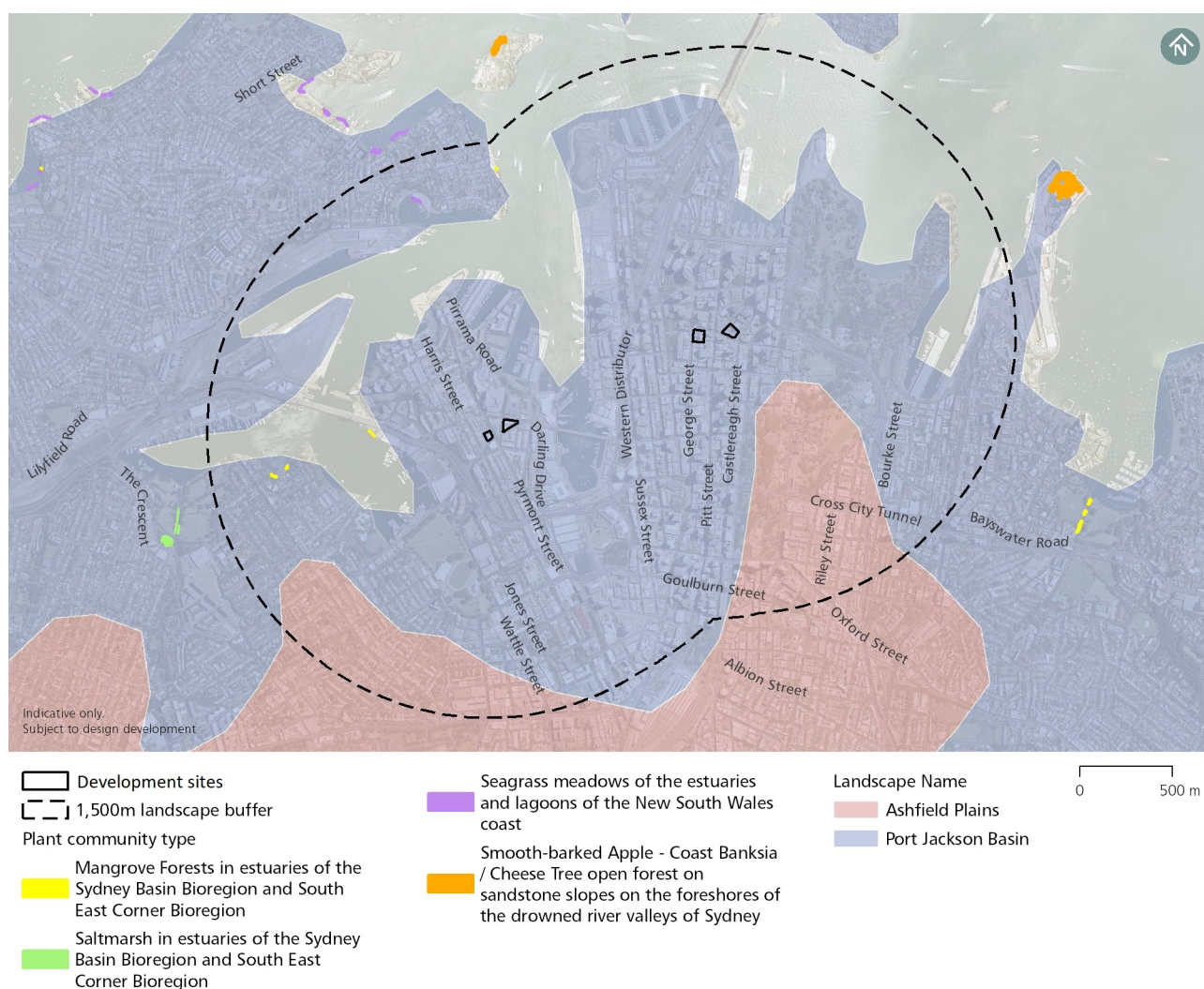


Figure 3-1 Location map with a 1,500-metre landscape buffer centred on the development sites

3.2 Threatened flora species

Threatened flora BioNet records identified within a 1.5 kilometre x 1.5 kilometre search area centred around the development sites are represented in **Table 3-2**. The threatened flora species listed in **Table 3-2** have been assessed by considering their likelihood of occurrence in the study area, in accordance with the classification and criteria described in **Table 2-2**, and the habitat requirements of each species, suitable habitat present within the study area and recent BioNet records nearby or within the study area.

Table 3-2: Threatened flora BioNet records within a 1.5 kilometre x 1.5 kilometre search area centred around the Pyrmont Station and Hunter Street Station (Sydney CBD) development sites

Scientific Name	Common Name	Status		BioNet Records	Likelihood of Occurrence
		BC Act	EPBC Act		
<i>Acacia terminalis</i> subsp. <i>terminalis</i>	Sunshine Wattle	E	E	310	Unlikely
<i>Eucalyptus pulverulenta</i>	Silver-leafed Gum	V	V	1	Unlikely
<i>Persoonia hirsuta</i>	Hairy Geebung	E	E	3	Unlikely
<i>Rhodamnia rubescens</i>	Scrub Turpentine	CE	-	1	Unlikely
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E	V	66	Unlikely

(1) BC Act Status: V = Vulnerable species E = Endangered species CE = Critically Endangered species

(2) EPBC Act Status: V = Vulnerable species E = Endangered species

3.3 Threatened fauna species

Threatened fauna BioNet records identified within a 1.5 kilometre x 1.5 kilometre search area centred around the development sites are represented in **Table 3-3**. The threatened fauna species listed in **Table 3-3** have been assessed in accordance with the likelihood of occurrence classification and criteria (**Table 2-2**), habitat requirements of each species, suitable habitat present within the study area and recent BioNet records nearby or within the study area.

Table 3-3: Threatened fauna BioNet records within a 1.5 kilometre x 1.5 kilometre search area centred around the Pyrmont Station and Hunter Street Station (Sydney CBD) development sites

Scientific Name	Common Name	Status		BioNet Records	Likelihood of Occurrence
		BC Act	EPBC Act		
Birds					
<i>Artamus cyanopterus</i>	Dusky Woodswallow	V	-	3	Low
<i>Burhinus grallarius</i>	Bush Stone-curlew	E	-	5	Unlikely
<i>Erythrotriorchis radiatus</i>	Red Goshawk	CE	V	1	Unlikely
<i>Haliaeetus leucogaster</i>	White-bellied Sea Eagle	V	-	37	Low
<i>Lathamus discolor</i>	Swift Parrot	E	CE	8	Unlikely
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	1	Unlikely
Mammals					
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V	-	95	Low

Scientific Name	Common Name	Status		BioNet Records	Likelihood of Occurrence
		BC Act	EPBC Act		
<i>Myotis macropus</i>	Southern Myotis	V	-	49	Low
<i>Ninox strenua</i>	Powerful Owl	V	-	237	Low
<i>Phascolarctos cinereus</i>	Koala	V	V	4	Unlikely
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	1,467	Moderate
<i>Ptilinopus superbus</i>	Superb Fruit-Dove	V	-	8	Low
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V	-	5	Low

Note: some species such as whales, sharks, fish, turtles, seals, wader birds, wetland birds and marine birds were omitted from this assessment as no marine or wetland habitat for these species is present in the development sites.

(1) BC Act Status: V = Vulnerable species E = Endangered species CE = Critically Endangered species

(2) EPBC Act Status: V = Vulnerable species CE = Critically Endangered species

3.4 Native vegetation and vegetation integrity

Pymont Station development sites

The Pymont Station development sites are characterised by landscape plantings, buildings, and pathways. There is some native vegetation (according to the definition of native vegetation provided in the LLS Act) that has been planted in the development sites (refer to **Figure 3-2**). The typical vegetation and type of habitats present in the Pymont Station development sites are illustrated in **Figure 3-3**. However, this native vegetation cannot be assigned to a PCT as identified in the DPIE BioNet Vegetation Classification. As such, the vegetation cannot be allocated to vegetation zones. The habitat types in the development sites and study area are best described as miscellaneous ecosystems as identified by the DPIE, specifically: Highly disturbed areas with no or limited native vegetation.

Six planted native trees occur within the Pymont Station development sites in garden beds, amongst concrete. Three of these planted native trees are *Syzygium austral* (Brush Cherry) individuals that occur within the Pymont Station western development site (Refer to **Figure 3-4**). The other three are adjacent to the footpath north of Pymont Bridge Road (refer to **Figure 3-8**) within the Pymont Station eastern development site and consist of the following species:

- Two *Syzygium austral* (Brush Cherry)
- One *Melaleuca citrina* (Crimson Bottlebrush).

All six native trees identified within the Pymont Station development sites would be removed as part of this proposal.

As the native vegetation cannot be assigned to a PCT, it is not possible to assess vegetation integrity by undertaking an assessment of the composition, structure, or function of the vegetation according to the field methods outlined in Section 5.3 of the BAM. A vegetation integrity score cannot be determined in accordance with Section 5.4 of the BAM as there are no PCTs that would be impacted.

The landscape plantings within the Pymont Station development sites are dominated by exotic species (according to the definition of native vegetation provided in the LLS Act), including:

- *Polyspora axillaris* (Fried Egg Tree)
- *Abelia x grandiflora* (Glossy Abelia)
- *Murraya paniculata* (Orange Jasmine)
- *Liriope muscari* (Lily turf)
- *Viburnum tinus* (Laurustinus)
- *Camphor laurel* (Camphor Tree)
- *Celtis Australis* (European Nettle Tree)
- *Magnolia figo* (Port Wine Magnolia)
- *Clivia miniata* (Clivia)
- *Cenchrus setaceus* (Fountain grass)
- *Agave attenuata* (Foxtail agave)
- *Yucca* sp.

All exotic landscape plantings occurring within the Pymont Station development sites are proposed to be removed.

Immediately adjacent to the Pymont Station development sites, some street tree plantings would need to be removed (beyond the Pymont Station development sites boundary) to allow for proposed truck movements turning into and exiting the site or for mobilisation of large equipment adjacent to the site. Five exotic trees and one native tree have been identified for removal next to the Pymont Station development sites (refer to **Figure 3-2**). This includes:

- Three trees along Pymont Bridge Road adjacent to the Pymont Station western development site, including: one exotic *Populus alba* var. *pyramidalis* (Silver-leaf Poplar) tree, one exotic *Robinia pseudoacacia* (Black locust) (refer **Figure 3-6**) and one native *Corymbia maculata* (Spotted gum) tree (refer **Figure 3-5**).
- Three trees, the first, second and third tree along Union Street from the corner of Edward and Union Street next to the Pymont Station eastern development site (all *Platanus x acerifolia* (London Plane))(refer **Figure 3-7**) .

All remaining street trees occurring adjacent to the Pymont Station development sites are exotic species and are proposed to be retained along Pymont Street, Paternoster Row, Edward Street and Pymont Bridge Road. Some tree trimming may be required to provide appropriate clearance for trucks or large equipment.



Figure 3-2 Biodiversity values impacted by the Pyrmont Station development sites



Figure 3-3 Typical vegetation and type of habitats present in the Pyrmont Station development sites.



Figure 3-4 Three native trees (*Syzygium austral* (Brush Cherry)) proposed to be removed in the Pyrmont Station western development site.



Figure 3-5 One native tree (*Corymbia maculata* (Spotted gum)) proposed to be removed adjacent Pymont Station western development site north of Pymont Bridge Road



Figure 3-6 Two exotic tree plantings (*Populus alba* var. *pyramidalis* (Silver-leaf Poplar) tree, *Robinia pseudoacacia* (Black locust)) proposed to be removed north of Pymont Bridge Road in the western Pymont Station development site



Figure 3-7 Three exotic trees (*Platanus x acerifolia* (London Plane)) to be removed south of Union Street adjacent to the Pymont Station eastern development site.



Figure 3-8 Three native trees proposed to be removed in the Pymont Station eastern development site north of Pymont Bridge Road (two *Syzygium austral* (Brush Cherry) and one *Melaleuca citrina* (Crimson Bottlebrush)).

Hunter Street Station (Sydney CBD) development site

The Hunter Street Station (Sydney CBD) development site is characterised by buildings and pathways. There is no native vegetation (according to the definition of native vegetation provided in the LLS Act) within the Hunter Street Station (Sydney CBD) development site.

Immediately next to the proposed Hunter Street Station (Sydney CBD) development site, four street tree plantings would need to be removed (beyond the Hunter Street Station (Sydney CBD) development site boundary) to allow for the turning of trucks associated with proposed truck movements into and exiting the site or for mobilisation of large equipment adjacent to the site. The locations of these exotic trees identified for removal are shown on **Figure 3-9** and are as follows:

- One *Celtis australis* (European Nettle Tree) tree adjacent to the Hunter Street Station (Sydney CBD) western development site located to the south of Hunter Street (refer to **Figure 3-10**).
- One *Platanus x acerifolia* (London Plane) tree and one *Populus alba* var. *pyramidalis* (Silver leaf Poplar) tree located adjacent to the Hunter Street Station (Sydney CBD) eastern development site, on O'Connell Street near the intersection with Hunter St (refer to **Figure 3-12**
- One *Platanus x acerifolia* (London Plane) tree located adjacent to the Hunter Street Station (Sydney CBD) eastern development site, on Hunter Street, near the intersection with O'Connell Street (refer to **Figure 3-11**).

Potential tree trimming may also be required to establish hoardings along Hunter Street within the Hunter Street Station (Sydney CBD) development sites. However, all trees adjacent the Hunter Street Station (Sydney CBD) development sites are exotic species, and, other than those trees mentioned above, all remaining trees would be retained along Hunter Street, O'Connell Street and George Street.



Figure 3-9 Biodiversity values impacts associated with the Hunter Street Station (Sydney CBD) development sites



Figure 3-10 One exotic tree (*Celtis australis*) to be removed south of Hunter St, adjacent to the Hunter Street Station (Sydney CBD) western development site



Figure 3-11 One exotic *Platanus x acerifolia* tree to be removed north of Hunter Street, adjacent to the Hunter Street Station (Sydney CBD) eastern development site

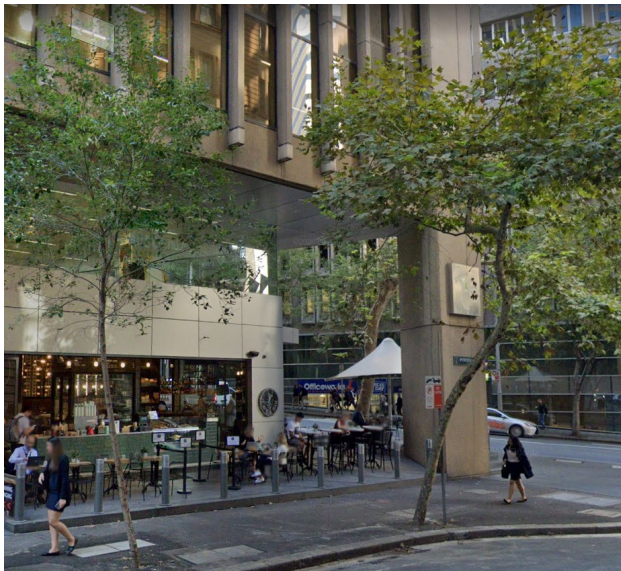


Figure 3-12 Two exotic trees (*Platanus x acerifolia*, *Populus alba* var. *pyramidalis*) to be removed on O'Connell Street adjacent the Hunter Street Station (Sydney CBD) eastern development site

3.5 Threatened microbats within human-made structures to be demolished

As outlined in the document: *How to apply for a biodiversity development assessment report waiver for Major Project Application* (DPIE 2019), human-made structures may provide habitat for threatened species, particularly microbats. Therefore, as the proposal would include demolition of buildings and other human-made structures, this section has been prepared to document the results of the desktop assessment and visual assessment carried out during the site visit.

Records of threatened species of microbats were obtained from the BioNet Atlas for the project locality, (accessed 18 March 2021). Records for threatened species listed pursuant to the EPBC Act that could potentially occur in the project locality were obtained from the PMST (accessed 18 March 2021). A list of the cave-dwelling bat species known or expected from the locality based on review of these records is presented in **Table 3-4**.

Table 3-4 List of threatened cave-dwelling microbats expected in the Pyrmont and Sydney CBD locality

Scientific Name	Common Name	Status		Records	Likelihood of Occurrence
		BC Act	EPBC Act		
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	PMST, BioNet – 2	Low
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V	-	BioNet – 10	Low
<i>Miniopterus australis</i>	Little Bent-winged Bat	V	-	BioNet – 9	Low
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V	-	BioNet – 95	Low
<i>Myotis macropus</i>	Southern Myotis	V	-	BioNet – 49	Low
<i>Saccolaimus flaviventris</i> *	Yellow-bellied Sheath-tail-bat	V	-	BioNet – 5	Low
<i>Scoteanax rueppellii</i> *	Greater Broad-nosed Bat	V	-	BioNet – 2	Low

* Predominantly tree-hollow roosting, although have been recorded in caves.

In Australia there is ample evidence of cave-dwelling microbats roosting in artificial created structures such as culverts, bridges, and mines shafts. There is also evidence of roosting in timber and iron roofs (Law and Chidel 2007, Sanderson *et al* 2010) and steel structures (North West Ecological Services 2012). However, in all cases where bats were found roosting in artificial structures the site was in proximity to large expanses of natural vegetation and in derelict or disused state. The structures proposed to be demolished at each of the development sites are not in proximity to large expanses of natural vegetation and are not in a derelict or disused state.

3.5.1 Pyrmont Station development site

The existing buildings to be demolished at the Pyrmont Station development site are detailed in **Table 3-5**. External illustrations of the existing buildings have been obtained from street-level Google Maps imagery captured between March 2020 to December 2020 and are represented in Photos 1 to 4. The accuracy of the street-level Google Maps imagery of the buildings illustrated in Photos 1 to 4 was confirmed during an onsite visual assessment.

Table 3-5 Building demolition schedule at Pyrmont Station development site

Lot	Plan	Current Land Use / Zoning	Address
10	DP 1028280	Residential	26-32 Pyrmont Bridge Rd, Pyrmont
1	DP 620352 and DP 657429	Residential	37-69 Union St, Pyrmont



Photo 1. Exterior view of 26-32 Pyrmont Bridge Rd, Pyrmont.



Photo 2. Exterior view of 26-32 Pyrmont Bridge Rd, Pyrmont.

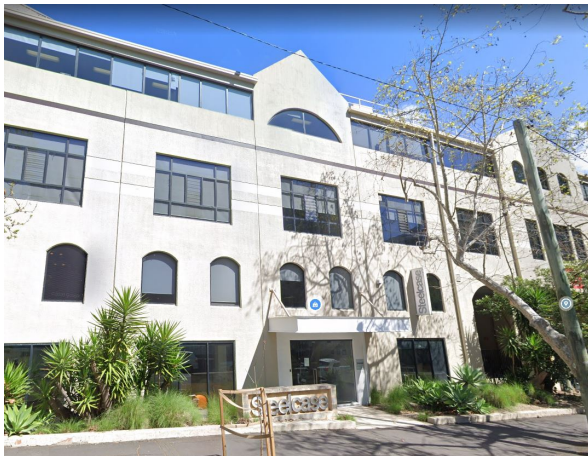


Photo 3. Exterior view of 37-69 Union St, Pyrmont



Photo 4. Exterior view of 37-69 Union St, Pyrmont

3.5.2 Hunter Street Station (Sydney CBD) development site

The existing buildings to be demolished at the Hunter Street Station (Sydney CBD) development site are detailed in **Table 3-6**. External illustrations of the existing buildings have been obtained from street-level Google Maps imagery captured between March 2020 to December 2020 and are represented in Photos 5 to 12. The accuracy of the street-level Google Maps imagery of the buildings illustrated in Photos 5 to 12 was confirmed during an onsite visual assessment.

Table 3-6 Demolition schedule at Hunter Street Station (Sydney CBD) development sites

Lot	Plan	Current Land Use / Zoning	Address
13	DP 622968	Business	314-318 George St, Sydney
CP	SP 65054 and SP 77889	Business	5 Hunter St, Sydney
Null	SP58859, SP61852, SP61922, SP61923, SP63146, SP63147, SP74004, SP87437	Business	50-58 Hunter St, Sydney
1	DP 211120	Business	312 George St, Sydney
CP	SP 596	Business	298-302 George St, Sydney
1 and 2	DP 59871 and DP 217112	Business	44-48 Hunter St, Sydney
1	DP 1003818	Business	5010 De Mestre Place, Sydney
CP and 2	SP 50276, SP61007, SP60441, SP62889, SP69300, SP77409 and DP 1250819	Business	7-13 Hunter St, Sydney and 320 George St, Sydney
2	DP 850895	Metropolitan Centre	9-13 Hunter St, Sydney
1	DP1107981, DP217112 and DP536538	Business	28-34 O'Connell St, Sydney
CP	SP 71068	Business	304-308 George St, Sydney

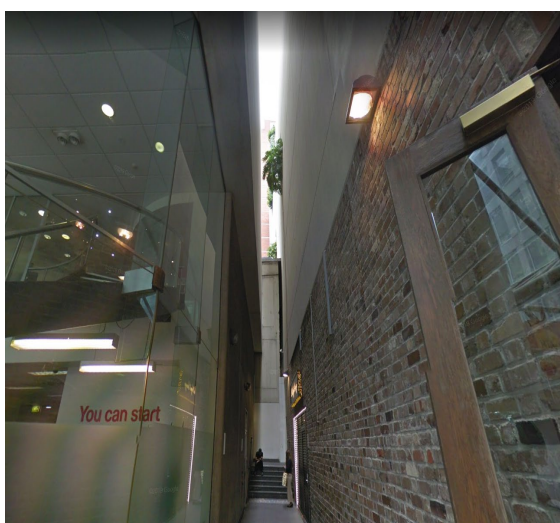


Photo 5. Exterior view of 314-318 George St, Sydney

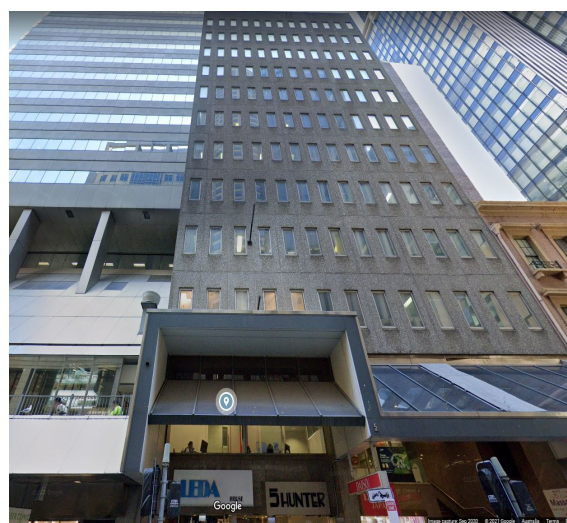


Photo 6. Exterior view of 5 Hunter St and 296 George St, Sydney



Photo 7. Exterior view of 44-48 and 50-58 Hunter St, Sydney



Photo 8. Exterior view of 20-26 O'Connell St, Sydney



Photo 9. Exterior view of 312 George St, Sydney



Photo 10. Exterior view of 298-302 George St, Sydney

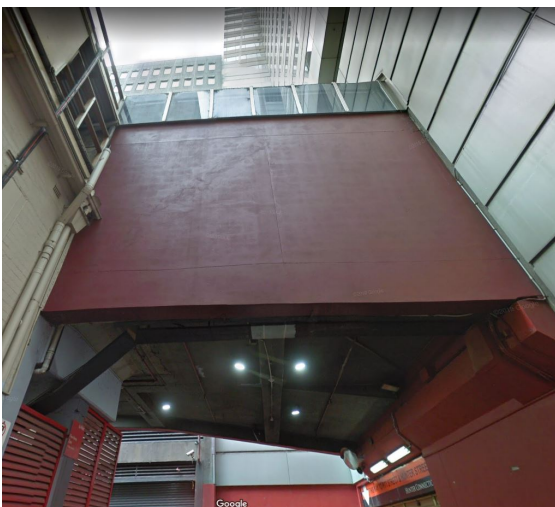


Photo 11. Exterior view of 5010 De Mestre Place, Sydney

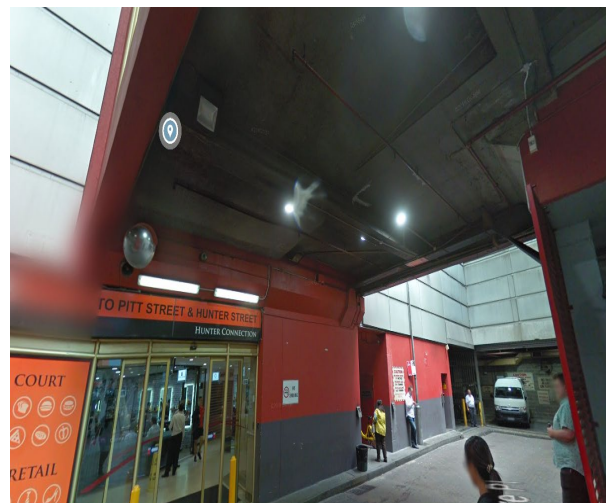


Photo 12. Exterior view of 7-13 Hunter St, Sydney



Photo 13. Exterior view of 7-13 Hunter St and 304-308 George St, Sydney

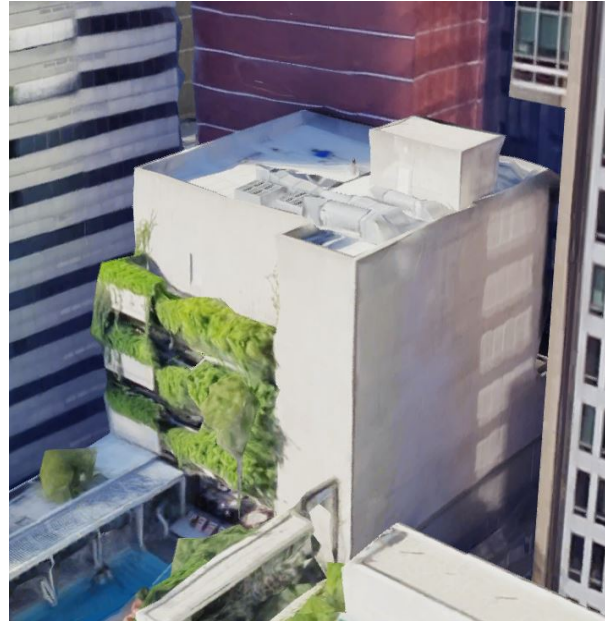


Photo 14. Exterior view of 9-13 Hunter St and 320 George St, Sydney

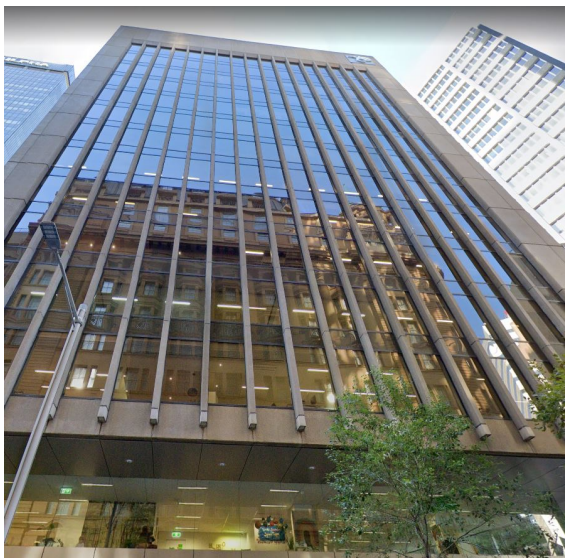


Photo 15. Exterior view of 28-34 O'Connell St, Sydney

An assessment of the existing human-made structures proposed to be removed by this proposal at the Pyrmont Station and Hunter Street Station (Sydney CBD) development sites to identify potential suitable roosting habitat for threatened microbats was carried out during an onsite visual assessment by an ecologist. These structures do not appear to be old or derelict and, as such, are unlikely to offer potential suitable roosting habitat for threatened microbats. While it is possible that these structures may provide potential roosting habitat in the future, the structures appear to be in good external condition with no openings that threatened microbats could regularly access and the development sites are not in proximity to large expanses of natural vegetation. In addition, no other potential microbat roosting habitat, such as tunnels, bridges, or culverts are present within the Pyrmont Station and Hunter Street Station (Sydney CBD) development sites.

Overall, this assessment concludes that the human-made structures do not appear to offer suitable roosting habitat for threatened microbats.

3.5.3 Unexpected microbat finds procedure

As no roosting microbats have been confirmed, there are no specific management measures required at this stage to avoid potential impacts. As a safeguard it is recommended that future demolition crews on the project are inducted to identify the possibility that roosting microbats could be encountered during the work at any stage of the demolition. In the event that a bat roost is identified during any part of the demolition works then an unexpected finds procedure should apply. The procedure is illustrated in **Figure 3-13** and involves stopping work and consulting with an appropriately experienced bat ecologist to provide advice on work methods and timing to minimise impacts on the bats.

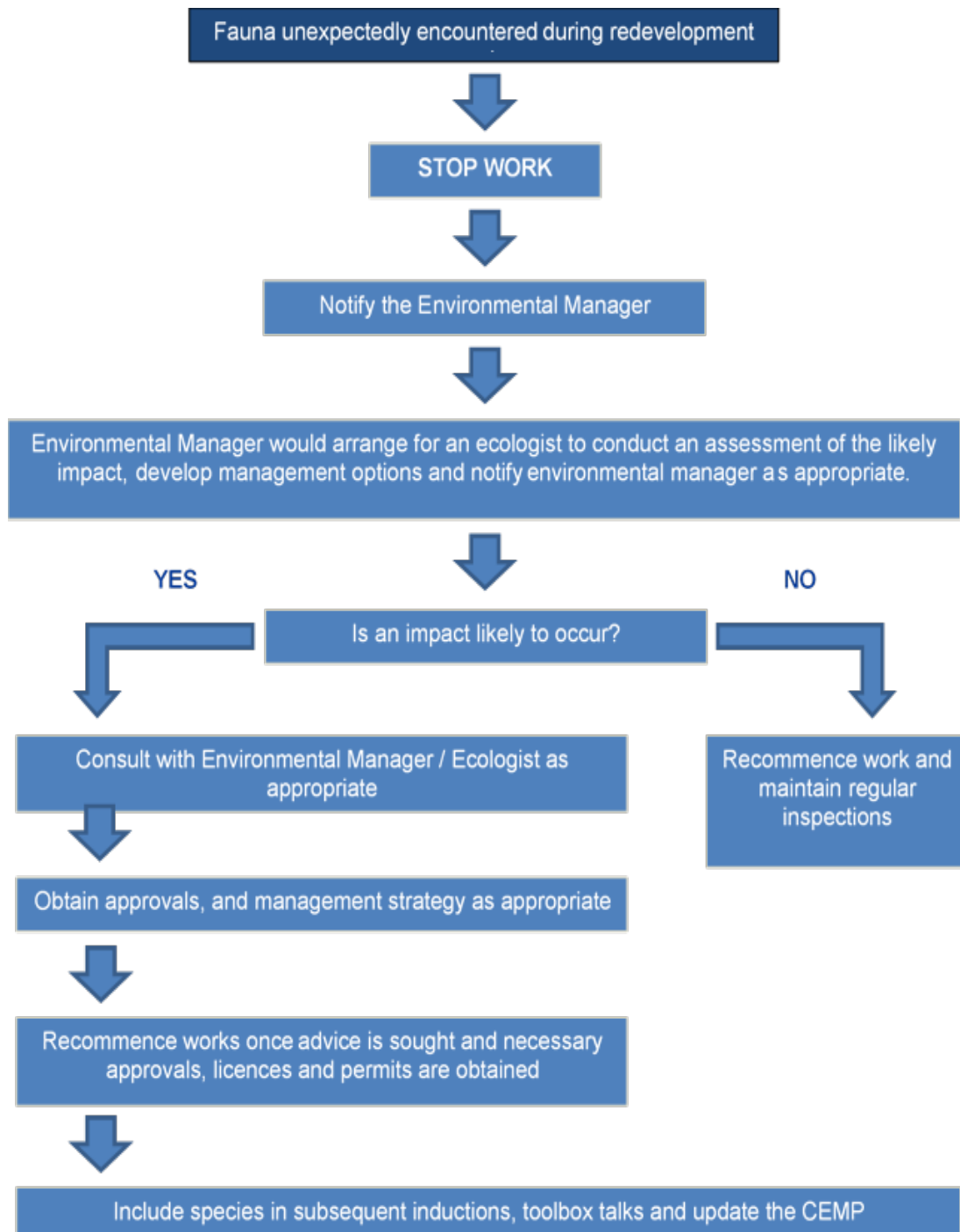


Figure 3-13 Unexpected microbat finds procedure

3.6 Threatened ecological communities

There are no threatened ecological communities located in or directly adjacent to the Pyrmont Station or Hunter Street Station (Sydney CBD) development sites.

3.7 Habitat suitability for threatened species

3.7.1 Ecosystem-credit species

Ecosystem-credit species are those threatened species where the likelihood of occurrence of a species or elements of the species' habitat can be predicted by vegetation surrogates and landscape features, or for which targeted survey has a low probability of detection. Ecosystem-credit threatened species must be assessed in conjunction with information about site context of the development sites (Section 4.3 and Subsection 5.3.2 of the BAM), PCTs and vegetation integrity attributes (Chapter 5 of the BAM), and data from the TBDC (Section 6.1 of the BAM).

During the assessment of biodiversity values as required by Chapter 5 of the BAM, the Pyrmont Station and Hunter Street Station (Sydney CBD) development sites were found to contain only some planted native vegetation, exotic species, and weeds. This vegetation is not a naturally occurring ecosystem and cannot be assigned to a PCT. As a result, if the BAM were applied to the assessment there would be no ecosystem credit species predicted to occur on the Pyrmont Station and Hunter Street Station (Sydney CBD) development sites since there is no suitable habitat that can be used as a habitat surrogate. Ecosystem-credit species would not be considered any further as there are no PCTs present on either development sites, hence ecosystem-credits could not be created.

There are few ecosystem-credit species that may use the planted native vegetation on the Pyrmont Station development site, however it is unlikely given the small size of the trees, the noise disturbance from the road and the isolation from other habitat patches. The Little Lorikeet may on rare occasion visit the trees to forage or for temporary refuge. The Grey-headed Flying-fox may also, on rare occasion, visit the trees to forage. Although, this species is a resident of the Sydney area, the better quality foraging habitat available surrounding the Pyrmont development site makes visitation of the planted native vegetation on the Pyrmont development site unlikely. The Powerful Owl is also a resident of the Sydney area and may move through the area and forage on the planted native vegetation on occasion. The Large Bent-winged Bat, Southern Myotis and Yellow-bellied Sheath-tail-bat have been recorded within a 1.5-kilometre radius centred around the development sites, however no high-quality habitat or suitable roost habitat is present within the development sites.

3.7.2 Species-credit species

Species-credit species are those species for which the likelihood of occurrence, or elements of suitable habitat, cannot be confidently predicted by vegetation surrogates or landscape features. Species-credit species can be reliably detected by survey. If the BAM was applied to this proposal, species-credit species would be assessed in conjunction with information collected about the site context of the subject land (Section 4.3 of the BAM), on PCTs and vegetation integrity attributes in (Section 5 of the BAM), and data obtained from the BioNet Threatened Biodiversity Data Collection (TBDC) (Section 6.1 of the BAM).

The Pyrmont Station development sites would impact seven native trees as native vegetation. However, this native vegetation cannot be assigned to a PCT. The habitat types in the development sites and study area are best described as miscellaneous ecosystems in the BioNet Vegetation Classification database, specifically referred to as "Highly disturbed areas with no or limited native vegetation". As there are no PCTs on the development sites the BAM calculator would not return a list of species-credit species for assessment.

However, there are some species-credit species that can use highly disturbed areas with no or limited native vegetation. Additionally, the TBDC was examined to retrieve a list of species-credit species that are known to use the miscellaneous plantings present within the development sites and have been previously recorded in the locality (5-kilometre radius centred on the development sites). Based on this information, the only species that may be applicable to this proposal includes:

- White-bellied Sea-Eagle (breeding)
- Swift Parrot (breeding)
- Eastern Osprey (breeding)
- Powerful Owl (breeding)
- Green and Golden Bell Frog
- Little Bent-winged Bat (breeding)
- Large Bent-winged Bat (breeding)
- Grey-headed Flying-fox (breeding)
- Southern Myotis.

Threatened plant species have not been considered due to the disturbed characteristics of both the Pymont Station and Hunter Street Station (Sydney CBD) development sites. The vegetation is planted and there is no habitat in the development sites for threatened plant species. No threatened plants were observed in the Pymont Station and Hunter Street Station (Sydney CBD) development sites from the onsite visual assessment.

The habitat constraints identified in the TBDC were used to assess the habitat on the development sites for each threatened species predicted for assessment. Some species do not have habitat constraints identified in the TBDC, so this step is not applicable, and these species would be automatically referred to as a 'candidate species-credit species' that require further assessment (if the BAM was to be applied to this proposal).

The species-credit species with habitat constraints identified in the TBDC are detailed in **Table 3-7**.

Table 3-7 Species-credit species potentially occurring within the development sites that have breeding habitat constraints

Species	Habitat constraint	Habitat suitability in development sites
Swift Parrot	Land identified within Important Area Maps	None mapped within or near the development sites.
Little Bent-winged Bat (breeding)	Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave;" observation type code "E nest-roost;" with numbers of individuals >500; or from the scientific literature	No cave, tunnel, mine, culvert, or other structures. No records of observation type IC or E. Not known from scientific literature.
Large Bent-winged Bat (breeding)		
White-bellied Sea-Eagle	Living or dead mature trees within suitable vegetation within 1 kilometre of a rivers, lakes, large dams or creeks, wetlands and coastlines	No suitable host trees present in the development sites for nesting. The habitats are likely to be too disturbed to represent suitable breeding habitat for this species.
Eastern Osprey	Presence of stick-nests in living and dead trees (>15 metres) or artificial structures within 100 metres of a floodplain for nesting	Unlikely presence of large stick nests in the development sites, and the habitats are likely to be too disturbed to represent suitable breeding habitat for this species.
Powerful Owl	Living or dead trees with hollow greater than 20 centimetres diameter	Unlikely presence of large stick nests in the development sites, and the habitats are likely to be too disturbed to represent suitable breeding habitat for this species.

Species	Habitat constraint	Habitat suitability in development sites
Grey-headed Flying Fox	Breeding camps	No breeding camps are located within or near the development sites. The closest camps are found at Centennial Park 5.2 kilometres south east of the development sites, followed by Gladesville 6.4 kilometres north west of the development sites.
Southern Myotis	Hollow bearing trees - within 200 metres of riparian zone; bridges, caves or artificial structures within 200 metres of riparian zone Bridges, caves, or artificial structures within 200 metres of riparian zone Waterbodies – This include rivers, creeks, billabongs, lagoons, dams, and other waterbodies on or within 200 metres of the site	Unlikely presence of trees with hollows within the development sites. No waterbodies, bridges, caves, or artificial structures occur within 200 metres of the development sites.
Green and Golden Bell Frog	Semi-permanent/ephemeral wet areas - within 1 kilometre of wet areas; swamps - within 1 kilometre of swamps; waterbodies - within 1 kilometre of waterbody	The Pymont station development site is located within 210 metres of a waterbody and Hunter Street Station (Sydney CBD) development sites is located within 580 metres of a waterbody. There are no suitable waterbodies in the development sites.

In conclusion, the development sites do not contain habitat for any species-credit species that would require their further assessment.

3.8 Matters of National Environmental Significance

3.8.1 Threatened ecological communities

There are no nationally listed threatened ecological communities located in or directly adjacent to the Pymont Station and the Hunter Street Station (Sydney CBD) development sites.

3.8.2 Threatened species

The Grey-headed Flying-fox, listed as vulnerable under the EPBC Act, may, on rare occasions, use the planted native vegetation in the study area for foraging when other food resources are limited. This is due to the proximity of a known roost camp at Centennial Park 5.2 kilometres south-east of the development sites and Gladesville 6.4 kilometres north west of the development sites, and the ability of this species to forage over large distances in a single night. No roost camps are present in the development sites. The planted native vegetation within or adjacent to the development sites, specifically *Corymbia maculata*, *Melaleuca citrinus* and *Syzygium australe*, provides no significant floral or fruiting foraging resource for this species. These foraging resources are common across the Sydney metropolitan area.

No threatened plant species listed under the EPBC Act are considered likely to occur in the development sites. The habitats are primarily planted vegetation for aesthetic purposes in an urban landscape and there are no natural habitats present.

No threatened fauna under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), are likely to use the habitats in the Pymont Station and Hunter Street Station (Sydney CBD) development sites. The habitats present are highly disturbed, mostly consisting of exotic vegetation that are highly isolated from suitable habitat patches for threatened fauna.

3.8.3 Migratory species

The development sites are in an area surrounded by White Bay, Elizabeth Macarthur Bay, Rozelle Bay, Jones Bay, Johnstons Bay, Blackwattle Bay, Tumbalong Bay, Cockle Bay, Darling Harbour and Pyrmont Bay, parts of which are known to contain habitat and species sightings for threatened and migratory birds. It is feasible that these migratory bird species may fly over the development sites on occasion, however, considering the current disturbance on the site, the proposal would be unlikely to increase the current barrier to flight paths and no new barriers will be introduced.

Sixty-eight listed migratory species were identified in the EPBC Act PMST as potentially occurring in the broader locality based on the distributional range of the species and modelled habitat. These migratory species, along with their preferred habitat requirements and an assessment of their likely presence in the study area are listed in **Appendix A**.

The Fork-tailed Swift, White-throated Needletail, Eastern Osprey and White-bellied Sea-Eagle may fly over the development sites but would not use it as habitat as there is no significant habitat resources provided for these species within the development sites. Other listed migratory species have been considered as having a low likelihood to occur or utilise the habitat within the development sites due to a lack of suitable habitat resources (see **Appendix A**).

While some migratory species of bird are likely to use the study area and locality, the development sites would not be classed as an 'important habitat'. A nationally significant proportion of the population would not be supported by the development sites, as the habitats are not large enough or of high enough quality. This proposal would not substantially modify, destroy or isolate an area of important habitat for any migratory species and it would not seriously disrupt the lifecycle of an ecologically significant proportion of a population of migratory birds.

4. Impacts on biodiversity values

A description of the BDAR waiver request information requirements and potential impacts on biodiversity values associated with the Pyrmont Station and Hunter Street Station (Sydney CBD) development sites is provided in **Table 4-1**. This follows the information requested by DPIE (2019) relating to *How to apply for a biodiversity development assessment report waiver for a Major Project Application*.

Table 4-1 Impacts of the proposal on biodiversity values

Meaning	Relevant (✓ or NA)	Explain and document potential impacts including additional impacts prescribed under the BC Regulation Attach additional supporting documentation where appropriate
Occurrence and abundance of vegetation at a particular site	NA	<p>There is some native vegetation (according to the definition of native vegetation provided in the <i>Local Land Services Act 2013</i>) present within the development sites. Any native vegetation present has been historically planted at the development sites, however, for aesthetic purposes as street trees and landscaping (see Section 3.4). This planted vegetation consists of a mixture of mainly non-native vegetation and one native tree species that do not naturally occur together and do not form an ecosystem. Therefore, this vegetation cannot be assigned to a Plant Community Type (PCT) as identified in the DPIE BioNet Vegetation Classification.</p> <p>Vegetation abundance (as it would apply to a PCT) would not be impacted by removal of vegetation within the Pyrmont Station or Hunter Street Station (Sydney CBD) development sites.</p> <p>For the Pyrmont Station development sites, impacts are limited to the removal of:</p> <ul style="list-style-type: none"> Five exotic trees, Seven native trees About 245 m² of exotic vegetation. <p>For the Hunter Street Station (Sydney CBD) development sites, impacts are limited to the removal of four exotic trees. No native trees are present within the Hunter Street Station (Sydney CBD) development sites.</p>
Degree to which the composition, structure, and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state	NA	<p>As the native vegetation present cannot be assigned to a native PCT, it is not possible to assess vegetation integrity against benchmark scores by undertaking an assessment of the composition, structure or function of the vegetation according to the field methods outlined in Section 5.3 of the BAM. This is because the vegetation within the subject land is planted. A vegetation integrity score cannot be determined in accordance with Section 5.4 of the BAM as there are no PCTs that will be impacted by this proposal.</p> <p>There would be no loss of vegetation condition, composition, structure, or function (as assessed in accordance to the BAM) as a result of this proposal.</p>

Meaning	Relevant (✓ or NA)	Explain and document potential impacts including additional impacts prescribed under the BC Regulation Attach additional supporting documentation where appropriate
Degree to which the habitat needs of threatened species are present at a particular site	✓	<p>The Pymont Station development site would require removal of seven planted native trees that may provide some limited foraging resources for species such as Grey-headed Flying Fox, Powerful Owl and Little Lorikeet.</p> <p>The planted native trees do not provide any suitable breeding habitat for these threatened species. The planted trees form a relatively small portion of the available amount of foraging resources in the locality (particularly considering the nearby Grey-headed Flying Fox camps at Centennial Park and Gladesville) and the similar quality planted vegetation surrounding the development sites. Impacts to the local occurrence of this marginal foraging habitat is unlikely to significantly impact these species.</p> <p>The clearing of planted exotic vegetation as part of this proposal constitutes a minimal impact to marginal foraging habitat for threatened species.</p> <p>Site assessment of the human-made structures was undertaken on 24 May 2021. Based on this assessment, the human-made structures do not appear to be old or derelict to offer potential suitable roosting habitat for threatened microbats. While it is possible that these human-made structures may provide potential roosting habitat, the human-made structures appear to be in good external condition with no obvious signs of damage or openings where threatened microbats could regularly access and the development sites are not in proximity to large expanses of natural vegetation</p> <p>None of the following habitats were present to be assessed:</p> <ul style="list-style-type: none"> ▪ Karst, caves, crevices, cliffs and other geological features of significance ▪ Rocks.
Occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site	✓	<p>A site assessment was undertaken by an ecologist on 24 May 2021. As part of this assessment, no high-quality threatened species habitats have been identified on the development sites. The Grey-headed Flying Fox, Powerful Owl and Little Lorikeet were assessed in association with Table 2-2 as having a potential likelihood of occurring within the development sites and foraging in or around the planted native tree on occasion. Additionally, the site visit assessed human-made structures within the development sites. This identified no suitable roosting habitat for threatened microbats due to the good structural integrity of the human-made structures displaying no obvious openings where threatened microbats could regularly access (see Section 3.5 for further discussion).</p> <p>Considering the extent of higher quality foraging resources in the locality, the removal of the following 16 trees would be unlikely to significantly impact these species:</p>

Meaning	Relevant (✓ or NA)	Explain and document potential impacts including additional impacts prescribed under the BC Regulation Attach additional supporting documentation where appropriate
		<ul style="list-style-type: none"> One native tree adjacent to the Pymont Station western development site Three native trees within the Pymont Station western development site Two exotic trees adjacent to the Pymont Station western development site Three native tree species within the Pymont Station eastern development site About 245 m² of exotic vegetation within the Pymont Station eastern development site Three exotic trees adjacent to the Pymont Station eastern development site One exotic tree adjacent to the Hunter Street Station (Sydney CBD) western development site Three exotic trees adjacent to the Hunter Street Station (Sydney CBD) eastern development site. <p>Also, considering the development sites are currently bounded by industrial areas, roads, and buildings in this location with high levels of human activity, the proposal would be unlikely to increase any impacts on native species in the immediate area, including that of vehicle strikes.</p> <p>Furthermore, this proposal would be unlikely to have an appreciable impact on threatened species abundance.</p>
Degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range	✓	<p>The development sites are located within a highly urbanised landscape where the majority of natural habitats have been cleared. The habitats that do remain are fragmented and primarily limited to planted urban vegetation. However, planted urban vegetation does provide a role in facilitating the movement of some highly mobile threatened species across the landscape. There is no obvious physical habitat connectivity associated with the development sites.</p> <p>However, functional connectivity exists for flying animals such as birds and bats that use the airspace above the development sites to move between habitats and the planted vegetation is likely used as a foraging or perching resource as part of daily movements. In terms of threatened species, a portion of the Grey-headed Flying-fox population (particularly those from the nearby camps at Centennial Park 5.2 kilometres south east of the development and Gladesville 6.4 kilometres north west of the development) will pass over the development sites as the animal's head to foraging grounds. The Powerful Owl and Little Lorikeet may move through the area and forage on the planted native vegetation on occasion.</p> <p>This proposal is considered unlikely to have a detrimental effect on habitat connectivity. The habitats in the development sites are not important or unique in the landscape for the</p>

Meaning	Relevant (✓ or NA)	Explain and document potential impacts including additional impacts prescribed under the BC Regulation Attach additional supporting documentation where appropriate
		Grey-headed Flying-fox, Powerful Owl and Little Lorikeet, and this proposal would have a negligible effect on the current dispersal and movement of this species through the locality.
Degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle	✓	<p>Threatened species in the locality, particularly the Grey-headed Flying-fox, Powerful Owl and Little Lorikeet are powerful flyers capable of covering large distances between habitat patches. Threatened microbats are also capable of covering a somewhat smaller distance. The landscape of the locality in its current form is permeable to these species and this landscape permeability will not be affected by this proposal. The movement patterns of these species are not rigid.</p> <p>No barriers to movement will be introduced and no further fragmentation of natural habitats will occur. The development sites are not part of a recognised movement corridor between breeding grounds, foraging grounds, or other habitats important for the lifecycle of species such as staging points for migration.</p> <p>This proposal would therefore not impact on the movement of these threatened species.</p>
Degree to which the flight paths of protected animals over a particular site are free from interference	✓	<p>This proposal is located within a predominately urban landscape. However, the development sites are located in an area surrounded by White Bay, Elizabeth Macarthur Bay, Rozelle Bay, Jones Bay, Johnstons Bay, Blackwattle Bay, Tumbalong Bay, Cockle Bay, Darling Harbour and Pyrmont Bay, parts of which are known to contain habitat and species sightings for threatened and migratory birds.</p> <p>It is possible that these migratory bird species will fly over the development sites on occasion, however, considering the current disturbance on the sites, this proposal would be unlikely to increase the current barrier to flight paths and no new barriers will be introduced.</p>
Degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.	NA	No threatened species or threatened ecological communities have been identified on the development sites that are being sustained by water quality, water bodies and hydrological processes.

5. Conclusions

The development sites are located within a highly urbanised area that does not possess large expanses of intact native vegetation with high biodiversity values. However, there is some native vegetation (according to the definition of native vegetation provided in the LLS Act) in and adjacent to the Pymont Station development sites that will be impacted by the project (see **Figure 3-2**). This native vegetation is not naturally occurring and cannot be assigned to a PCT as identified in the DPIE BioNet Vegetation Classification. As such, the vegetation cannot be allocated to vegetation zones. The habitat types in the development sites and study area are best described as miscellaneous ecosystems, specifically: Highly disturbed areas with no or limited native vegetation. The trees in the development sites are planted amongst brickwork, asphalt and concrete adjacent to buildings, roadsides and along pathways.

Immediately adjacent to the development sites, some street tree plantings would need to be removed (beyond the development sites boundary) to allow for the turning of trucks associated with proposed truck movements into and exiting the sites or for mobilisation of large equipment adjacent to the sites. As such, this proposal would include removal of the following:

- One native tree adjacent to the Pymont Station western development site
- Three native trees within the Pymont Station western development site
- Two exotic trees adjacent to the Pymont Station western development site
- Three native tree species within the Pymont Station eastern development site
- About 245 m² of exotic vegetation within the Pymont Station eastern development site
- Three exotic trees adjacent to the Pymont Station eastern development site
- One exotic tree adjacent to the Hunter Street Station (Sydney CBD) western development site
- Three exotic trees adjacent to the Hunter Street Station (Sydney CBD) eastern development site.

In accordance with Section 7.9 of the BC Act and after consideration of the potential impacts on biodiversity values as outlined in the BC Act and the BC regulation this proposal is not likely to have any significant impact on biodiversity values. A waiver for the BDAR requirement is sought under Section 7.9(2) of the BC Act.

The information provided in this BDAR waiver request, has considered the guidance provided in the DPIE (2019) *How to apply for a biodiversity development assessment report waiver for a Major Project application*. The report highlights the absence of naturally-occurring native vegetation and important ecological values from the proposal area, and it is evident that the proposed activity will not have a significant impact on threatened species, populations, or ecological communities. As such a BDAR is not deemed to be required.

6. References

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Appendix A. Likelihood of occurrence assessment

State and nationally listed threatened species identified from the literature review and database search were considered in terms of their likelihood to occur in the habitats present within the study area based on identified habitat requirements. The likelihood of occurrence was classified according to the criteria described in Table 2-2. With high levels of urbanisation in the locality, the likelihood of threatened terrestrial species or communities occurring in the development sites in their current condition is low (see Table 6-1).

Table 6-1: Likelihood of occurrence assessment for threatened species

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
Birds						
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	CE	The Regent Honeyeater that has a patchy distribution between south-east Queensland and central Victoria. It mostly inhabits inland slopes of the Great Dividing Range, in areas of low to moderate relief with moist, fertile soils. It is most commonly associated with box-ironbark eucalypt woodland and dry sclerophyll forest, but also inhabits riparian vegetation such as Sheoak (<i>Casuarina</i> spp) where it feeds on needle-leaved mistletoe and sometimes breeds. It sometimes utilises lowland coastal forest, which may act as a refuge when its usual habitat is affected by drought. It also uses a range of disturbed habitats within these landscapes including remnant patches in farmland and urban areas and roadside vegetation. It feeds primarily on the nectar of eucalypts and mistletoes and, to a lesser extent, lerps and honeydew; it prefers taller and larger diameter trees for foraging. It is nomadic and partly migratory with its movement through the landscape being governed by the flowering of select eucalypt species. There are four known key breeding areas: three in NSW and one in Victoria. Breeding varies between regions and corresponds with flowering of key eucalypt and mistletoe species. It usually nests in horizontal branches or forks in tall mature eucalypts and Sheoaks.	PMST	Low. There is no habitat in the development sites considered suitable for this species.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V	-	The Dusky Woodswallow has two separate populations. The eastern population is found from Atherton Tableland, Queensland south to Tasmania and west to Eyre Peninsula, South Australia. The other population is found in south-west Western Australia. The Dusky Woodswallow is found in open forests and woodlands, and may be seen along roadsides, urban parks and golf courses.	BioNet – 3 records	Low. The habitats in the development sites are too disturbed and urban for this species.
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E	E	Occurs from south-east Queensland to south-east South Australia, Tasmania and the south-west of Western Australia. The Australasian Bittern's preferred habitat is comprised of wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds (e.g. <i>Phragmites</i> , <i>Cyperus</i> , <i>Eleocharis</i> , <i>Juncus</i> , <i>Typha</i> , <i>Baumea</i> , <i>Bolboschoenus</i>) or cutting grass (<i>Gahnia</i>) growing over a muddy or peaty substrate	PMST, BioNet – 2 records	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Burhinus grallarius</i>	Bush Stone-curlew	E	-	Open forests and woodlands with a sparse grassy ground layer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Feed on insects and small vertebrates, such as frogs, lizards and snakes. Nest on the ground in a scrape or small bare patch.	BioNet – 5 records	Unlikely. There is no habitat in the development sites considered suitable for this species.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Calyptrorhynchus lathamii</i>	Glossy-black Cockatoo	V	-	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 open forest and woodlands of the coast and the Great Dividing Range where stands of Sheoak occur. Black Sheoak (<i>Allocasuarina littoralis</i>) and Forest Sheoak (<i>A. torulosa</i>) are important foods. Inland populations feed on a wide range of Sheoaks, including Drooping Sheoak, <i>Allocasuarina diminuta</i> , and <i>A. gymnanthera</i> . Belah is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah (<i>Casuarina cristata</i>).	BioNet – 3 records	Unlikely There is no habitat in the development sites considered suitable for this species.
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Feeds on arthropods gleaned from crevices in rough or decorticated bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. Nests in an upright tree fork high in the living tree canopy.	BioNet – 1 record	Unlikely. There is no habitat in the development sites considered suitable for this species.

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Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<p><i>Epthianura albifrons</i></p> <p>and</p> <p>White-fronted Chat <i>Epthianura albifrons</i> in the Sydney Metropolitan Catchment Management Authority Area</p>	White-fronted Chat	V, EP	-	<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, it occupies foothills and lowlands up to 1,000 metres above sea level. In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas. Two isolated sub-populations of White-fronted Chats are currently known from the Sydney Metropolitan Catchment Management Authority (CMA) area; one at Newington Nature Reserve on the Parramatta River and one at Towra Point Nature Reserve in Botany Bay. These sub-populations are separated from each other by 25 kilometres of urbanised land, across which the Chats are unlikely to fly. The nearest extant populations outside Sydney Metropolitan Catchment Management Area are at Ash Island north of Newcastle and Lake Illawarra, south of Wollongong. White-fronted Chats were previously recorded at Penrith Lakes (2001), Hawkesbury Swamps (2002), Tuggerah Lake (1997) and Lake Macquarie (1998). Regularly observed in the saltmarsh of Newington Nature Reserve (with occasional sightings from other parts of Sydney Olympic Park and in grassland on the northern bank of the Parramatta River). Current estimates suggest this population consists of 8 individuals. Regularly observed in the saltmarsh and on the sandy shoreline of a small island of Towra Point Nature Reserve. This population is estimated to comprise 19-50 individuals.</p>	BioNet - 2 records	<p>Unlikely.</p> <p>There is no habitat in the development sites considered suitable for this species.</p>

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Erythrotriorchis radiatus</i>	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, extending south to about 30°S, with most records north of this, in the Clarence River Catchment, and a few around the lower Richmond and Tweed Rivers. Formerly, it was at least occasionally reported as far south as Port Stephens. 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. In NSW, preferred habitats include mixed subtropical rainforest, <i>Melaleuca</i> swamp forest and riparian <i>Eucalyptus</i> forest of coastal rivers.	BioNet – 1 record	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Falco hypoleucos</i>	Grey Falcon	E	V	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.

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Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-	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. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally nomadic' movements are suspected of breeding pairs. Forages primarily in the canopy of open <i>Eucalyptus</i> forest and woodland, yet also finds food in <i>Angophora</i> , <i>Melaleuca</i> and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species.	BioNet – 5 records	Moderate. This species may forage on the planted native vegetation within the development sites on occasion.
<i>Grantiella picta</i>	Painted Honeyeater	V	V	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. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus <i>Amyema</i> .	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Haliaeetus leucogaster</i>	White-bellied Sea Eagle	V	M	Distributed along the coastline (including offshore islands) of mainland Australia and Tasmania. Found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. The habitats occupied by the sea-eagle are characterised by the presence of large areas of open water (larger rivers, swamps, lakes, and the sea).	PMST, BioNet – 37 records	Low. May use airspace above the development sites. Unlikely to utilise the affected vegetation within the development sites or be impacted by the proposal.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.	BioNet – 3 records	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Hirundapus caudacutus</i>	White-throated Needletail	-	V, M	Widespread in eastern and south-eastern Australia. Almost exclusively aerial, from heights of less than one metre up to more than 1000 metres above the ground. They also commonly occur over heathland but less often over treeless areas, such as grassland or swamps.	PMST, BioNet – 4 records	Low. May use airspace above the development sites. Unlikely to utilise the affected vegetation within the development sites or be impacted by the proposal.
<i>Ixobrychus flavicollis</i>	Black Bittern	V	-	The Black Bittern is found along the coastal plains within NSW, although individuals have rarely been recorded south of Sydney or inland. It inhabits terrestrial and estuarine wetlands such as flooded grasslands, forests, woodlands, rainforests and mangroves with permanent water and dense waterside vegetation. The Black Bittern typically roosts on the ground or in trees during the day and forages at night on frogs, reptiles, fish and invertebrates. The breeding season extends from December to March. Nests are constructed of reeds and sticks in branches overhanging the water.	BioNet – 2 records	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Lathamus discolor</i>	Swift Parrot	E	CE	On the mainland they occur in areas where eucalypts are flowering profusely or where there is abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany (<i>Eucalyptus robusta</i>), Spotted Gum (<i>Corymbia maculata</i>), Red Ironbark (<i>E. sideroxylon</i>), and White Box (<i>E. albens</i>).	PMST, BioNet – 8 records	Unlikely. There is limited habitat in the development sites considered suitable for this species.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	Typically inhabits coastal forested and wooded lands of tropical and temperate Australia. In NSW it is often associated with ridge and gully forests dominated by <i>Eucalyptus longifolia</i> , <i>Corymbia maculata</i> , <i>E. elata</i> , or <i>E. smithii</i> . Individuals appear to occupy large hunting ranges of more than 100 km ² . They require large living trees for breeding, particularly near water with surrounding woodland /forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in a tree fork or on large horizontal limbs.	BioNet – 1 record	Unlikely. May use airspace above the development sites. Unlikely to utilise the affected vegetation within the development sites or be impacted by the proposal.
<i>Neophema chrysogaster</i>	Orange-bellied Parrot	CE	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. Typical winter habitat is saltmarsh and strandline/foredune vegetation communities either on coastlines or coastal lagoons. Spits and islands are favoured but they will turn up anywhere within these coastal regions. The species can be found foraging in weedy areas associated with these coastal habitats or even in totally modified landscapes such as pastures, seed crops and golf courses.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Ninox connivens</i>	Barking Owl	V	-	Found throughout continental Australia except for the central arid regions. 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.	BioNet – 2 records	Unlikely. There is no habitat in the development sites considered suitable for this species.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Ninox strenua</i>	Powerful Owl	V	-	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. 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 comprising species such as Turpentine <i>Syncarpia glomulifera</i> , Black She-oak <i>Allocasuarina littoralis</i> , Blackwood <i>Acacia melanoxylon</i> , Rough-barked Apple <i>Angophora floribunda</i> , Cherry Ballart <i>Exocarpus cupressiformis</i> and a few eucalypt species.	BioNet – 237 records	Moderate. There is no breeding habitat in the development sites, however planted vegetation may provide suitable foraging habitat for this species.
<i>Pandion cristatus</i>	Eastern Osprey	V	M	The Osprey has a global distribution with four subspecies previously recognised throughout its range. Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water.	BioNet – 1 record	Low. May use airspace above the development sites. Unlikely to utilise the affected vegetation within the development sites or be impacted by the proposal.
<i>Ptilinopus superbus</i>	Superb Fruit-Dove	V	-	The Superb Fruit-dove occurs principally from north-eastern in Queensland to north-eastern NSW. 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.	BioNet – 8 records	Low. There is no habitat in the development sites considered suitable for this species. This species is vagrant to the Sydney area.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Stagonopleura guttata</i>	Diamond Firetail	V	-	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (<i>Eucalyptus pauciflora</i>) 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. Nests are globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests. Birds roost in dense shrubs or in smaller nests built especially for roosting.	BioNet – 1 record	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Tyto novaehollandiae</i>	Masked Owl	V	-	Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90 per cent of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. Inhabits dry eucalypt forests and woodland from sea level to 1100 metres. A forest owl, but often hunts along the edges of forests, including roadsides. Requires old trees for roosting and nesting.	BioNet – 2 records	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Tyto tenebricosa</i>	Sooty Owl	V	-	Occupies the easternmost one-eighth of NSW, occurring on the coast, coastal escarpment and eastern tablelands. Territories are occupied permanently. Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests.	BioNet – 1 record	Unlikely. There is no habitat in the development sites considered suitable for this species.
Mammals						
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	Forages over a broad range of open forest and woodland habitats, this species is a cave roosting bat which favours sandstone escarpment habitats for roosting, in the form of shallow overhangs, crevices and caves.	PMST, BioNet – 2 records	Low. There is no habitat in the development sites considered suitable for this species.
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll (south east mainland population)	V	E	Wet and dry sclerophyll forests and rainforests, and adjacent open agricultural areas. Generally associated with large expansive areas of habitat to sustain territory size. Requires hollow-bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky-cliff faces as den sites.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.

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Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Isoodon obesulus</i>	Southern Brown Bandicoot	E	E	This species prefers sandy soils with scrubby vegetation and/or areas with low ground cover that are burn from time to time. A mosaic of post fire vegetation is important for this species.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V	-	Occur in dry sclerophyll forest and woodland east of the Great Dividing Range. Roosts mainly in tree hollows but will also roost under bark or in human-made structures.	BioNet – 10 records	Low. There is no habitat in the development sites considered suitable for this species.
<i>Miniopterus australis</i>	Little Bent-winged Bat	V	-	East coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. 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.	BioNet – 9 records	Low. There is no habitat in the development sites considered suitable for this species.
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V	-	Occurs on east and north west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other manmade structures.	BioNet – 95 records	Low. There is no habitat in the development sites considered suitable for this species.
<i>Myotis macropus</i>	Southern Myotis	V	-	Generally, roost in groups close to water in caves, mine shafts, hollow-bearing trees, and storm water channels, buildings, under bridges and in dense foliage. Forages over streams and pools catching insects and small fish.	BioNet – 49 records	Low. There is no habitat in the development sites considered suitable for this species.
<i>Perameles nasuta</i>	Long-nosed Bandicoot population in inner western Sydney	EP	-	The exact area occupied by the population is not clearly defined, and includes the local government areas (LGA) of Marrickville and Canada Bay, with the likelihood that it also includes Canterbury, Ashfield and Leichhardt LGAs. 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. Shelter mostly under older houses and buildings.	BioNet – 21 records	Unlikely. There is no habitat in the development sites considered suitable for this species.

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Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Petauroides volans</i>	Greater Glider	-	V	The Greater Glider occurs in eucalypt forests and woodlands along the east coast of Australia from north east Queensland to the Central Highlands of Victoria. This population of Greater Gliders on the south coast of NSW is bounded by the Moruya River to the north, Coila Lake to the south and the Princes Highway and cleared land exceeding 700 metres in width to the west. 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. Occupy a relatively small home range with an average size of 1 to 3 hectares.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	-	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 midstorey.	BioNet – 1 record	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E	V	Range extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Phascolarctos cinereus</i>	Koala	V	V	In NSW it mainly occurs on the central and north coasts with some populations in the 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.	PMST, BioNet – 4 records	Unlikely. There is no habitat in the development sites considered suitable for this species.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Potorous tridactylus</i>	Long-nosed Potoroo (south east mainland)	V	V	The long-nosed potoroo is found on the south-eastern coast of Australia, from Queensland to eastern Victoria and Tasmania, including some of the Bass Strait islands. In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 mm. Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. A sandy loam soil is also a common feature.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Pseudomys gracilicaudatus</i>	Eastern Chestnut Mouse	V	-	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. Optimal habitat appears to be in vigorously regenerating heathland burnt from 18 months to four years previously.	BioNet – 1 record	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	-	V	Distribution is fragmented across all eastern states of Australia, where it inhabits open heath lands, open woodlands with heath understorey and vegetated sand dunes.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	Generally found within 200 kilometres of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations. 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 kilometres of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young.	PMST, BioNet – 1,467 records	Moderate. Known to occur in the Sydney urban area. The planted native vegetation within the development sites is likely to represent foraging habitat for the Grey-headed Flying-fox.
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	V	-	Wide-ranging species found across northern and eastern Australia. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows.	BioNet – 5 records	Low. There is no habitat in the development sites considered suitable for this species.
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	-	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings.	BioNet – 2 records	Low. There is no habitat in the development sites considered suitable for this species.
Frogs						

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	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 per cent of its time in non-breeding habitat in areas up to 300 metres from breeding sites. Whilst in non-breeding habitat it burrows below the soil surface or in the leaf litter. Individual frogs occupy a series of burrow sites, some of which are used repeatedly.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Litoria aurea</i>	Green and Golden Bell Frog	E	V	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. Ephemeral and permanent freshwater wetlands, ponds, dams with an open aspect and fringed by Typha and other aquatics, free from predatory fish.	PMST, BioNet – 5 records	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Mixophyes balbus</i>	Stuttering Frog	E	V	Occur along the east coast of Australia from southern Queensland to north-eastern Victoria. 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.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.
<i>Pseudophryne australis</i>	Red-crowned Toadlet	V	-	It has restricted distribution from Pokolbin to Nowra and west to Mt Victoria. Occurs in open forests and wet drainage lines below sandstone ridges that often have shale lenses or cappings in the Hawkesbury and Narrabeen Sandstones.	BioNet – 49 records	Unlikely. There is no habitat in the development sites considered suitable for this species.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
Insects						
<i>Petalura gigantea</i>	Giant Dragonfly	E	-	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.	BioNet – 1 record	Unlikely. There is no habitat in the development sites considered suitable for this species.
Reptiles						
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	E	V	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 hollows in large trees within 200 metres of escarpments in summer.	PMST	Unlikely. There is no habitat in the development sites considered suitable for this species.
Flora						
<i>Acacia bynoeana</i>	Bynoe's Wattle	E	V	Found in central eastern NSW, from the Hunter District south to the Southern Highlands and west to the Blue Mountains. It 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 (<i>Corymbia gummifera</i>), Scribbly Gum (<i>Eucalyptus haemastoma</i>), Drooping Red Gum (<i>E. parramattensis</i>), Old Man Banksia (<i>Banksia serrata</i>) and Small-leaved Apple (<i>Angophora bakeri</i>).	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.

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Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Acacia pubescens</i>	Downy Wattle	V	V	Concentrated around the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. 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. Occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravelly soils, often with ironstone.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Acacia terminalis</i> <i>subsp. terminalis</i>	Sunshine Wattle	E	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. Habitat includes coastal scrub and dry sclerophyll woodland on sandy soils.	PMST, Bionet – 310 records	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Allocasuarina glareicola</i>	-	E	E	Primarily restricted to the Richmond (NW Cumberland Plain) district, but with an outlier population found at Voyager Point, Liverpool. Grows in Castlereagh woodland on lateritic soil. Found in open woodland with <i>Eucalyptus parramattensis</i> , <i>Eucalyptus fibrosa</i> , <i>Angophora bakeri</i> , <i>Eucalyptus sclerophylla</i> and <i>Melaleuca decora</i> . Common associated understorey species include <i>Melaleuca nodosa</i> , <i>Hakea dactyloides</i> , <i>Hakea sericea</i> , <i>Dillwynia tenuifolia</i> , <i>Micromyrtus minutiflora</i> , <i>Acacia elongata</i> , <i>Acacia brownei</i> , <i>Themeda triandra</i> and <i>Xanthorrhoea minor</i> .	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Allocasuarina portuensis</i>	Nielsen Park She-oak	E	E	The original known habitat of the Neilsen Park She-oak is at Nielsen Park, in Woollahra local government area. There are no plants left at the original site where it was discovered. However, propagation material has been planted successfully at a number of locations at Nielsen Park and other locations in the local area, e.g. Gap Bluff, Hermit Point and Vaucluse House. The original habitat occurs above a sandstone shelf approximately 20 metres above the harbour. The shallow sandy soils are highly siliceous, coarsely textured and devoid of a soil profile. The plantings have occurred on similar soils.	BioNet – 6 records	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Amperea xiphoclada</i> var. <i>pedicellata</i>	-	Ex	PEX	<i>Amperea xiphoclada</i> var. <i>pedicellata</i> 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. <i>Amperea xiphoclada</i> var. <i>pedicellata</i> was previously widespread in heath, woodland and forest in low-fertility, sandy soils.	BioNet – 1 record	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Asterolasia elegans</i>	-	E	E	Occurs north of Sydney, in the Baulkham Hills, Hawkesbury and Hornsby local government areas. Also, likely to occur in the western part of Gosford local government area. 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. The canopy at known sites includes Turpentine (<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>), Smooth-barked Apple (<i>Angophora costata</i>), Sydney Peppermint (<i>Eucalyptus piperita</i>), Forest Oak (<i>Allocasuarina torulosa</i>) and Christmas Bush (<i>Ceratopetalum gummiferum</i>).	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Caladenia tessellata</i>	Thick-lipped Spider Orchid	E	V	Known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct. Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	V	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. The larger populations typically occur in woodland dominated by Scribbly Gum (<i>Eucalyptus sclerophylla</i>), Silvertop Ash (<i>E. sieberi</i>), Red Bloodwood (<i>Corymbia gummifera</i>) and Black Sheoak (<i>Allocasuarina littoralis</i>); appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (<i>C. subulata</i>) and the Tartan Tongue Orchid (<i>C. erecta</i>).	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Darwinia biflora</i>	-	V	V	Occurs at 129 sites in the northern and north-western suburbs of Sydney, in the Ryde, Baulkham Hills, Hornsby and Ku-Ring-Gai Local Government Areas. Occurs on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone. Associated overstorey species include <i>Eucalyptus haemastoma</i> , <i>Corymbia gummifera</i> and/or <i>E. squamosa</i> . The vegetation structure is usually woodland, open forest or scrub-heath.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Dichanthium setosum</i>	Bluegrass	V	V	<i>Dichanthium setosum</i> has been reported from mid-coastal to inland NSW and Queensland. <i>Dichanthium setosum</i> occurs on the New England Tablelands, North West Slopes and Plains and the Central Western Slopes of NSW, extending west to Narrabri. <i>Dichanthium setosum</i> is associated with heavy basaltic black soils and red-brown loams with clay subsoil.	BioNet – 1 record	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Doryanthes palmeri</i>	Giant Spear Lily	V	-	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. Its southern distributional limit is Mount Billen. The species is currently known from eleven sites within NSW, five of which are conservation reserves. Most populations consist of only a few hundred individuals.	BioNet – 2 records	Unlikely. There is no habitat considered suitable for this species in the development sites.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Eucalyptus camfieldii</i>	Camfield's Stringybark	V	V	Restricted distribution in a narrow band with the most northerly records in the Raymond Terrace area south to Waterfall. Poor coastal country in shallow sandy soils overlying Hawkesbury sandstone. Coastal heath mostly on exposed sandy ridges. Occurs mostly in small scattered stands near the boundary of tall coastal heaths and low open woodland of the slightly more fertile inland areas. Associated species frequently include stunted specimens of <i>E. oblonga</i> (Narrow-leaved Stringybark), <i>E. capitellata</i> (Brown Stringybark) and <i>E. haemastoma</i> (Scribbly Gum).	PMST, BioNet – 4 records	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Eucalyptus nicholii</i>	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. Found largely on private property and roadsides, and occasionally conservation reserves. Planted as urban trees, windbreaks and corridors. Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock.	BioNet – 6 records	Unlikely. Known to occur in the broader locality. Commonly planted as a street tree in Sydney but not present in the development sites.
<i>Eucalyptus pulverulenta</i>	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 (<i>Eucalyptus mannifera</i>), Red Stringybark (<i>E. macrorhynca</i>), Broad-leaved Peppermint (<i>E. dives</i>), Silvertop Ash (<i>E. sieberi</i>) and Apple Box (<i>E. bridgesiana</i>).	BioNet – 1 record	Unlikely. There is no habitat considered suitable for this species in the development sites.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Genoplesium baueri</i>	Bauer's Midge Orchid	E	E	Recorded from locations between Nowra and Pittwater and may occur as far north as 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. No collections have been made from those sites in recent years. The species has been recorded at locations now likely to be within the several conservation reserves including Berowra Valley Regional Park, Royal National Park and Lane Cove National Park. May occur in the Woronora, O'Hares, Metropolitan and Warragamba Catchments. Found in sparse sclerophyll forest and moss gardens over sandstone	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Haloragodendron lucasii</i>	-	E	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. Reported to grow in moist sandy loam soils in sheltered aspects, and on gentle slopes below cliff-lines near creeks in low open woodland. Associated with high soil moisture and relatively high soil-phosphorus levels.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Hibbertia puberula</i>	-	E	-	Recent work on this species 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. Habitats are typically dry sclerophyll woodland communities, although heaths are also occupied. One of the recently described subspecies also favours upland swamps.	BioNet – 1 record	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Lasiopetalum joyceae</i>	-	V	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.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Macadamia integrifolia</i>	Macadamia Nut	-	V	Planted specimens have been recorded as far south as Sydney and the North Coast of NSW, however this species is not known to occur naturally in NSW. The Macadamia Nut prefers to grow in mild frost-free areas with a reasonably high rainfall. Vegetation communities in which the Macadamia Nut is found range from complex notophyll mixed forest, extremely tall closed forest, simple notophyll mixed very tall closed forest to simple microphyll-notophyll mixed mid-high closed forest with <i>Araucaria</i> and <i>Argyrodendron</i> emergent.	BioNet – 2 records	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Melaleuca biconvexa</i>	Biconvex Paperbark	V	V	Found only in NSW, with scattered and dispersed populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north. Generally, grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Melaleuca deanei</i>	Deane's Paperbark	V	V	Deane's Paperbark occurs in two distinct areas, in the Ku-ring-gai, Berowra, Holsworthy and Wedderburn areas, and there are also more isolated occurrences at Springwood, Wollemi National Park, Yalwal and the Central Coast areas. The species grows in heath on sandstone	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Persicaria elatior</i>	Tall Knotweed	V	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). This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Persoonia hirsuta</i>	Hairy Geebung	E	E	The Hairy Geebung has been recorded in the Sydney coastal area, the Blue Mountains area and the Southern Highlands. Found in sandy soils in dry sclerophyll open forest, woodland and heath on sandstone.	PMST, BioNet – 3 records	Unlikely. There is no habitat considered suitable for this species in the development sites.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Pimelea curviflora</i> var. <i>curviflora</i>	Slender Curved Rice Flowers	V	V	Confined to the coastal area of Sydney between northern Sydney in the south and Maroota in the north-west. Former range extended south to 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.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Pimelea spicata</i>	Spiked Rice-flower	E	E	Broad distribution in western Sydney, occurring on the Cumberland Plain (Narellan, Marayong, Prospect Reservoir areas). Another smaller population is recorded in districts (Landsdowne to Shellharbour to northern Kiama) Illawarra. It grows on well-structured clay soils. On the inland Cumberland Plain sites, it is associated with Grey Box and Ironbark. In the coastal Illawarra it occurs commonly in Coastal Banksia open woodland with a more well-developed shrub and grass understorey.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Prostanthera marifolia</i>	Seaforth Mintbush	CE	CE	<i>Prostanthera marifolia</i> is 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 kilometres. The sites are within the local government area 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.	BioNet – 4 records	Unlikely. There is no habitat considered suitable for this species in the development sites.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Rhizanthella slateri</i>	Eastern Underground Orchid	V	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. Highly cryptic given that it grows almost completely below the soil surface, with flowers being the only part of the plant that can occur above ground. Therefore, usually located only when the soil is disturbed.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Rhodamnia rubescens</i>	Scrub Turpentine	CE	-	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 kilometres south of Sydney, to areas inland of Bundaberg in Queensland. Populations of <i>R. rubescens</i> typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 metres above sea level in areas with rainfall of 1,000-1,600 millimetres. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. This species is characterised as highly to extremely susceptible to infection by Myrtle Rust.	PMST, BioNet – 1 record	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Rhodomirtus psidioides</i>	Native Guava	CE	-	Occurs from Broken Bay, approximately 90 kilometres 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 about 120 kilometres 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.	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E	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 gallery rainforests and remnant littoral rainforest communities.	PMST, BioNet – 66 records	Unlikely. This species may be planted in the locality but does not naturally occur. There is no habitat considered suitable for this species in the development sites.
<i>Tetratheca glandulosa</i>	Glandular-pink Bell	V	-	Endemic to NSW, with around about 150 populations from Yengo National Park to Lane Cove National Park. Associates in areas with shale cappings over sandstone. Occurs in heath, scrublands to woodlands and open forest. Common woodland tree species include: <i>Corymbia gummifera</i> , <i>C. eximia</i> , <i>Eucalyptus haemastoma</i> , <i>E. punctata</i> , <i>E. racemosa</i> , and/or <i>E. sparsifolia</i> , with an understorey dominated by species from the families Proteaceae, Fabaceae, and Ericaceae.	BioNet – 1 record	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Tetratheca juncea</i>	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 local government areas 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.	BioNet – 3 records	Unlikely. There is no habitat considered suitable for this species in the development sites.
<i>Thesium australe</i>	Austral Toadflax	V	V	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. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (<i>Themeda triandra</i>).	PMST	Unlikely. There is no habitat considered suitable for this species in the development sites.

Scientific Name	Common Name	Status		Distribution and Habitat	Records and data source	Likelihood of Occurrence
		BC Act	EPBC Act			
Distribution and habitat requirements information adapted from:						
<ul style="list-style-type: none">Australian Government Department of Agriculture, Water and the Environment http://www.environment.gov.au/biodiversity/threatened/index.htmlNSW Department of Planning, Industry and Environment http://www.environment.nsw.gov.au/threatenedspecies/						
Records and data source information includes:						
<ul style="list-style-type: none">Number of records from the NSW Department of Planning, Industry and Environment Atlas of Wildlife record data (BioNet); andIdentified from the Protected Matters Search Tool (PMST) Australian Government Department of Agriculture, Water and the Environment http://www.environment.gov.au/epbc/pmst/index.html						
Key:						
CE = critically endangered						
E = endangered species						
EP = endangered population						
Ex = extinct						
PEx = presumed extinct						
V = vulnerable species						
M = migratory species						
Note: some species such as whales, sharks, fish, turtles, seals, wader birds, wetland birds and marine birds were omitted from this assessment as no marine or wetland habitat for these species is present in the development sites.						