



Biodiversity Development Assessment Report

**225 - 245 Martin Road, Bradfield Bulk Earthworks,
Rehabilitation and Quarrying SSD-97711727**

Goodman Property Services (Aust) Pty Ltd

The Hayesbery
1-11 Hayes Road
Rosebery NSW 2018

Prepared by:

SLR Consulting Australia Pty Ltd

SLR Project No.: 625.010786.00001

20 March 2026

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Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
v0.1	20 March 2026	Alix Murray	Matt Freeman	Matt Freeman

Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Aust) Pty LtdProperty Services (Aust) Pty Ltd (the Applicant) on behalf of the Goodman Western Sydney Trust (the Owner). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Applicant. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Applicant and others in respect of any matters outside the agreed scope of the work.



Executive Summary

This Biodiversity Development Assessment Report has been prepared by SLR Consulting Pty Ltd (SLR) on behalf of Goodman Property (Aust) Services Pty Ltd (the Applicant) to assess the potential impacts to biodiversity associated with the proposed development located at 225-245 Martin Road, Bradfield (the 'project'). The proposal is to be assessed as a State Significant Development (SSD) under Division 4.7 of Part 4 of the *NSW Environmental Planning and Assessment Act 1979*, and this BDAR will form a component of the broader '225-245 Martin Road, Bradfield Bulk Earthworks SSD-97711727 Environment Impact Statement (EIS) prepared to support the project.

The project is largely located within the boundaries of the Western Sydney Growth Centres and therefore has been biodiversity certified (bio-certified) under the former *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (now repealed and consolidated under the *State Environmental Planning Policy (Precincts-Western Parkland City) 2021*, and so these areas are not subject to further biodiversity assessment under the *Biodiversity Conservation Act 2016* (BC Act) or *Environmental Protection Biodiversity Conservation Act 1999*. The remaining areas of land that have not been biocertified comprise approximately 6.97 ha and will be subject to biodiversity assessment under the BC Act and therefore will be assessed in this BDAR.

S1 The Proposal

This proposal is for site preparation works only (i.e no buildings, retaining walls or other infrastructure works), including the rehabilitation of areas disturbed by historic mining and brick-making operations, as well as remediation and bulk earthworks across other areas of the site to make the site suitable for intended future land use. The proposed application also seeks approval for demolition of any remaining structures on the site.

This SSDA will be submitted concurrently with a separate SSDA entitled '225-245 Martin Road, Bradfield Internal Works SSD-97688711'. As all vegetation and potential threatened species habitat is to be removed as part of this proposal, this BDAR has been prepared to assess the potential impacts on biodiversity.

The development footprint defined for the purposes of this BDAR and associated BAM calculations incorporate both the construction footprint and operational footprint of the project in the non-certified portions of land. The overall development site footprint is hereafter referred to as the 'subject land'.

S2 Site Description

The Site predominantly comprises an existing quarry and brickmaking facility, with the subject land comprising agricultural land primarily using for livestock grazing. Native vegetation across the subject land and surrounding areas varies from patches of open forest and woodland to exotic dominated grassland. Some areas within the subject land have been historically subject to pasture improvement, with areas of heavy grazing dominated by exotic pasture species.

S3 Methodology

This BDAR has been prepared in accordance with the requirements of the Biodiversity Assessment Method (BAM) and includes:

- Desktop studies and GIS analysis to identify the landscape features, native vegetation extent and site context;
- Field surveys to map vegetation extent, occurrence of threatened ecological communities (TECs) and habitat features;



- Targeted surveys for candidate threatened species;
- Assessment of vegetation integrity (site condition) based on BAM plot data;
- Assessment of habitat suitability for threatened species that can be predicted by habitat surrogates (ecosystem credits) and for threatened species that cannot be predicted by habitat surrogates (species credit species);
- Identification of potential prescribed biodiversity impacts;
- Identification of measures to manage risks and avoid or mitigate potential impacts;
- Identification of the thresholds for the assessment and offsetting of impacts; and
- Application of the no net loss standard of the BAM.

S4 Key Findings

Vegetation within the subject land predominantly comprises scattered canopy trees over an exotic ground layer, exotic dominated grassland and a freshwater wetland. Specifically, the following native Plant Community Types (PCTs) were identified as occurring in various conditions within the subject land:

- PCT 3320: Cumberland Shale Plains Woodland;
- PCT 3975: Southern Lower Floodplain Freshwater Wetland; and
- PCT 4025: Cumberland Red Gum Riverflat Forest.

All three of the above PCTs conform to threatened ecological communities under the BC Act, with one condition of PCT 4025 conforming to the *Environmental Protection Biodiversity Conservation Act 1999* listing of the community, however a Referral to the Commonwealth was prepared for this and it was determined by the Minister on the 19 March 2026 not to be a controlled action.

Threatened species identified within the subject land comprise highly mobile microchiropteran bat and avifauna species such as the White-bellied Sea Eagle, Grey-headed Flying Fox and the Eastern Bent-winged Bat.

The assessments conducted in accordance with the BAM identified the following impacts for the Project:

- Direct Impacts:
 - Clearing of native vegetation and habitat features;
 - Clearing of threatened ecological communities; and
 - Clearing of habitat for threatened fauna species.
- Indirect Impacts:
 - Potential for edge effects;
 - Increased potential for dust, noise and light spill; and
 - Potential for transport of weeds and pathogens.
- Prescribed impacts:
 - Waterbodies, water quality and hydrological processes;
 - Vehicle strike; and
 - Habitat connectivity.



S5 Avoidance, Mitigation and Offsetting Measures

Specific measures have been developed as part of this assessment to manage the risks identified at each stage of the development. Key measures include:

- Development of layout to avoid higher conservation value areas, by situating the development largely within bio-certified land;
- Commitment to further maximise avoidance of threatened ecological communities/threatened species habitat/higher conservation value areas during detailed design;
- Implementation of strict protocols to protect soil, water and native vegetation during construction and operation;
- Creation of fauna underpasses and creek to creek corridors so that native fauna can pass through the site safely;
- Implementation of a Vegetation Management Plan to enhance and rehabilitate surrounding retained vegetation; and
- Offsetting residual loss of native vegetation and habitat via use of biodiversity credits in accordance with the BAM.

S6 Conclusion

With the implementation of the proposed avoidance, management and offsetting measures, it is considered that the impacts of this project on biodiversity, in particular on TECs and threatened species, will be minimal and can be appropriately managed and that the no net loss standard required under the BAM is therefore met.



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Acronyms and Abbreviations

Abbreviation	Definition
Aerotropolis DCP	<i>Western Sydney Aerotropolis Development Control Plan 2022</i>
Assessment area	Area of land within 500m along each side of the centre line of the linear subject land
AHD	Australian Height Datum
asl	above sea level
The 'Applicant'	Goodman Property (Aust) Services Pty Ltd
BAAS	Biodiversity Assessor Accreditation System
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BC Act	<i>NSW Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
BoM	Bureau of Meteorology
°C	Degrees Celsius
CEEC	Critically Endangered Ecological Community
DPIE	NSW Department of Planning, Industry and Environment
DBH	Diameter at breast height
DCP	Development Control Plan
EES	Environment, Energy and Science Group (a part of DPIE)
EIS	Environmental Impact Statement
EPBC Act	<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>
EP&A Act	<i>NSW Environmental Planning and Assessment Act 1979</i>
ERR	Eastern Ring Road
GDE	Groundwater Dependent Ecosystem
GIS	Geographic Information System
GPS	Global Positioning System
Growth Centres SEPP	<i>State Environmental Planning Policy (Sydney Region Growth Centres) 2006</i>
ha	Hectares
IBRA	Interim Biogeographic Regionalisation for Australia
km	kilometres
LGA	Local Government Area
MNES	Matters of National Environmental Significance
NDA	Net Developable Area
NRAR	National Resources Access Regulator
NSW	New South Wales



Abbreviation	Definition
OEH	Former NSW Office of Environment and Heritage
Parklands SEPP	<i>State Environmental Planning Policy (Precincts-Western Parkland City) 2021</i>
PCT	Plant Community Type
The Project	The proposed development at 225-245 Martin Road, Bradfield
SAII	Serious and Irreversible Impact
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSD	State Significant Development
Site	Areas which have been subject to detailed assessment of ecological values related to the project
Subject land	The land subject to this BAM assessment.
SVTM	State Vegetation Type Map
TBDC	Threatened Biodiversity Database Collection
TEC	Threatened Ecological Community
VMP	Vegetation Management Plan
WM Act	Water Management Act
WHAMP	Wildlife Hazard Assessment and Management Plan
WSAP	Western Sydney Aerotropolis Precinct Plan



DECLARATIONS

i. Certification under clause 6.15 Biodiversity Conservation Act 2016

I certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 of the Biodiversity Conservation Act 2016 (BC Act).

Signature:



Date: 20/3/2026

BAM Assessor Accreditation no: BAAS19019

This BDAR has been prepared to meet the requirements of BAM 2020. Appendix A provides an assessment of compliance with the minimum information requirements outlined in BAM Appendix K.

The lead or responsible assessor for the project must certify in the BDAR that the report has been prepared on the basis of the requirements of, and information provided under the BAM as at a specified date, and that date is within 14 days of the date the report is submitted to the decision-maker.

The BAM Calculator (BAM-C) must also be finalised and submitted within the Biodiversity Offsets and Agreement Management System (BOAMS). The date the assessor certifies (signs) the BDAR does not need to match the date on the finalised credit report; however, to be considered valid, the BDAR must be submitted to the decision-maker within 14 days of the finalisation of the BAM-C.

ii. Details and experience of author/s and contributors

Table DC1 Authors and contributors

Name	BAM Assessor Accreditation No.	Position/Role	Tasks Performed	Relevant Qualifications
Matt Freeman	BAAS19019	Principal Ecologist	Project direction, Document review, BAM calculations.	Bachelor of Natural Science (Nature Conservation) University of Western Sydney, 2012. BAM Accredited Assessor Training, Muddy Boots 2018. BAM Accredited Assessor Renewal Training, Greencap 2022. BAM Accredited Assessor Renewal Training, DCCEEW 2025 (Accredited to April 2028)



Name	BAM Assessor Accreditation No.	Position/Role	Tasks Performed	Relevant Qualifications
Alix Murray	-	Senior Ecologist	Project management, desktop assessment, report preparation, field surveys	Bachelor of Biology and Psychology. University of Newcastle Upon Tyne, 2017. Master of Biodiversity, Conservation and Ecosystem Management. University of Newcastle Upon Tyne, 2018.
Bryan Furchert	BAAS18095	Principal Botanist	Field surveys, PCT selection, TEC analysis, vegetation descriptions	Bachelor of Biodiversity and Conservation. Macquarie University, 2012 Diploma of Conservation and Land Management. TAFE NSW, 2008 BAM Accredited Assessor Training. Muddy Boots, 2017. BAM Accredited Assessor Renewal Training, Greencap 2022. BAM Accredited Assessor Renewal Training, DCCEEW 2025 (Accredited to June 2028)
Rohan Mellick	BAAS18075	Associate Botanist	Field surveys	Doctor of Philosophy, Evolutionary Ecology. The University of Adelaide, 2012 Bachelor of Applied Science (Honours) in Natural Resource Management, Southern Cross University, 2000. BAM Accredited Assessor Training, Muddy Boots 2018. BAM Accredited Assessor Renewal Training, Greencap 2022. BAM Accredited Assessor Renewal Training, DCCEEW 2025 (Accredited to April 2028).
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Jacqueline Britton	BAAS21003	Associate Ecologist	Field surveys	Bachelor of Environmental Science, Charles Sturt University, 2011. BAM



Name	BAM Assessor Accreditation No.	Position/Role	Tasks Performed	Relevant Qualifications
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Jesse Luscombe	-	Senior GIS Specialist	GIS mapping, figure preparation	Bachelor of Marine Science. Macquarie University, 2013 Certificate III in Conservation and Land Management. TAFE NSW, 2016 BAM Accredited Assessor Training. Muddy Boots, 2018

iii. Conflict of interest

I declare that I have considered the circumstances and there is no actual, perceived or potential conflict of interest.

This declaration has been made in the interests of full disclosure to the decision-maker. Full disclosure has also been provided to the client.

Signature: 

Date: 26/03/2026

BAM Assessor Accreditation no: BAAS19019



1.0 Introduction

This Biodiversity Development Assessment Report (BDAR) has been prepared by SLR Consulting Pty Ltd (SLR) to address the site-specific Secretary's Environmental Assessment Requirements (SEARs) received in respect of the proposed State Significant Development Application (SSDA) No. 97711727. The proposed development is being undertaken by Goodman Property Services (Aust) Pty Ltd (Applicant) on behalf of Goodman Western Sydney Pty Limited as trustee for the Goodman Western Sydney Trust (Owner). The development is located at 225 – 245 Martin Road, Bradfield, 2556, which is referred to hereafter as 'the Site'. A detailed description of the project can be found in Section 1.4.2.

This BDAR will form part of the required Environmental Impact Statement (EIS) to support an application for a State Significant Development (SSD) under Part 4, Division 4.7 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act).

This SSDA seeks approval for the following, which is hereafter referred to as 'the project';

- Site preparation works only (i.e. no buildings, retaining walls or other infrastructure works);
- Rehabilitation of areas disturbed by historic mining and brick-making operations under major project approval MP10_0014 and MP10_0033;
- Bulk Earthworks to the Site to align with the Connecting to Country and Precinct Plan principles including both the disturbed and undisturbed portions to capture the following proposed works:
 - Remediation of Pits 1 & 2 using predominantly on-site fill (Engineered fill import required); and
 - Preparation of the remaining Site to Bulk Earthwork Levels (BEL) (not including detailed trimming) for the proposed industrial development as considered under SSDA 97688711.
- Quarrying and Export of Bringelly Shale and Clay from select areas of Pit 1 & 2 to rectify the previous approved pit designs to ensure they are geotechnically stable to suit the proposed industrial masterplan;
- Vegetation removal of 6.97Ha over land that is not certified under the *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (Growth Centre SEPP):
 - Species being cleared involves species protected under both the *Biodiversity Conservation Act 2016* (BC Act) and *Environmental Protection Biodiversity Conservation Act 1999* (EPBC Act); and
 - EPBC Act Referral completed on a precautionary measure given small amount of EPBC Act listed communities.
- Demolition of any remaining structures within the Site;
- Remediation of identified and unidentified contamination and, if required, the construction of a containment cell in the proposed northeastern corner of the Site (currently identified as Lot 55 of DP 3050). The containment cell is subject to the identification of contamination above the commercial and industrial use thresholds that cannot otherwise be remediated or used within the general fill;
- Relocation of the Jemena Gas main predominantly burdening Lot 3 of DP127878; and



- If required through an Aboriginal Cultural Heritage Assessment Report, relocation and reburial of artefacts.

Additionally, this SSDA seeks to rely on already existing authority approvals issued under MP10_0014 (subject to any applicable modifications). These are as follows:

- Mining Lease 1771;
- Environmental Protection Licence 684;
- Ground Water Access Licence WAL24346; and
- Ground Water Supply Works Approval No. 10WA109463.

It is important to note that a number of the proposed activities being sought for approval under this SSDA have previously been assessed and approved under MP10_0014. The existing DA relates to approximately 70 ha of Net Developable Area (NDA), with the new portion of Site approximately 36 ha NDA. Cumulatively the area is approximately 116 ha NDA.

This report further outlines this in Section 1.4.2.

1.1 Related Applications/Activities

There are two applications associated with the proposed development as detailed below.

- 1 SSDA 97688711 – 14 warehouse buildings, Active Open Space & amenities precinct (including a café) and internal site infrastructure works.

The SSDA seeks approval for the construction, fit-out (including office and standard warehouse racking) and operation of 14 warehouse buildings, Active Open Space & amenities precinct (including a café) and internal site infrastructure works.

This application assumes the bulk earthworks are completed under SSDA 97711727.

- 2 Part 5 Activity – External Works Lead in Roads and Services.

The Applicant is proposing access to the Site via the following route which will be upgraded to be in accordance with the Precinct Plan:

Part 1 - Martin Road / Elizabeth Drive intersection upgrades

- It is expected that these works will be approved by way of amendment to the existing Part 5 approval by Transport for New South Wales ('TfNSW'); and
- It is understood that Transport for NSW will construct the work with a target completion date of December 2029.

Part 2 -4 - Martin Road / East West Collector Road / Lawson Road Upgrades

- Further to Part 1, access to the Site is proposed to be constructed concurrently as follows:
 - Part 2 – Access from the Martin Road / Elizabeth Drive intersection will continue down Martin Road and join the future East / West Collector Road identified within the Precinct Plan through Lot 36 DP 3050:
 - The portion of road between the Intersection and future East / West Collector Road will be upgraded with a temporary access strategy that is consistent with Condition DS5 of the Precinct Plan.
 - Part 3 – The East / West Collector Road through Lot 36 DP 3050 is proposed to be delivered in ultimate form consistent with the Precinct Plan, connecting Martin Road and Lawson Road; and



- Part 4 – From the East / West Collector Road connection on Lawson Road, the portion of Lawson Road South through to the Site will be upgraded in ultimate form consistent with the Precinct Plan.
- It is expected that these works are completed by December 2029, based on a commencement date of June 2028.

It is the Applicant's expectation that the above-mentioned works (Part 1-4) are completed prior to the receipt of the first building Occupation Certificate (expected December 2029).

Notwithstanding the above, the Applicant notes that access to the Site under SSD 97711727 will continue to be via Martin Road based on the intersection upgrades completed under MP10_0014.

1.2 Requirement for a BDAR

The project is classified as SSD under Clause 20 of Schedule 1 of State Environmental Planning Policy (State and Regional Development) 2011, as the Capital Investment Value of the project exceeds \$30 million.

Section 7.9 of the NSW *Biodiversity Conservation Act 2016* (BC Act) requires all SSD applications for Development Consent to be accompanied by a BDAR unless both the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values. A waiver has not been sought for the project, and therefore this BDAR has been prepared.

1.2.1 Planning Secretary's Environmental Assessment Requirements and Agency Referrals

As the Project comprises an SSD, an Environmental Impact Statement (EIS) is required. The EIS must meet the minimum form and content requirements as prescribed by Part 8 of the *Environmental Planning and Assessment Regulation 2021* and the State Significant Development Guidelines. Specific requirements for what is to be included in the EIS are detailed in the Planning Secretary's Environmental Assessment Requirements (SEARs) dated 26 November 2025. Item 2 of the SEARs details assessment requirements for biodiversity, which are reproduced in Table 1 below:

Table 1 SEARs

SEARs	Location in BDAR
Accurate predictions of any vegetation clearing on site	Chapters 4 and 10
A detailed assessment of the potential biodiversity impacts of the development, paying particular attention to threatened species, populations and ecological communities and groundwater dependent ecosystems undertaken in accordance with Sections 7.2 and 7.9 of the <i>Biodiversity Conservation Act 2016</i>	Chapters 4-8
A detailed description of the proposed measures to maintain or improve the biodiversity values of the site in the medium to long term, as relevant	Chapter 9
A strategy to offset any residual impacts of the development in accordance with the Biodiversity Offsets Scheme	Chapter 10



In addition to the above, Liverpool City Council (Council) were invited to provide comments on the SEARS. Item 5 of the letter received by Council details assessment requirements for biodiversity, which are reproduced in Table 2 below.

Table 2 Council requested items

Council Request	Location in BDAR
Mitigation measures for both the Bio certified and Non-Bio certified Land to minimise harm to fauna and reuse material where possible.	Chapter 9
Dam dewatering plan to minimise impact to fauna and aquatic ecosystems	To be submitted with EIS (our reference: 625.010786.00001-R3-DDP-20260326)
Vegetation Management Plan (VMP) should be provided for any bushland and riparian corridors to be retained.	To be submitted with EIS for the future Internal Works SSDA (SSD – 97688711) (our reference: 625.010786.00001-R5-VMP-20260326)

1.3 Purpose

The purpose of this BDAR is to document the findings of an assessment undertaken for the project in accordance with Stage 1 (Biodiversity Assessment) and Stage 2 (Impact Assessment) of the BAM. Specifically, the objectives of this BDAR are to:

- Identify the landscape features and site context (native vegetation cover) within the subject land and assessment area;
- Assess native vegetation extent, plant community types (PCTs), TECs and vegetation integrity (site condition) within the subject land;
- Assess habitat suitability for threatened species that can be predicted by habitat surrogates (ecosystem credits) and for threatened species that cannot be predicted by habitat surrogates (species credit species);
- Identify potential prescribed biodiversity impacts on threatened species;
- Describe measures to avoid and minimise impacts on biodiversity values and prescribed biodiversity impacts during project planning;
- Describe impacts to biodiversity values and prescribed biodiversity impacts and the measures to mitigate and manage such impacts;
- Identify the thresholds for the assessment and offsetting of impacts, including:
 - Impact assessment of potential entities of serious and irreversible impacts (SAIL);
 - Impacts for which an offset is required; and
 - Impacts for which no further assessment is required.
- Describe the application of the no net loss standard, including the calculation of the offset requirement.

A compliance table showing how this report meets the requirements of BAM is provided in Appendix A.



1.4 Project Description

1.4.1 Location

The project is located along Martin Road, Badgery Creek, and comprises Lots 1-3 DP 1278780 and Lots 55 & 56 DP 3050 within the Western Sydney Aerotropolis within the future Badgery Creek Precinct, approximately 42km west of the Sydney Central Business District (CBD) and 15km northwest of the Liverpool CBD. It is located within the Liverpool Local Government Area (LGA) and covers an area of approximately 189.5ha.

The project is largely located within the boundaries of the Western Sydney Growth Centres and therefore has been biodiversity certified (bio-certified) under the former *State Environmental Planning Policy (Sydney Region Growth Centres) 2006* (Growth Centres SEPP) (now repealed and consolidated under the *State Environmental Planning Policy (Precincts-Western Parkland City) 2021* (Parklands SEPP) (Figure 1), and so these areas are not subject to further biodiversity assessment under Part 7.6 the BC Act, or the EPBC Act (see Section 1.5.2). The bio-certified portion of the Project Maverick site is currently zoned a mix of ENT – Enterprise and ENZ – Environment and Recreation. The areas of land that have not been biocertified comprise approximately 6.97 ha and will be subject to biodiversity assessment under the BC Act and therefore will be assessed in this BDAR. These areas are referred to hereafter as the ‘subject land’.

Additionally, the Site and subject land are wholly contained within the Western Sydney Aerotropolis and so Chapter 4 of the *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* (Parklands SEPP) apply to the project (Section 1.7.4).

A site map and location map for the area impacted by the project (i.e. the subject land) have been prepared in accordance with the BAM and are presented in Figure 1 and Figure 2, respectively.

1.4.2 Project Overview

The project comprises a SSDA at 225-245 Martin Road, Bradfield seeking consent for remediation, quarrying and bulk earthworks which will replace the existing MP10_0014 quarrying consent.

This SSDA will be for site preparation works only (i.e. no buildings, retaining walls or other infrastructure works), including the rehabilitation of areas disturbed by historic mining and brick-making operations, as well as remediation and bulk earthworks across other areas of the subject land to make it suitable for intended future land use. The subject land and wider Site have historically been used for quarrying, most recently authorised by the project approval MP 10_0014 as noted above. As part of the approved mining operations, rehabilitation strategies have been established to ensure that once the mining activity ceases, the Site is readily available for future uses. It is proposed that these rehabilitation strategies are continued under this proposed application.

1.4.3 Scope of Assessment

This BDAR has been prepared to support SSD-97711727, which seeks approval for rehabilitation, quarrying, demolition and bulk earthworks only at 225–245 Martin Road, Bradfield. This application does not seek approval for buildings, internal estate infrastructure, permanent drainage works, operational land uses or landscaping.

The project assessed in this BDAR therefore comprises site preparation works only, including vegetation removal, ground disturbance, remediation and earthworks required to establish the final landform enabled by SSD-97711727.



A separate SSDA (SSD-97688711 (Internal Works)), is being progressed concurrently and seeks approval for the construction and operation of warehouse buildings, internal roads, permanent stormwater infrastructure, landscape works and associated estate infrastructure. That application is contingent on the completion of bulk earthworks under SSD-97711727 and is subject to its own environmental assessment, including consideration of detailed design outcomes.

In accordance with the BAM, biodiversity impacts must be assessed having regard to the maximum extent of vegetation clearing enabled by the approval being sought, rather than the specific staging or form of future development. Accordingly, this BDAR assesses biodiversity impacts on the basis that almost all native vegetation within the non-certified portion of the development footprint (approximately 6.97 hectares) will ultimately be removed as a consequence of SSD-97711727.

References within this BDAR to future development outcomes, design measures, fauna connectivity infrastructure (including underpasses and corridors), revegetation or landscape treatments are provided for context only. These elements:

- Are not approved under SSD-97711727;
- Are not relied upon to avoid, minimise or offset biodiversity impacts assessed in this BDAR; and
- Will be subject to separate assessment, approval and delivery under SSD-97688711 and associated management plans.

The assessment of biodiversity impacts, prescribed impacts and offset requirements presented in this BDAR is therefore based solely on the scope of works enabled by SSD-97711727 and does not assume the implementation of mitigation or enhancement measures associated with future development stages.

1.5 Site Overview

The Site is identified as 225-245 Martin Road, Bradfield, and will hereafter be referred to as the 'Site'. The key features of the Site are as follows.

Table 3 Site overview

Description	Site detail
Land Configuration	Lot 1 DP 1278780 Lot 2 DP 1278780 Lot 3 DP 1278780 Lot 55 DP 3050 Lot 56 DP 3050
Existing land use(s)	The Site is currently an operational Quarry and historically had a Brickmaking Facility. The structures and hardstand areas used for the quarry operations are located in the central portion of the Site, connected by an internal road network. In addition, three pits are located along the southern and southeast portion of the Site.
Surrounding Land Use	Surrounding land uses include: • North: Land to the north is predominantly characterised by a mix of rural, agricultural, landscape industries and, residential properties accessed by Lawson and Martin Roads. It is noted that several sites are subject to existing SSDAs for industrial / warehouse developments. Both Martin and Lawson Roads intersect with Elizabeth Drive, a major Arterial Road that



Description	Site detail
	provides access to the WSI site and the broader regional road network including the M7, Northern Road and the future M12. • South: The land to the south is currently rural however is subject to the IPG Master Plan which was approved on 11 July 2025. The approved Master Plan covers 184 hectares and aims to support over 12,400 jobs. Inghams Property Group has allocated around 625,467 sqm for employment space, focusing on advanced manufacturing, logistics, and community services. The plan includes a mix of industrial and commercial zones, a local centre, and accessible public green spaces near the Western Sydney International Airport. • Further to the south-west of the Site is Bradfield City Centre, a 114-hectare planned urban development adjacent to Western Sydney International Airport. Designed to be a hub for innovation, advanced industries, and economic growth, it has the potential to create 20,000 jobs and provide 10,000 homes, including affordable housing. The Bradfield City Master Plan prioritises sustainability, integrating green spaces, climate-resilient infrastructure, and a commitment to achieving net-zero emissions. • East: Further east of the Wianamatta-South Creek which bounds the Site, is the suburb of Kemps Creek. This land is characterised by a mix of open space, rural, agricultural, emerging urban development, and residential properties that are non-initial precincts under the WSAP but intended for employment generating uses • West: To the immediate west of the Site, bound by Badgerys Creek, is Western Sydney International Airport (WSI). Located in Badgerys Creek, WSI is a major federal infrastructure project designed to accommodate Sydney's future aviation needs. Set to commence operations in 2026, WSI will initially handle 10 million passengers annually and operate 24/7. Badgerys Creek Road also travels in a north-south direction to the west of the site. It provides a north-south connection between Elizabeth Drive and the Northern Road.
Site Access and road network	The Site is currently accessible from Martin Road which is located at the north-eastern boundary.

The Site location is depicted in Figure 1.

1.5.1 Identification of the Development Site Footprint

The layout of the project is shown in Figure 3. The development site footprint comprises the area of land directly impacted by the project including the existing buildings to be demolished, new facilities, watercourse and riparian zones and landscaping. The development site footprint comprises both the construction footprint and the operational footprint of the project. The overall development site footprint is hereafter referred to as the 'subject land', i.e. any mentioning of the development footprint or development site within this BDAR is synonymous with the subject land. For the purposes of this assessment, only the non-certified areas of land within the Site are being assessed.

It should be noted that the layout shown in Figure 3 is the end result of the two concurrent SSDAs (SSD-97711727 and SSD-97688711) and has been provided for consistency. The 'end result' of the current SSD-97711727 will be a cleared Site, with site preparation works only taking place (as outlined in Section 1.0).



1.5.2 General Description of the Subject Land

1.5.2.1 Historical and Present Land Use

The subject land and surrounds have been operating as a clay mining and brick manufacturing facility which has been in operation since 1976.

The vegetation within the subject land has largely been cleared to facilitate the quarry works, however small patches of native vegetation remain in the form of remnant canopy trees over a largely exotic understorey. The remaining vegetation within the subject land consists of exotic dominated grassland, that has been utilised for agricultural purposes over the recent past.

1.5.2.2 Topography, Geology and Soils

The subject land is low lying and sits approximately between 3-10m above sea level. The Soil Landscapes of the Penrith 1:100 000 Sheet Map (Hazelton et al. 1989) and soil landscapes available on eSpade (DPIE 2020a) indicates that the subject land is mapped as the South Creek soil landscape. The South Creek soil landscape comprises flood plains on quaternary alluvium within the Cumberland Plain and is often associated with extensively cleared open forest on yellow, grey and brown podzolic soils.

The following landscape features have been mapped within the subject land:

- Mitchell's Landscape: Cumberland Plain;
- IBRA Region: Sydney Basin; and
- IBRA Subregion: Cumberland.

1.5.2.3 Hydrology

The subject land occurs within the Sydney water catchment and Hawkesbury-Nepean sub-catchment. As per the Natural Resources Access Regulator (NRAR) Hydroline spatial dataset (reference), the subject land does not contain any waterbodies or watercourses.

There is an unnamed second order watercourse present in the southeast of the Site, located approximately 60m south of the subject land. Controlled activities carried out in, on, or under waterfront land are regulated by the *Water Management Act 2000* (WM Act) and require approval by the NRAR who defines 'waterfront land' as the land 40 m from the highest bank of a river, lake or estuary. The subject land does not fall on waterfront land, as defined by the WM Act, and so the WM Act does not apply to this BDAR.

Additionally, under the EP&A Act, a controlled activity approval issued under the WM Act for development on waterfront land is not required for SSDs as per Section 4.41 which states:

"The following authorisations are not required for State Significant Development that is authorised by a development consent granted after the commencement of this Division (and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply) - water use approval under Section 89, a water management work approval under Section 90 or an activity approval (other than an aquifer interference approval) under Section 91 of the Water Management Act 2000."

Section 91 of the WM Act states:

"A controlled activity approval confers a right on its holder to carry out a specified controlled activity at a specified location in, on or under waterfront land."

As such, in accordance with the EP&A Act and the WM Act, a controlled activity approval is not required for the masterplan development within the Site.



1.6 Information Sources

1.6.1 Databases

A number of databases were utilised during the preparation of this BDAR, including:

- E&H NSW BioNet Atlas (E&H 2026a);
- E&H BioNet Vegetation Information System (VIS) database (E&H 2026b);
- E&H Threatened Biodiversity Data Collection (TBDC) (E&H 2026c);
- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) EPBC Act Protected Matters Search Tool (DCCEEW 2026a);
- Commonwealth DCCEEW Directory of Important Wetlands in Australia (DCCEEW 2026b); and
- Data within the SEED portal (NSW Government 2026) including NSW State Vegetation Type Map (SVTM).

1.6.2 Literature

This BDAR has not used the results and/or spatial data from any other documents. However, the findings of the following documents were considered:

- Project Maverick: Due Diligence Memo and Reconnaissance Survey Results (Arcadis, 2025); and
- Project Maverick Scoping Report #3 – Earthworks and Remediation SSDA (Urbis, 2025).

Other sources of information have been referenced throughout this BDAR.

1.6.3 Aerial Photography

The aerial imagery utilised in this BDAR is sourced from NearMap and is dated 22 June 2025. Historical aerial imagery from 1943 as available on SixMaps, as well as historical aerial imagery from the 1960s – 1990s, sourced from NSW Government Spatial Services – historical imagery viewer, was also consulted.

1.7 Other Legislative Requirements

1.7.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) prescribes the Commonwealth's role in environmental assessment, biodiversity conservation and the management of protected areas of national significance. It also provides a mechanism for national environment protection and biodiversity conservation.

The EPBC Act is administered by the Commonwealth DCCEEW and provides protection for listed Matters of National Environmental Significance (MNES) including:

- Listed species and communities (e.g. listed threatened species and ecological communities and migratory species);
- Protected areas (e.g. World Heritage properties, Ramsar wetlands of international significance, conservation zones); and
- National, Commonwealth and Indigenous Heritage.



Under the EPBC Act, any action (which includes a development, project or activity) that is considered likely to have a significant impact on MNES must be referred to the Commonwealth Minister for the Environment.

There are several MNES occurring within the Site that may be impacted by the project all of which are addressed within this BDAR. These include:

- Threatened Ecological Communities (TECs);
- Threatened flora species;
- Commonwealth Lands (Western Sydney Airport);
- Listed Migratory bird species; and
- Threatened fauna species.

A referral under the EPBC Act was prepared for the project and submitted on 17 February 2026 to address the potential impacts on MNES within the Site. A decision was made by the Minister on 19 March 2026 that confirmed that the project is not considered to be a controlled action on MNES. A copy of the Referral outcome is provided in Appendix B.

1.7.2 Water Management Act 2000

Under the WM Act, waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary. The NRAR is an independent water regulator, responsible for enforcement of water laws while NSW Water administers the WM Act and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land because of carrying out the controlled activity. This means that a controlled activity approval must be obtained from NSW Water before commencing the controlled activity. The design and construction of works or activities within a watercourse or adjoining waterfront land should protect and enhance water flow, water quality, stream ecology and existing riparian vegetation. Impacts on the hydrologic, hydraulic and geomorphic functions of a watercourse should also be minimised.

Controlled activity means:

- Erection of a building;
- Carrying out a work;
- Removing material from waterfront land, such as vegetation or extractive material;
- Depositing material on waterfront land, such as extractive material; and
- Carrying out an activity which affects the quantity or flow of water in a water source.

As mentioned in Section 1.5.2.3, a controlled activity approval is not required for SSDs, and so is not required for the project.

1.7.3 Growth Centre SEPP

The project is largely located within the boundaries of the Western Sydney Growth Centres and therefore has been biodiversity certified (bio-certified) under the former Growth Centres SEPP (now repealed and consolidated under Chapter 3 of the Parklands SEPP).

The Growth Centres SEPP is a planning tool that guides development within designated growth areas in Western Sydney. The aims of the policy are as follows:



- a) To co-ordinate the release of land for residential, employment and other urban development in the North West Growth Centre, the South West Growth Centre, the Wilton Growth Area and the Greater Macarthur Growth Area;
- b) To enable the Minister from time to time to designate land in growth centres as ready for release for development;
- c) To provide for comprehensive planning for growth centres;
- d) To enable the establishment of vibrant, sustainable and liveable neighbourhoods that provide for community well-being and high-quality local amenity;
- e) To provide controls for the sustainability of land in growth centres that has conservation value;
- f) To provide for the orderly and economic provision of infrastructure in and to growth centres;
- g) To provide development controls in order to protect the health of the waterways in growth centres;
- h) To protect and enhance land with natural and cultural heritage value; and
- i) To provide land use and development controls that will contribute to the conservation of biodiversity.

1.7.3.1 Bio-certification under the Growth Centres SEPP

The Growth Centres SEPP was established in 2006 to prepare for the predicted population growth in Sydney by approximately 1.7 million people by 2036, which would present significant challenges to governments to provide appropriate and affordable housing, infrastructure and services. Since then, the State Government has commenced coordinated planning and infrastructure delivery within the Growth Centres, to facilitate the supply of new land to the market as quickly and efficiently as possible. It will provide for approximately 181,000 new dwellings, a minimum of 2,500ha for employment and up to \$7.5 billion in regional infrastructure.

To streamline providing for the above, bio-certification was granted over the Growth Centres SEPP to allow for development in the Growth Centres to proceed without further NSW biodiversity assessment on certified areas on the basis that the agreed conservation outcomes are delivered. The order to confer bio-certification on the Growth Centres SEPP was published on 14 December 2007 and was originally in force until 30 June 2025 (reference), however the NSW Government has proposed to extend the certification order until 30 June 2026.

The *Sydney Growth Centres Program* commenced in November 2009 and was prepared under the strategic assessment provisions of the EPBC Act, conducted under an agreement between the NSW and Commonwealth governments to support Sydney's population and development. The program was prepared to protect the land and manage biodiversity through several mechanisms and removes the need for individual approvals under the EPBC Act. The approval of the strategic assessment program:

- Ensures that eligible developments in the Sydney Growth Centres don't need EPBC Act approval;
- Makes environmental assessment and approval processes more efficient;
- Removes duplication in decision-making; and
- Maintains high environmental standards.



The majority of the Site is certified under the Growth Centres SEPP, and so further biodiversity assessment is not required under the BC Act or the EPBC Act within these areas. The subject land comprises an area of approximately 6.97 ha that falls within the non-certified land in the eastern portion of the Site (Figure 4). The subject land will therefore need to be subject to a full biodiversity assessment under the BC Act, hence the preparation of this BDAR.

1.7.4 Parklands SEPP

The Parklands SEPP simplifies and consolidates planning for growth areas in the Western Parkland City of Sydney. It aims to coordinate development, enable the establishment of vibrant neighbourhoods and ensure infrastructure is provided in an orderly manner. It also focuses on protecting environmental and cultural heritage.

The subject land is wholly contained within the Western Sydney Aerotropolis within the future Badgerys Creek precinct, so therefore Chapter 4 of the Parklands SEPP applies to the proposed development, as explained in the section below.

1.7.4.1 Chapter 4 Western Sydney Aerotropolis

Chapter 4 of the Parklands SEPP titled Western Sydney Aerotropolis outlines the planning framework for the Western Sydney Aerotropolis precinct. It aims to guide development within the area surrounding the future Western Sydney International (Nancy-Bird) Airport. Specifically, it aims to:

- a) To facilitate development in the Western Sydney Aerotropolis in accordance with the objectives and principles of the Western Sydney Aerotropolis Plan (WSAP);
- b) To promote sustainable, orderly and transformational development in the Western Sydney Aerotropolis;
- c) To ensure development is compatible with the long-term growth and development of the Western Sydney Airport (including in relation to the operation of the Airport 24 hours a day) and other critical transport infrastructure;
- d) To promote employment and world-class innovation and provide for residential development in suitable locations;
- e) To recognise the physical and cultural connection of the local Aboriginal community to the land and to incorporate local Aboriginal knowledge, culture and tradition into development;
- f) To preserve land for future infrastructure development;
- g) To protect, maintain and enhance, and to minimise the impact of development on, trees and vegetation, soil quality and the health of waterways and to contribute to the conservation of biodiversity; and
- h) To recognise and protect the ecological and cultural value of Wianamatta–South Creek.

Clause 4.19 Wildlife Hazards

Under Chapter 4 of the Parklands SEPP, development consent must not be granted to relevant development on land within a 13km wildlife buffer zone of the future airport unless the consent authority has:

- a) Consulted the relevant Commonwealth body;



- b) Considered a written assessment of the wildlife that is likely to be present on the land and the risk of the wildlife to the operation of the Airport provided by the applicant, which includes:
 - i. Species, size, quantity, flock behaviour and the particular times of day or year when the wildlife is likely to be present;
 - ii. Whether any of the wildlife is a threatened species; and
 - iii. A description of how the assessment was carried out.
- c) Is satisfied that the development will mitigate the risk of wildlife to the operation of the Airport, including, for example, measures relating to:
 - i. Waste management, landscaping, grass, fencing, stormwater or water areas; and
 - ii. The dispersal of wildlife from the land by the removal of food or the use of spikes, wire or nets.

The Site and subject land are within the 3km wildlife buffer to the airport, and therefore a Wildlife Hazard Assessment and Management Plan (WHAMP) has been prepared for the proposed development to accompany the EIS (our reference: 625.010786.00001-R5-WHAMP-20260326).

Clause 4.25 Preservation of trees and vegetation in Environment and Recreation Zone and Cumberland Plain

Clause 4.25 of the Parklands SEPP applies to land that is zoned ENZ – Environment and Recreation and areas shown as 'existing native vegetation' on the High Biodiversity Values Map (Figure 5). The subject land is zoned largely ENT – Enterprise under Chapter 4 of the Parklands SEPP, however it does contain 0.17ha of land that is mapped on Figure 5, and therefore development consent is required.

Development consent must not be granted for areas mapped as existing native vegetation, unless the consent authority is satisfied that:

- a) There is no reasonable alternative available to the disturbance of the native vegetation;
- b) Any impact of the proposed clearing on biodiversity values is avoided or minimised;
- c) The disturbance of the native vegetation will not increase salinity;
- d) Native vegetation inadvertently disturbed for the purposes of construction will be re-instated where possible on completion of construction;
- e) The loss of remnant native vegetation caused by the disturbance will be compensated by revegetation on or near the land to avoid a net loss of remnant native vegetation; and
- f) The clearing of the vegetation is unlikely to cause or increase soil erosion, salination, land slip, flooding, pollution or other adverse land or water impacts.

This BDAR has been prepared in accordance with Clause 4.25 of the WPC SEPP, and further information on how the proposed development will impact on the above can be found in Section 8.0.



1.7.4.2 Western Sydney Aerotropolis Development Control Plan

The *Western Sydney Aerotropolis Development Control Plan 2022* (Aerotropolis DCP) was prepared in accordance with the EP&A Act, the Parklands SEPP and the Western Sydney Aerotropolis Precinct Plan (WSAP). The objectives and controls within this DCP aim to:

- 1 Facilitate development which is appropriate to the unique natural characteristics and desired future outcomes for each precinct of the Aerotropolis;
- 2 Safeguard the airport operations of the Western Sydney International (Nancy-Bird Walton) Airport;
- 3 Support high levels of local accessibility, quality place and amenity outcomes to drive business relocation and economic growth;
- 4 Encourage design that maintains and enhances the character and heritage significance of Aboriginal and European heritage items and heritage conservation areas;
- 5 Encourage ecologically sustainable development and reduce the impacts of development on the environment; and
- 6 Deliver development in accordance with the principles of Water Sensitive Urban Design.

In terms of biodiversity, the Aerotropolis DCP aims to ensure consistency with the requirements of the relevant bio-certification for the subject land and implements the Growth Centres SEPP bio-certification order where applicable. Therefore, under the Aerotropolis DCP, the majority of the Site is exempt from further biodiversity assessment, and only the subject land (i.e. the non-certified land) needs to be assessed. This BDAR has been prepared in accordance with the Aerotropolis DCP.



FIGURE 1

- LEGEND**
- Subject Land
 - The Site
 - Cadastral
 - Native Vegetation Cover
 - Patch Size
 - Riparian Corridor
 - Local Wetlands and Waterbodies
- Watercourses**
- 1st Order Stream
 - 2nd Order Stream
 - 3rd Order Stream
 - 4th Order Stream
 - 6th Order Stream or Above
- IBRA Bioregion**
- Sydney Basin
- IBRA Subregion**
- Cumberland
- NSW (Mitchell) Landscapes**
- Cumberland Plain
 - Hawkesbury - Nepean Channels and Floodplains

Image Source:
Image © NearMap 2026 Dated: 22/6/2025
Data Source:
NSW Government Spatial Services SIX Maps 'Clip and Ship'
Liverpool LGA
DECCW (2008), Landscapes (Mitchell) of NSW - Version 3.
DSEWPoC (2012), Interim Biogeographic Regionalisation for Australia (IBRA) - Version 7.
DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

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Project Number: 625.010786.00001
Date Drawn: 18-Mar-2026
Drawn by: JL

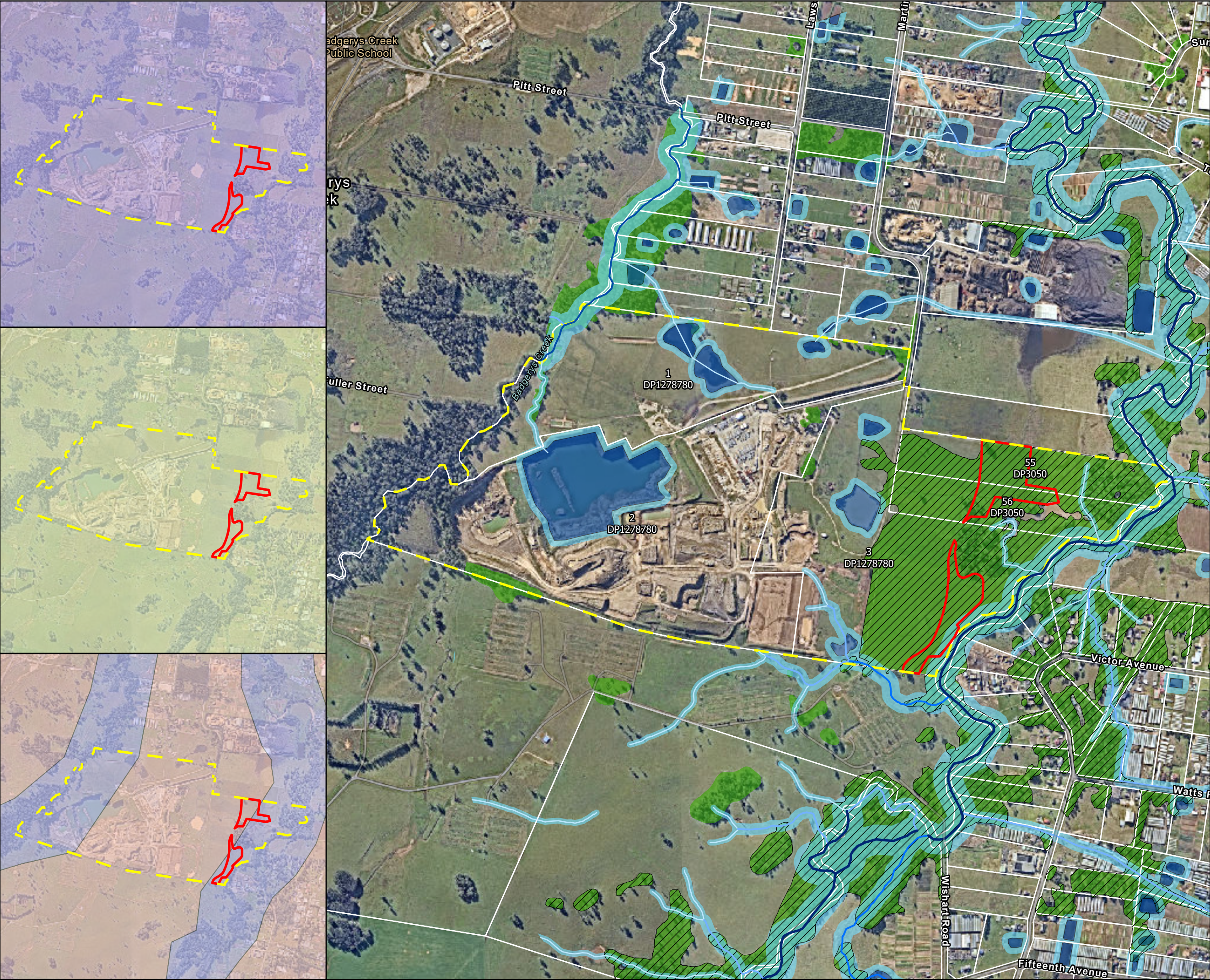


FIGURE 2

- LEGEND**
- Subject Land
 - The Site
 - Assessment Area
 - Native Vegetation Cover
 - Patch Size
 - Riparian Corridor
 - Local Wetlands and Waterbodies
- Watercourses**
- 1st Order Stream
 - 2nd Order Stream
 - 3rd Order Stream
 - 4th Order Stream
 - 6th Order Stream or Above
- IBRA Bioregion**
- Sydney Basin
- IBRA Subregion**
- Cumberland
- NSW (Mitchell) Landscapes**
- Cumberland Plain
 - Hawkesbury - Nepean Channels and Floodplains

Image Source:
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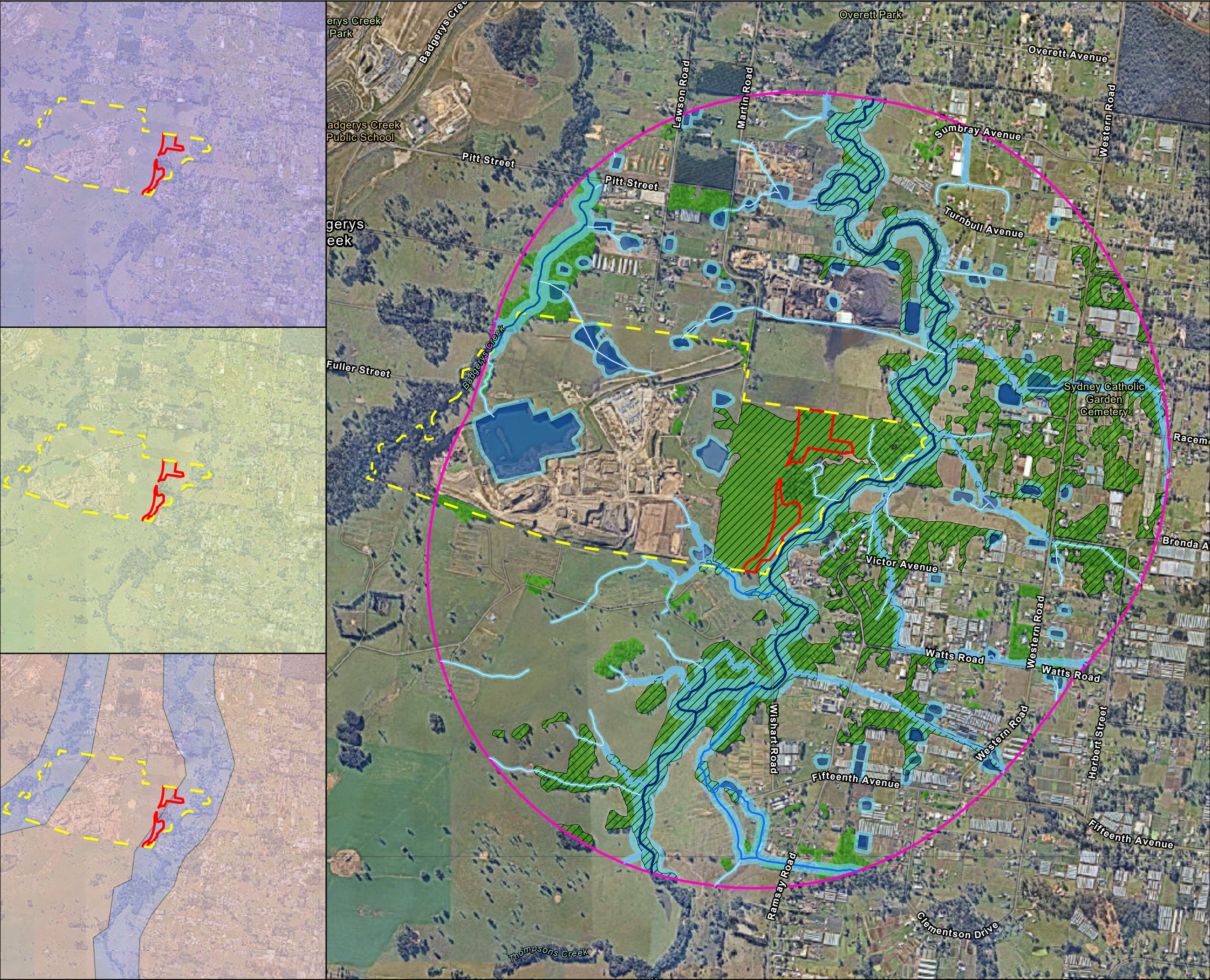
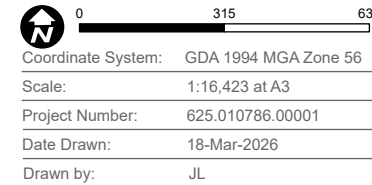


FIGURE 3. LAYOUT OF THE PROJECT



DEVELOPMENT SUMMARY												LEGEND											
ESTATE SITE AREA		1,897,893 m²		LOT 1		LOT 3		LOT 5		LOT 6B		LOT 8		LOT 9B		LOT 11		OVERALL INDUSTRIAL PROVISION		ACTIVE OPEN SPACE			
ESTATE NON DEVELOPABLE AREA		723,197 m²		WAREHOUSE LOT NET DEVELOPABLE AREA		1,124,286 m²		WAREHOUSE OFFICE		15,582 m²		WAREHOUSE OFFICE		1,387 m²		WAREHOUSE OFFICE		30,873 m²		WAREHOUSE OFFICE		1,480 m²	
ACTIVE OPEN SPACE - EAST		3,731 m²		LOT		AREA		LOT		AREA		WAREHOUSE DOCK OFFICE		58 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		200 m²	
ACTIVE OPEN SPACE - WEST		25,832 m²		1		32,371 m²		7		76,747 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		200 m²		WAREHOUSE DOCK OFFICE		200 m²	
COLLECTOR ROAD		74,346 m²		2		57,627 m²		8		89,775 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		200 m²		WAREHOUSE DOCK OFFICE		200 m²	
DNZ		185,462 m²		3		47,018 m²		9		237,972 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		200 m²		WAREHOUSE DOCK OFFICE		200 m²	
FUTURE ROAD RESERVE		115,140 m²		4		58,183 m²		10		110,885 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		200 m²		WAREHOUSE DOCK OFFICE		200 m²	
HALF WIDTH PRIMARY ARTERIAL ROAD		23,772 m²		5		61,730 m²		11		45,697 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		200 m²		WAREHOUSE DOCK OFFICE		200 m²	
HIGH BIODIVERSITY VALLEY TREES		98,466 m²		6		242,789 m²		12		67,211 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		200 m²		WAREHOUSE DOCK OFFICE		200 m²	
PARK EDGE ROAD / LOCAL STREET		30,839 m²		TOTAL GFA		16,457 m²		TOTAL GFA		21,258 m²		TOTAL GFA		32,399 m²		TOTAL GFA		36,323 m²		TOTAL GFA		43,688 m²	
RESIDUAL STORMWATER ZONE		77,518 m²		TOTAL GFA		16,328 m²		TOTAL GFA		21,164 m²		TOTAL GFA		32,219 m²		TOTAL GFA		36,143 m²		TOTAL GFA		43,479 m²	
SYDNEY WATER STORM WATER BASIN		65,185 m²		LOT 2		LOT 4		LOT 6A		LOT 7		LOT 9A		LOT 10		LOT 12		TOTAL DEVELOPABLE GLA		TOTAL DEVELOPABLE GFA		594,862 m²	
SYDNEY WATER TRUNK DRAINAGE		33,778 m²		TOTAL GROSS DEVELOPABLE AREA		1,897,893 m²		WAREHOUSE OFFICE		30,379 m²		WAREHOUSE OFFICE		25,922 m²		WAREHOUSE OFFICE		38,976 m²		WAREHOUSE OFFICE		32,187 m²	
WAREHOUSE LOT EASEMENTS		56,120 m²		ESTATE NON DEVELOPABLE AREA		723,197 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		200 m²		WAREHOUSE DOCK OFFICE		200 m²	
DEVELOPER TRUNK DRAINAGE		3,682 m²		WAREHOUSE LOT NON DEVELOPABLE AREA		56,120 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		200 m²		WAREHOUSE DOCK OFFICE		200 m²	
NATURALISED CHANNEL		7,886 m²		TOTAL NET DEVELOPABLE AREA		1,124,286 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		180 m²		WAREHOUSE DOCK OFFICE		200 m²		WAREHOUSE DOCK OFFICE		200 m²	
NATURALISED CORRIDOR		3,544 m²		TOTAL GFA		31,979 m²		TOTAL GFA		27,246 m²		TOTAL GFA		103,049 m²		TOTAL GFA		39,957 m²		TOTAL GFA		36,758 m²	
FOOTSTRAIN ACCESS		848 m²		TOTAL GFA		31,837 m²		TOTAL GFA		27,168 m²		TOTAL GFA		102,728 m²		TOTAL GFA		39,796 m²		TOTAL GFA		36,564 m²	
RIPIARIAN STREET		15,503 m²		TOTAL GFA		31,837 m²		TOTAL GFA		27,168 m²		TOTAL GFA		102,728 m²		TOTAL GFA		39,796 m²		TOTAL GFA		36,564 m²	
SYDNEY WATER TRUNK DRAINAGE		33,947 m²		TOTAL GFA		31,837 m²		TOTAL GFA		27,168 m²		TOTAL GFA		102,728 m²		TOTAL GFA		39,796 m²		TOTAL GFA		36,564 m²	
				TOTAL GFA		31,837 m²		TOTAL GFA		27,168 m²		TOTAL GFA		102,728 m²		TOTAL GFA		39,796 m²		TOTAL GFA		36,564 m²	
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				TOTAL GFA		31,837 m²		TOTAL GFA		27,168 m²		TOTAL GFA		102,728 m²		TOTAL GFA		39,796 m²		TOTAL GFA		36,564 m²	
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				TOTAL GFA		31,837 m²		TOTAL GFA		27,168 m²													

DA SUBMISSION

FIGURE 4

LEGEND

Subject Land

The Site

**State Environmental Planning
Policy (Sydney Region Growth
Centres) 2006**

Existing Certified

Existing Non Certified

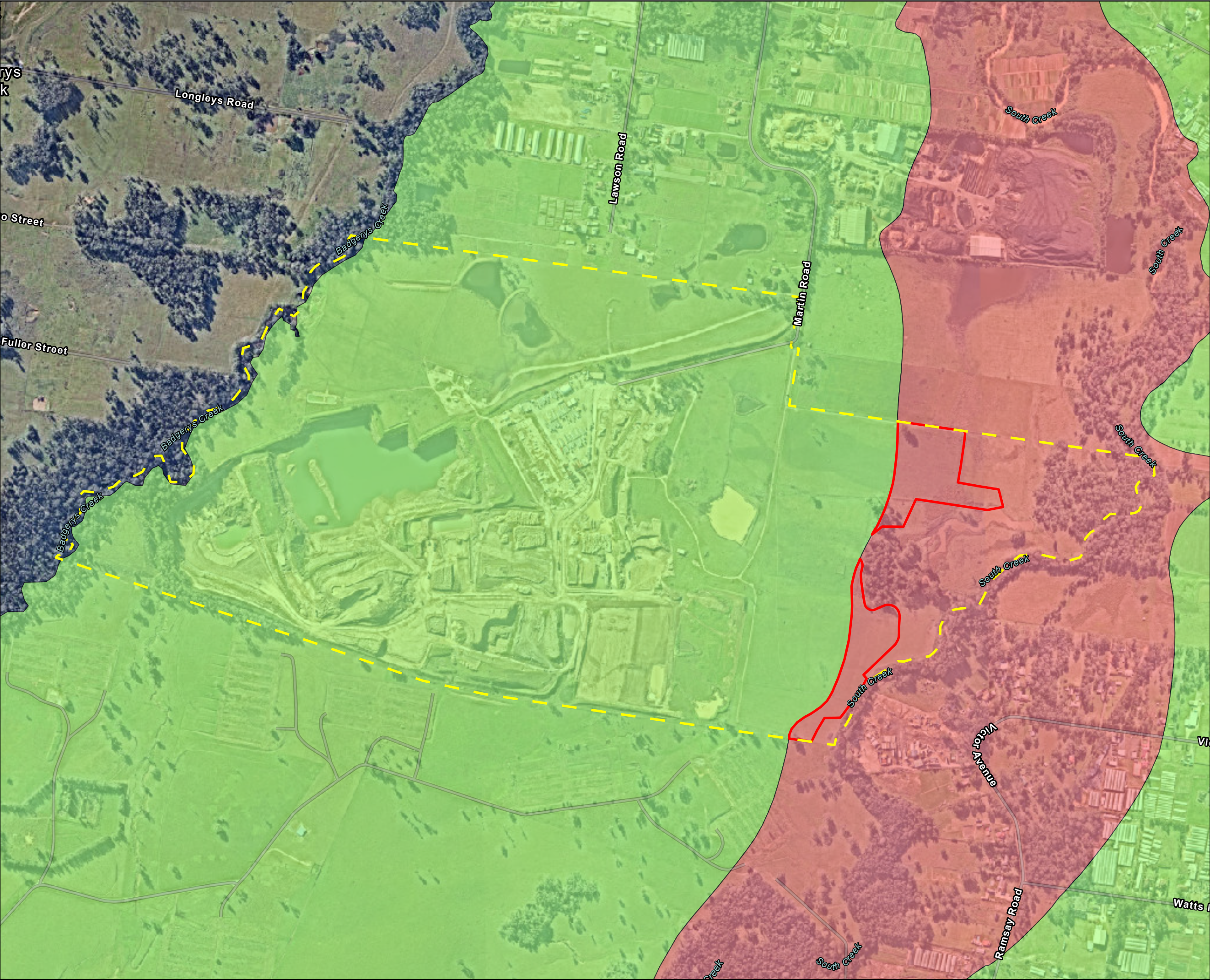


Image Source:
Image © NearMap 2026 Dated: 22/6/2025
Data Source:
State Environmental Planning Policy (Sydney Region
Growth Centres) 2006
DISCLAIMER: All information within this document may be
based on external sources. SLR Consulting Pty Ltd makes
no warranty regarding the data's accuracy or reliability for
any purpose.

0160320
m

Coordinate System: GDA 1994 MGA Zone 56

Scale: 1:8,431 at A3

Project Number: 625.010786.00001

Date Drawn: 18-Mar-2026

Drawn by: JL



FIGURE 5

LEGEND

- Subject Land
- The Site

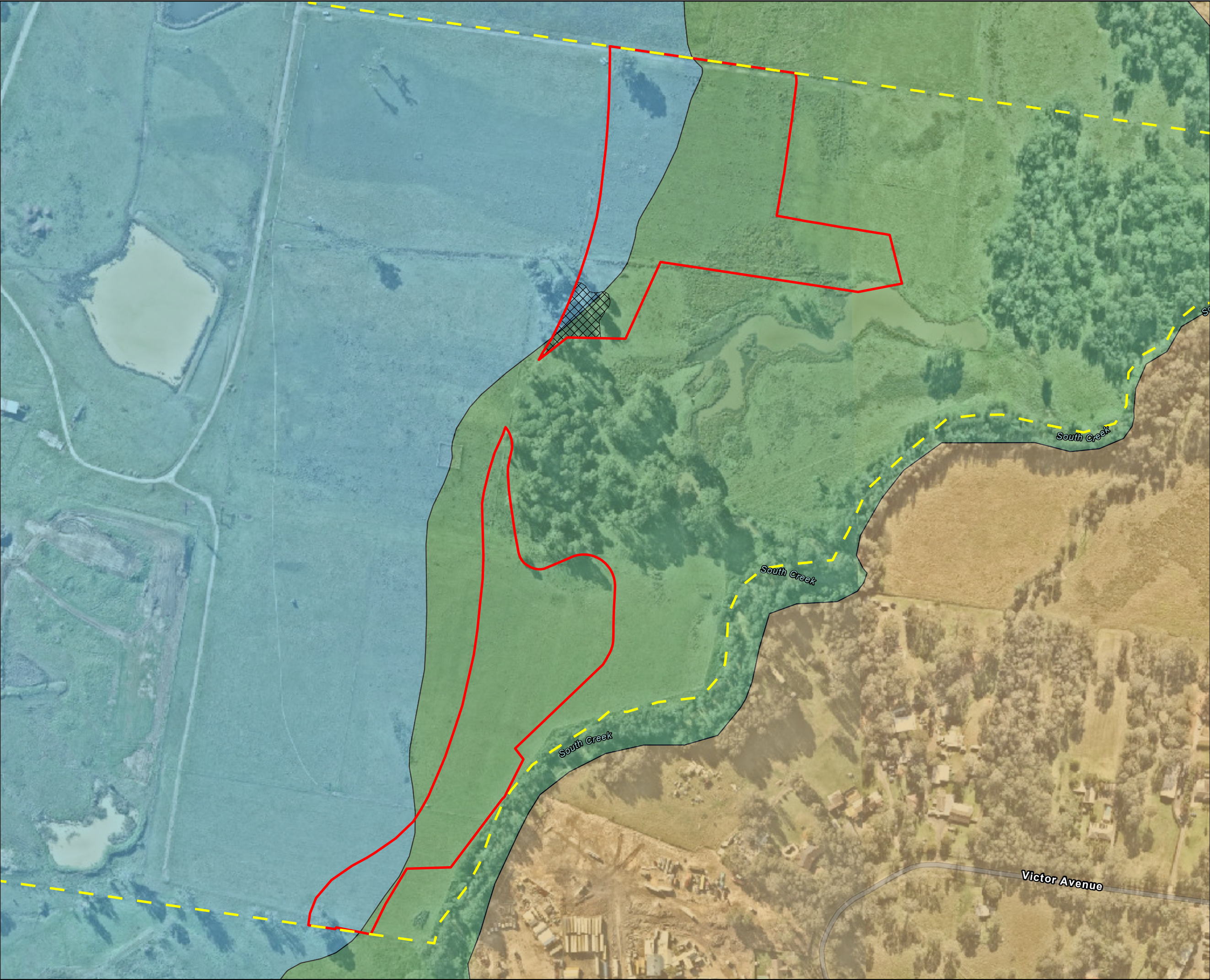
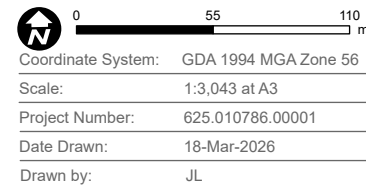
State Environmental Planning
Policy (Precincts—Western
Parkland City) 2021

High Biodiversity Values Map

Land Zoning

- ENT - Enterprise
- ENZ - Environment and Recreation
- RU4 - Primary Production Small Lots

Image Source:
Image © NearMap 2026 Dated: 22/6/2025
Data Source:
State Environmental Planning Policy (Precincts—Western
Parkland City) 2021
DISCLAIMER: All information within this document may be
based on external sources. SLR Consulting Pty Ltd makes
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any purpose.



2.0 Methodology

2.1 Review of Existing Data

Database analysis was conducted for the locality of the subject land using the BioNet Atlas (EHG 2024a). The locality is defined as the area within a 5 km buffer from the boundary of the subject land. The BioNet Atlas search facility was used to generate records of threatened flora and fauna species and populations listed under the BC Act and/or EPBC Act within the locality of the subject land. The abundance, distribution and age of records generated within the search areas provided supplementary information for the assessment of occurrence of those threatened species within the subject land.

The following databases and map tools were also interrogated:

- Species data that is held in the BioNet Atlas (EHG 2024a);
- NSW SVTM (DPE 2024b);
- BioNet Vegetation Classification database (EHG 2024b);
- Threatened Biodiversity Data Collection (TBDC) (EHG 2024c); and
- Biodiversity Values Map and Threshold Tool (DPE 2024a).

The information collected during the database analysis provided additional information on the ecological constraints associated with the subject land and Site and informed the field surveys.

2.2 Landscape Features

Landscape features requiring consideration were initially determined via desktop assessment. Field surveys undertaken by SLR on 8 – 12 September 2025 sought to verify the following landscape features:

- Rivers, streams and estuaries;
- Important and local wetlands;
- Karsts, caves, crevices, cliffs and areas of geological significance; and
- NSW BioNet Landscapes.

No amendments were required to be made to any of these landscape features within the subject land following field surveys.

2.3 Native Vegetation Survey

2.3.1 Vegetation Mapping

Broad-scale vegetation mapping published in the NSW SVTM by the NSW DCCEEW encompasses the subject land and wider Site. SLR conducted additional vegetation surveys between the 8 – 12 September 2025 to revise and update the vegetation mapping. The vegetation within the Site was ground-truthed to examine and verify the mapping of the condition and extent of the different plant communities. Mapping of plant communities within the Site was undertaken by random meander surveys through patches of vegetation, noting key characteristics of areas in similar broad condition states such as similar tree cover, shrub cover, ground cover, weediness or combinations of these, and areas were also assessed for microhabitat suitability for threatened flora.

Records of plant community boundaries were made using a hand-held Global Positioning System (GPS) and mark-up of aerial photographs. The resultant information was synthesised



using GIS to create a spatial database that was used to interpret and interpolate the data to produce a vegetation map of the Site.

2.3.2 Vegetation Integrity Assessment

Vegetation integrity assessments were undertaken in the subject land and wider Site in accordance with the BAM. BAM requires the establishment of a 20 x 50 m plot with an internal 20 m x 20 m plot. The following data was collected within each of the plots:

- Composition for each growth form group by counting the number of native plant species recorded for each growth form group within a 20 m x 20 m floristic plot;
- Structure of each growth form group as the sum of all the individual projected foliage cover estimates of all native plant species recorded within each growth form group within a 20 m x 20 m floristic plot;
- Cover of 'High Threat Exotic' weed species within a 20 m x 20 m floristic plot;
- Assessment of function attributes within a 20 x 50 m plot, including:
- Count of number of large trees;
- Tree stem size classes, measured as 'diameter at breast height (DBH)' over bark;
- Regeneration based on the presence of living trees with stems <5 cm DBH;
- The total length in metres of fallen logs over 10 cm in diameter;
- Assessment of litter cover within five 1 m x 1 m plots evenly spread within the 20 x 50 m plot; and
- Number of trees with hollows that are visible from the ground within the 20 x 50 m plot.

A total of fourteen (14) BAM plots were undertaken within the Site and subject land and their locations are shown in Figure 6. The locations of plots have sought to capture the environmental variation of the PCTs identified within the Site (see Section 4.2). Table 4 summarises the plot requirements based on the size and number of vegetation zones in the subject land. The vegetation in the Site has been mapped as comprising nine separate vegetation zones, and the minimum number of plots have been completed for each of these zones.

Table 4 Minimum Plot Survey Requirements

Vegetation Zone	PCT	Condition	Area within the Site (ha)	Area within the Subject Land (ha)	Minimum Number of Plots Required	Number of Plots Completed
1	3320	Canopy	11.88	0.62	1	1
2	3320	Grassland	0.75	0.03	1	1
3	3975	Artificial	0.50	0.00	1	1
4	3975	Natural	2.80	0.40	2	2
	4023	Moderate	1.86	0.00	1	1
	4023	Degraded	0.50	0.00	2	2
	4025	Moderate	3.14	0.00	2	2
5	4025	Degraded	4.28	0.08	2	2
6	4025	Grassland	22.60	4.43	3	3



2.4 Threatened Flora Species Survey

2.4.1 Habitat Constraints

Under Section 5.2.2 of BAM 2020, species credit species can be excluded from further assessment, and thereby targeted surveys, if it is determined that none of the species-specific habitat constraints are present within the subject land. Furthermore, under Section 5.2.3 of BAM 2020, a candidate species credit species can be considered unlikely to occur on the subject land (or specific vegetation zones) if after carrying out a field assessment, the assessor determines that the habitat is substantially degraded such that the species is unlikely to utilise the subject land (or specific vegetation zones).

Desktop assessments and field surveys within the subject land included assessment of habitat constraints and microhabitats for predicted species credit flora species. Due to the historic disturbance including pasture improvement, dominance of exotic grasses and absence of a shrub layer within the subject land, the habitat constraints assessments determined that habitats within the subject land were considered to be sufficiently degraded to rule out several candidate flora species credit species generated by the BAM-C.

2.4.2 Targeted Threatened Species Survey

Targeted threatened flora surveys were undertaken for species credits species that were assessed as candidate species credit species for further assessment. Table 5 provides a summary of the flora species credit species surveyed for within the subject land.

The locations of the targeted flora species surveys are shown in Figure 6.

Table 5 Flora survey effort

Scientific Name	Common Name	Recommended Survey Period	Dates of Survey within Subject Land	Survey Method
<i>Acacia pubescens</i>	Downy Wattle	Jan-Dec	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Eucalyptus benthamii</i>	Camden White Gum	Jan - Dec	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Eucalyptus glaucina</i>	Slaty Red Gum	Jan - Dec	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	-	Jan - Dec	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Hibbertia puberula</i>		Oct – Dec	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Hibbertia</i> sp. <i>Bankstown</i>		Sept - Dec	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random



Scientific Name	Common Name	Recommended Survey Period	Dates of Survey within Subject Land	Survey Method
				meander/habitat assessment (Sept)
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> – endangered population	Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool, and Penrith local government areas	Nov - Feb	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Maundia triglochinos</i>	-	Nov - Mar	19 October 2021 1 December 2021	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Micromyrtus minutiflora</i>		Jan - Dec	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Persicaria elatior</i>	Tall Knotweed	Dec - May	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Persoonia hirsuta</i>	Hairy Geebung	Jan – Dec	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Persoonia nutans</i>	Nodding Geebung	Jan - Dec	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Pimelea curviflora</i> var. <i>curviflora</i>	-	Oct - Mar	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Pimelea spicata</i>	Spiked Rice-flower	Jan – Dec	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)
<i>Pultenaea pedunculata</i>	Matted Bush-pea	Sept - Nov	8-12 September 2025 15 December 2025	Parallel traverses (Dec), Random meander/habitat assessment (Sept)



2.4.3 Parallel Traverses

Target Species: As per Table 5 above.

Targeted surveys were conducted using parallel field traverses in combination with a random meander in accordance with the NSW Guide to Surveying Threatened Plants (NSW Government 2020b). Targeted threatened flora surveys using parallel traverses were undertaken in December 2025.

2.5 Threatened Fauna Species Survey

2.5.1 Habitat Constraints

Under Section 5.2.2 of BAM 2020, species credit species can be excluded from further assessment, and thereby targeted surveys, if it is determined that none of the species-specific habitat constraints are present within the subject land. Furthermore, under Section 5.2.3 of BAM 2020, a candidate species credit species can be considered unlikely to occur on the subject land (or specific vegetation zones) if after carrying out a field assessment, the assessor determines that the habitat is substantially degraded such that the species is unlikely to utilise the subject land (or specific vegetation zones).

Desktop assessments and field surveys within the subject land included assessment of habitat constraints and microhabitats for predicted species credit fauna species and assessment of potential breeding habitat for species/ecosystem credit species (hereafter referred to as dual credit species). This included desktop assessment of proximity of the subject land to features such as caves and waterways and field inspection of microhabitats including leaf litter, stick nests, hollowing-bearing trees, significant bush rock, fallen logs, culverts, water bodies and decorticated bark. Due to the historic disturbance and lack of structural layers within the subject land, the habitats within the subject land were sufficiently degraded to rule out the presence of several candidate fauna species credit species and dual credit species generated by the BAM-C. Further species were excluded from further assessment as the species-specific habitat constraints were absent from within the subject land following field surveys.

2.5.2 Targeted Threatened Species Survey

Targeted threatened fauna surveys were undertaken within the subject land for species credit species or breeding habitat for dual credit species that were assessed as candidate species credit species for further assessment. The survey design was guided by the following:

- NSW Government (2020a): Biodiversity Assessment Method;
- DEC (NSW) (2004): Threatened Biodiversity Survey and Assessment, Guidelines for Development and Activities (Working Draft);
- Department of Planning, Industry and Environment (DPIE) (2020): NSW Survey Guide for Threatened Frogs, a guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method;
- NSW Government (OEH 2018): 'Species credit' threatened bats and their habitats, NSW survey guide for the Biodiversity Assessment Method; and
- Survey Comments within the E&H TBDC.

All surveys were undertaken during periods specified in the TBDC (EES 2025) for each species and according to relevant survey guidelines. Table 6 provides a summary of the fauna species credit species surveyed for within the subject land, whilst detailed survey methods are described below.

The locations of the targeted fauna species surveys are shown in Figure 7.



Table 6 Fauna survey effort

Scientific Name	Common Name	Recommended Survey Period	Dates of Survey within Subject Land	Survey Method
<i>Litoria aurea</i>	Green and Golden Bell Frog	Nov - Mar	1 – 4, 10 th and 15 th December 2025	Spotlighting, call playback, active searches
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	Jan - Dec	21 st November 2025	Diurnal active search
<i>Myotis macropus</i>	Southern Myotis	Oct - Mar	15 – 19 December 2025	Ultrasonic call detection
<i>Ninox connivens</i>	Barking Owl	Jan – Dec	1 – 4, 10 th and 15 th December 2025	Call playback, spotlighting
<i>Ninox strenua</i>	Powerful Owl	Jan – Dec	1 – 4, 10 th and 15 th December 2025	Call playback, spotlighting
<i>Petaurus norfolcensis</i>	Squirrel Glider	Jan - Dec	21 November – 19 December 2025	IR cameras, spotlighting
<i>Phascolarctos cinereus</i>	Koala	Jan – Dec	1 – 4, 10 th and 15 th December 2025	SAT surveys, spotlighting
<i>Tyto novaehollandiae</i>	Masked Owl	Jan – Dec	1 – 4, 10 th and 15 th December 2025	Call playback, spotlighting

2.5.2.1 Diurnal Active Search

Target Species: Cumberland Plain Land Snail

An active search was undertaken within the subject land by two ecologists on the 21 November 2025. The survey method involved searches within 1 metre of native trees with bark and/or leaf litter present at the base. Searches included disturbance (via raking) of the bark and/or leaf litter to search for live snails and snail shells.

2.5.2.2 Koala SAT Surveys

Surveys for Koalas were undertaken using the Spot Assessment Technique (SAT) throughout the subject land, where possible, on the 1 December 2025. Survey locations were randomly selected due to the limited habitat available in the subject land, based on each patch of vegetation within the site that contains Koala food trees. Once a central food tree was established, a maximum of two-person minutes were spent searching for faecal pellets (scats) within a one metre radius of the base of the central tree and 29 surrounding trees. Tree trunks were searched for scratch marks, and the canopy was observed for any koalas present.

Species targeted: Koala

Relevant survey guidelines: *Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide (DPE 2022)*

2.5.2.3 Nocturnal Bird Surveys

Nocturnal bird surveys were conducted at the centre point of the subject land using a call playback technique with a recording of the targeted species call. Following the call playback, the area immediately surrounding around the centre point of the subject land was spotlighted to visually search for the targeted species.



Call playback surveys involved arriving at the centre point of the site and listening for unsolicited calls for 10 minutes, followed by broadcasting of the pre-recorded calls for no more than 15 seconds followed by at least 30 seconds of listening time to watch and listen for an owl that may be circling overhead. The call broadcasting occurred for 15 minutes for each targeted species unless the species was detected before 15 minutes expires. As there are multiple targeted species, this process was repeated individually for each of the species and was then followed by 10 minutes of spotlighting in the immediate area. This process was conducted once per night for six nights at the centre point of the site.

Species targeted: Barking Owl, Powerful Owl, Masked Owl.

Relevant survey guidelines: *Threatened Biodiversity Data Collection Survey Guidelines (EHG 2024)*.

2.5.2.4 Nocturnal Mammal Surveys

Spotlighting was undertaken via random meander searches throughout the subject land using high power hand-held torches, focussing on hollow-bearing trees, burrows and any identified fauna runs. This was conducted once per night for six nights, in conjunction with the owl surveys. Surveys included sunset surveys as many of the mammals are most active at crepuscular times.

Species targeted: Squirrel Glider, Koala.

Relevant survey guidelines: *Survey Guidelines for Australia's Threatened Mammals (DotE 2011a)*, *Threatened Biodiversity Survey and Assessment: Guidelines for Activities and Developments (DEC (NSW) 2004)*, *Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide (DPE 2022b)*.

2.5.2.5 Infrared Cameras

Four arboreal infrared (IR) cameras were installed within areas of suitable habitat of the subject land. Each camera was set to take three photos in succession when triggered. These were left on site for approximately four (4) weeks. Motion sensor cameras were placed facing bait on native vegetation to determine whether any of the targeted species are present on within the subject land. The IR cameras were retrieved at the end of the survey, and the data was analysed, and species identified by an experienced ecologist.

Species targeted: Squirrel Glider, Koala

Relevant survey guidelines: *Survey Guidelines for Australia's Threatened Mammals (DotE 2011)*, *Threatened Biodiversity Survey and Assessment: Guidelines for Activities and Developments (DEC (NSW) 2004)*

2.5.2.6 Amphibian Surveys

Aural-visual and call playback surveys for amphibians was undertaken within the swampy area of the subject land.

Call playback surveys were undertaken for five minutes for each species and involved the call being played for 30 seconds followed by a two-minute listening period. This process was then repeated, and any frogs heard calling were recorded. An active search was then undertaken for a ten-minute period. These surveys were undertaken over four nights between 1 and 4 December 2025.

Target Species: Green and Golden Bell Frog

Survey Guidelines: *NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (DPIE 2020)* and



Threatened species survey and assessment guidelines: field survey methods for fauna – Amphibians (DECC 2009).

2.5.2.7 Microchiropteran Bat Surveys

Microchiropteran bat (microbat) surveys were undertaken in the subject land using ultrasonic call detection. Three ultrasonic recorders, including two Anabat Swift units and one Chorus unit, were placed in proximity to areas of the most suitable microbat habitat and were left on-site to record microbat activity over four consecutive nights from 15 to 19 December 2025. Following completion of the surveys, all calls were analysed and species identified by Isaac Floyd of Nighttime Ecology.

Target Species: Southern Myotis

Survey Guidelines: 'Species credit' threatened bats and their habitats (NSW Government 2018).

2.5.2.8 Incidental Observations

Any incidental fauna species, particularly avifauna species, that were observed, heard calling, or otherwise detected based on tracks or signs, were recorded and listed in the total species list for the subject land. Furthermore, the locations of any specific habitat features, in particular hollow-bearing trees and raptor nests, incidentally, sighted outside of the habitat assessment locations were also recorded.

2.5.3 Weather Conditions

Weather conditions during the field surveys were appropriate for detection of target species credit species. A monthly summary of weather conditions in the wider locality of the subject land (BOM Weather Station 67108, Badgery's Creek, NSW) leading to and during the field survey is provided in Figure 5 (Bureau of Meteorology 2026).

Table 7 Weather conditions during field surveys

Date	Temperature Minimum (°C)	Temperature Maximum (°C)	Rainfall (mm)
June 2025*	5.4	17.8	54.7
July 2025*	4.3	17.6	34.7
August 2025*	5.0	19.4	39.1
September 2025			
8/09/2025	10.8	29.5	0
9/09/2025	13.9	27.0	0
10/09/2025	13.2	18.1	11.2
11/09/2025	9.4	18.4	48.8
12/09/2025	6.1	21.1	0.2
November 2025			
21/11/2025	14.3	20.0	0
December 2025			
1/12/2025	8.1	25.1	0
2/12/2025	10.9	25.3	0



Date	Temperature Minimum (°C)	Temperature Maximum (°C)	Rainfall (mm)
3/12/2025	9.1	31.2	0
4/12/2025	11.5	36.0	0
10/12/2025	18.6	30.0	0
15/12/2025	16.4	27.3	0
19/12/2025	18.1	41.6	0

* For preceding months values, temperatures are provided as a mean value, and rainfall is provided as a total.



FLORA SURVEY LOCATIONS

FIGURE 6



LEGEND

Subject Land
The Site
Survey Tracks
BAM Plot Locations

Plant Community Type

- PCT 3320 (Canopy)
- PCT 3320 (Grassland)
- PCT 3320 (Exotic Ground)
- PCT 3975 (Artificial)
- PCT 3975 (Natural)
- PCT 4023 (Native Ground)
- PCT 4023 (Degraded)
- PCT 4025 (Moderate)
- PCT 4025 (Moderate/Low)
- PCT 4025 (Degraded)
- PCT 4025 (Exotic Ground)
- PCT 4025 (Grassland)

Other Map Units (Non-PCTs)

- Planted Native Vegetation
- Exotic Woody Vegetation
- Exotic Grassland and Cleared Land
- Farm Dam

Image Source:
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DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

0 160 320 m

Coordinate System: GDA 1994 MGA Zone 56

Scale: 1:8,431 at A3

Project Number: 625.010786.00001

Date Drawn: 18-Mar-2026

Drawn by: JL



FAUNA SURVEY LOCATIONS

FIGURE 7

- LEGEND**
- Subject Land
 - The Site
 - Fauna Survey Locations**
 - Koala SAT Surveys and CPLS Surveys
 - Anabat
 - Call Playback
 - Frog Location
 - IR Camera



Image Source:
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	0	160	320
m			
Coordinate System:	GDA 1994 MGA Zone 56		
Scale:	1:8,431 at A3		
Project Number:	625.010786.00001		
Date Drawn:	18-Mar-2026		
Drawn by:	JL		

3.0 Landscape Features

3.1 Assessment Area

The subject land is approximately 6.97 ha in size and is shown in Figure 1. As the project is being assessed as a site-based project, the assessment area comprises the area of land within a 1,500 m buffer around the outer boundary of the subject land. The assessment area is approximately 1019.8ha in size and is shown in Figure 2.

3.2 Landscape Features

Landscape features identified within the subject land and assessment area are outlined below. The extent of these features within the subject land is shown in Figure 1 and the extent within the assessment area is shown in Figure 2.

3.2.1 IBRA Bioregions and IBRA Subregions

The subject land and assessment area occurs within the Sydney Basin Bioregion and within the Cumberland Subregion.

3.2.2 Rivers, Streams and Estuaries

The subject land and assessment area occur within the Hawkesbury Nepean catchment.

No mapped watercourses occur within the subject land; however numerous watercourses occur within the assessment area. Badgery's Creek (seventh order) occurs to the west of the subject land and South/Wianatta Creek (sixth order) to the east, as well as several first and second order streams that are tributaries of these two creeks. In accordance with Appendix E of the BAM, a riparian corridor of 10 m and 50 m either side of the waterway applies to 1st and ≥7th order streams, respectively.

There are five mapped watercourses within the Site – three first order and two second order. These have been assessed in detail within the Riparian Lands Assessment prepared by SLR for the project (our reference: 625.010786.00001-R6-RLA-20260326).

3.2.3 Important and Local Wetlands

No important wetlands listed in the Directory of Important Wetlands in Australia are present in the subject land and/or assessment area. Numerous rural dams occur within the Site and the assessment area.

3.2.4 Habitat Connectivity

The subject land does not form part of a regional biodiversity corridor, flyway for migratory species, riparian buffer or estuary, or a local corridor identified by Liverpool City Council (Council) and does not form part of the Cumberland Subregion Biodiversity Corridors of Regional Significance.

The subject land is comprised of grassland, that is largely dominated by exotic species, with the occasional remnant scattered paddock tree, which may provide 'stepping stone' habitat for highly mobile species such as birds and bats to the vegetated riparian corridor of South Creek, located approximately 500m to the east. However, that connectivity is extremely limited due to the extensive clearing of vegetation caused by current and previous intense agricultural activity.



3.2.5 Karsts, Caves, Crevices, Cliffs and Areas of Geological Significance

No karsts, caves, crevices, cliffs or areas of geological significance have been identified within the assessment area based on searches of available aerial imagery from NearMap, or topographic data available from SixMaps.

3.2.6 Areas of Outstanding Biodiversity Value

No Areas of Outstanding Biodiversity Value have been mapped within the subject land and/or assessment area.

3.2.7 BioNet NSW Landscapes

The subject land is located within the 'Cumberland Plain' BioNet NSW Landscape. The assessment area comprises a combination of the 'Cumberland Plain', 'Hawkesbury - Nepean Channels and Floodplains' and 'Sydney Basin Diatremes' landscapes.

3.2.8 Soil Hazard Features

No soil hazard features have been identified within the subject land or the assessment area.

3.2.9 Additional Features Required by SEARs

The SEARs do not require consideration of any additional features.

3.3 Native Vegetation Cover

The native vegetation cover was determined through the use of GIS. To map native vegetation cover within the subject land and assessment area, this assessment utilised the detailed vegetation mapping prepared by SLR in conjunction with NSW SVTM published by the NSW DCCEE. The native vegetation cover within the assessment area is shown in Figure 2. The assessment area is approximately 1019.8 ha in size, of which approximately 23.54 ha comprises native vegetation cover, which represents 23.54% of the assessment area. Therefore, the native vegetation cover value is assigned to the cover class of 11-30%.

The remaining land within the assessment area comprises cleared land and exotic vegetation. No differences between the aerial photographs used in this assessment and the native vegetation cover shown in Figure 2 have been identified.



4.0 Native Vegetation

4.1 Native Vegetation Extent

The subject land and wider Site have been subject to detailed surveys by SLR for the purpose of this BDAR. The native vegetation extent within the subject land was determined through aerial photograph interpretation and field surveys. The native vegetation extent within the subject land is shown in Figure 8. It occupies 6.97 ha, which represents 100% of the subject land. The native vegetation extent within the subject land comprises remnant native vegetation.

No differences between the aerial photographs used in this assessment and the native vegetation extent shown in Figure 8 have been identified.

4.2 Plant Community Types

Identification of the PCTs occurring within the subject land was guided by the results of the surveys undertaken by SLR. The data collected during surveys of the subject land was analysed in conjunction with a review of the PCTs held within the BioNet Vegetation Classification database. In selecting PCTs, consideration was given to the following:

- Occurrence within the Cumberland IBRA subregion;
- Vegetation formation;
- Alignment with TECs;
- Landscape position; and
- Upper, mid and ground strata species (including cover and abundance).

The analysis determined that the native vegetation within the subject land aligned with three PCTs held within the BioNet Vegetation Classification database, and a further two PCTs were recorded within the Site. Table 8 provides a summary of the PCTs identified within the subject land. The distribution of these PCTs within the subject land is shown in Figure 9. Detailed descriptions of these PCTs and the justification for PCT selection is provided in the sections below. BAM plot data including cover and abundance for each species which has been used for the justification of PCTs is provided as an attachment within the BAM-C.

Table 8 Plant community types within the Site and subject land

PCT #	PCT Name	Site (ha)	Subject Land (ha)
3320	Cumberland Shale Plains Woodland	13.49	0.72
3975	Southern Lower Floodplain Freshwater Wetland	2.96	0.55
4023	Coastal Valleys Riparian Forest	2.35	0.0
4025	Cumberland Red Gum Riverflat Forest	35.78	5.69

4.2.1 PCT 3320 Cumberland Shale Plains Woodland

Vegetation Formation: Grassy Woodlands

Vegetation Class: Coastal Valley Grassy Woodlands

Percentage cleared: 93.03



4.2.1.1 BioNet Description

A tall sclerophyll open forest or woodland with a sparse mid-stratum of soft-leaved shrubs and small trees with a grassy ground cover on the undulating Wianamatta Group shale plains of western Sydney. The canopy very frequently includes *Eucalyptus tereticornis* and *Eucalyptus moluccana*, with ironbarks (*Eucalyptus crebra* and *Eucalyptus fibrosa*) occasionally present and sometimes prominent in localised areas. The sparse shrub to small tree layer very frequently includes *Bursaria spinosa* and one or more species of *Acacia*, of which *Acacia parramattensis*, *Acacia decurrens* and *Acacia falcata* are the most frequent and abundant. Presence of these *Acacia* species helps to distinguish this PCT from the related PCT 3319 on rises of the southern Cumberland Plain which typically includes *Acacia implexa*. The mid-dense ground layer typically includes grasses, forbs, twiners and hardy small ferns. *Microlaena stipoides* is almost always present and *Themeda triandra*, *Dichondra repens*, *Brunoniella australis*, *Cheilanthes sieberi* subsp. *sieberi*, *Desmodium varians*, *Aristida vagans* and *Glycine tabacina* are very frequent. This is the most widespread PCT on the Cumberland Plain, occupying much of the plain between Bankstown and the Hawkesbury and Nepean rivers. It typically occurs in a warm, moist climate below 120 metres asl however can occur up to 200 metres asl on the undulating terrain between Douglas Park and Campbelltown to the east of the Nepean River. A northern outlier occurs near Maroota on a small remnant on a narrow shale ridge. While widespread on the main part of the plain, this PCT primarily occurs in small, often disturbed patches within a rural or urban matrix. In the hilly country to the west of the Nepean River, this PCT is replaced by PCT 3319. On thinner shales above sandstone around the periphery of the Cumberland Plain, it grades into PCT 3321. Ironbarks are very frequent and *Eucalyptus punctata* is common in the canopy of PCT 3321, and *Eucalyptus moluccana* and *Eucalyptus tereticornis* are both rare.

4.2.1.2 Subject Land Description

PCT 3320 occurs as small areas in the central-west of the Site, and the central polygon of the subject land, where it occupies areas of slightly higher elevation than PCT 4025, on areas of Bringelly Shale of the Wianamatta Group, in transitional areas between the Blacktown and South Creek soil landscapes (EHG, 2025b; NSW DPIRD, 2025).

The PCT occurs as two condition zones within the subject land, one with canopy trees present, and the other comprising a derived grassland state.

4.2.1.3 Condition Zones

Within the subject land PCT 3320 occurs as two condition zones, described below.

PCT 3320 Canopy

This condition zone has canopy trees present, predominately of the species *Eucalyptus moluccana* only within the subject land occurrence. It occurs as a small patch in the central portion of the subject land. Due to historical modification for agriculture, native shrub species are absent from this occurrence, and the ground layer is dominated by exotic grass species, and exotic forbs are common. There are scattered individuals of exotic shrubs include *Solanum sisymbriifolium*, and *Lycium ferocissimum* (African Boxthorn).

The native species present with the highest cover in the ground layer is *Microlaena stipoides* var. *stipoides* (Weeping Grass), with the exception of *Cynodon dactylon* var. *dactylon* (Couch), a variety that is currently considered exotic by all state herbaria in Australia and in the Flora of Australia (Commonwealth DCCEEW, 2025), but is currently on a precautionary basis considered native by the NSW Herbarium. Scattered individuals of the native grass *Sporobolus creber* (Rat's Tail Grass) are also present. Native forbs are present and have a sparse and scattered distribution through the ground layer. Species present include *Dichondra*



repens (Kidney Weed), *Asperula conferta* (Common Woodruff), and *Einadia nutans* subsp. *nutans* (Climbing Saltbush).

Dominant exotic species in the ground layer, with the exception of *Cynodon dactylon* var. *dactylon* (Couch), are *Lolium perenne* (Ryegrass), *Ehrharta erecta* (Panic Veldtgrass), *Bromus catharticus* (Prairie Grass), and *Cenchrus clandestinus* (Kikuyu). Exotic forbs are common and include *Modiola caroliniana* (Red-flowered Mallow), *Senecio madagascariensis* (Fireweed), and *Hypochaeris radicata* (Catsears).

An example of this condition zone is shown in Photo 1.



Photo 1 PCT 3320 Canopy condition within the subject land

PCT 3320 Grassland

These areas were assigned to PCT 3320 due to the presence of some native species in these grassland areas, and the topography matching areas of shale derived soils, outside of a floodplain, that would historically have supported the PCT. However, these areas are highly dominated by exotic species. They areas lack native trees and shrub species. The native species present with the highest cover is *Sporobolus creber*, with the exception of *Cynodon dactylon* var. *dactylon* (Couch) a Couch variety that is currently considered exotic by all state herbaria in Australia and likely exotic but on a precautionary basis considered native by the NSW Herbarium. *Microlaena stipoides* var. *stipoides* (Weeping Grass) is also present. *Cynodon dactylon* var. *dactylon* accounts for 30% of a total of a cover of approximately 39% native coverage in the BAM plot undertaken in this zone. The only native forb recorded was *Oxalis perennans*.

Exotic grass species are dominant, and with the exception of *Cynodon dactylon* var. *dactylon* include *Cenchrus clandestinus*, *Paspalum dilatatum* (Paspalum), and *Lolium perenne*. Exotic forbs present include *Plantago lanceolata* (Lamb's tongues), *Senecio madagascariensis*, and *Cerastium glomeratum* (Mouse-ear Chickweed).

An example of this condition zone is shown in Photo 2.





Photo 2 PCT 3320 Grassland condition within the subject land

4.2.1.4 Justification of PCT Selection

Justification for selection of PCT 3320 is provided in Table 9 below. A review of the State Vegetation Type Map (SVTM) (EHG, 2025c) shows these areas of the subject land have generally been mapped as PCT 3320. Quantitative data from plots undertaken in the subject land is shown in Table 10 for species associated with determining PCT 3320 – these are species either mentioned specifically, in the description of PCT 3320 in the BioNet Vegetation Classification Database (EHG, 2025a), and/or are in the top ten most frequently recorded species in primary reference plots assigned to PCT 3320, as reported in the database.

Table 9 Justification for PCT 3320 selection

Method	Selection/Discussion
Non-Plot to PCT Tool	
Likely PCT matches from SVTM over or nearby to PCT 3320 polygons in site-specific mapping	PCT shortlist: 3320
Plot to PCT Tool	
Top 5 distance to centroid matches for each plot (n=2 plots)	PCT Shortlist: 3319, 3325, 3396, 3958, 3973, 4015, 4023, 4073, 4088, 4089
Filtered for Cumberland IBRA Subregion	PCTs Remaining: 3319, 3320, 3958, 4023
PCT Selection	
Discarded PCTs	PCT 3319 – This PCT is a good match for the limited number of species present in plots in the degraded vegetation, and shale soils on the Cumberland Plain, however this PCT is described as occurring



Method	Selection/Discussion
	on hills within the Cumberland Plain, whereas this vegetation area within the subject land occurs on flat/gentle topography. PCT 3958 – This PCT was discarded as it comprises mostly treeless wetlands, dominated by sedges and aquatic forbs. PCT 4023 – This PCT was discarded as it is a forested wetland PCT, typically dominated by <i>Casuarina glauca</i> (Swamp Oak), which was not present in plots.
Selected PCT	PCT 3320 was selected as this PCT is associated with shale soils on plains of Western Sydney. The single canopy species present <i>Eucalyptus moluccana</i> is one of the dominant species in this PCT. All of the limited number of native species recorded across two BAM plots in the PCT within the subject land have formerly been recorded in the PCT, as described in the species lists derived from primary PCT reference plots reported in BioNet Vegetation Classification.
Site species matches within each BAM Growth Form Group with Selected PCT	
Tree	<i>Eucalyptus moluccana</i>
Shrub	-
Fern	-
Grass and Grass-like	<i>Carex appressa</i> , <i>Cyperus gracilis</i> , <i>Juncus subsecundus</i> , <i>Juncus usitatus</i> , <i>Cynodon dactylon</i> , <i>Microlaena stipoides</i> , <i>Sporobolus creber</i>
Forb	<i>Cotula australis</i> , <i>Wahlenbergia communis</i> , <i>Einadia nutans</i> , <i>Dichondra repens</i> , <i>Oxalis exilis</i> , <i>Oxalis perennans</i> , <i>Rumex brownii</i> , <i>Asperula conferta</i>
Other	<i>Glycine tabacina</i>

Table 10 Occurrence of characteristic PCT 3320 species within Site plots

BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Tree (TG)	<i>Eucalyptus tereticornis</i>	0	0
Tree (TG)	<i>Eucalyptus moluccana</i>	30.0	50.0
Tree (TG)	<i>Eucalyptus crebra</i>	0	0
Tree (TG)	<i>Acacia decurrens</i>	0	0
Tree (TG)	<i>Acacia parramattensis</i>	0	0
Tree (TG)	<i>Eucalyptus eugenioides</i>	0	0
Tree (TG)	<i>Eucalyptus fibrosa</i>	0	0
Tree (TG)	<i>Corymbia maculata</i>	0	0
Tree (TG)	<i>Angophora floribunda</i>	0	0
Tree (TG)	<i>Allocasuarina littoralis</i>	0	0
Shrub (SG)	<i>Bursaria spinosa</i>	0	0
Shrub (SG)	<i>Eremophila debilis</i>	0	0
Shrub (SG)	<i>Ozothamnus diosmifolius</i>	0	0
Shrub (SG)	<i>Daviesia ulicifolia</i>	0	0



BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Shrub (SG)	<i>Dillwynia sieberi</i>	0	0
Shrub (SG)	<i>Exocarpos cupressiformis</i>	0	0
Shrub (SG)	<i>Indigofera australis</i>	0	0
Shrub (SG)	<i>Acacia falcata</i>	0	0
Shrub (SG)	<i>Acacia implexa</i>	0	0
Shrub (SG)	<i>Breynia oblongifolia</i>	0	0
Fern (EG)	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0	0
Fern (EG)	<i>Cheilanthes distans</i>	0	0
Fern (EG)	<i>Cheilanthes austrotenuifolia</i>	0	0
Fern (EG)	<i>Adiantum aethiopicum</i>	0	0
Fern (EG)	<i>Asplenium flabellifolium</i>	0	0
Fern (EG)	<i>Pellaea falcata</i>	0	0
Fern (EG)	<i>Pellaea paradoxa</i>	0	0
Fern (EG)	<i>Pteridium esculentum</i>	0	0
Grass & grasslike (GG)	<i>Microlaena stipoides</i>	3.5	100.0
Grass & grasslike (GG)	<i>Themeda triandra</i>	0	0
Grass & grasslike (GG)	<i>Aristida vagans</i>	0	0
Grass & grasslike (GG)	<i>Aristida ramosa</i>	0	0
Grass & grasslike (GG)	<i>Lomandra filiformis</i>	0	0
Grass & grasslike (GG)	<i>Paspalidium distans</i>	0	0
Grass & grasslike (GG)	<i>Dichelachne micrantha</i>	0	0
Grass & grasslike (GG)	<i>Eragrostis leptostachya</i>	0	0
Grass & grasslike (GG)	<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	0	0
Grass & grasslike (GG)	<i>Cymbopogon refractus</i>	0	0
Forb (FG)	<i>Dichondra repens</i>	0.4	50.0
Forb (FG)	<i>Brunoniella australis</i>	0	0
Forb (FG)	<i>Oxalis perennans</i>	0.3	100.0
Forb (FG)	<i>Opercularia diphyllo</i>	0	0
Forb (FG)	<i>Dianella longifolia</i>	0	0
Forb (FG)	<i>Wahlenbergia gracilis</i>	0	0
Forb (FG)	<i>Lobelia purpurascens</i>	0	0
Forb (FG)	<i>Solanum prinophyllum</i>	0	0
Forb (FG)	<i>Vernonia cinerea</i>	0	0
Forb (FG)	<i>Goodenia hederacea</i>	0	0



BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Other (OG)	<i>Desmodium varians</i>	0	0
Other (OG)	<i>Glycine tabacina</i>	0.1	50.0
Other (OG)	<i>Glycine clandestina</i>	0	0
Other (OG)	<i>Hardenbergia violacea</i>	0	0
Other (OG)	<i>Glycine microphylla</i>	0	0
Other (OG)	<i>Polymeria calycina</i>	0	0
Other (OG)	<i>Clematis glycinoides</i>	0	0
Other (OG)	<i>Convolvulus erubescens</i>	0	0
Other (OG)	<i>Amyema miquelii</i>	0	0
Other (OG)	<i>Amyema gaudichaudii</i>	0	0
Unassigned (UA)	<i>Wurmbea dioica</i>	0	0
Unassigned (UA)	<i>Sphaeromorphaea australis</i>	0	0

Table Key: Average Cover = Average Projective Foliage Cover across PCT 3320 plots species occurred in

4.2.1.5 Alignment with Threatened Ecological Communities

BC Act Status: Cumberland Plain Woodland in the Sydney Basin Bioregion – Critically Endangered Ecological Community

EPBC Act Status: Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest – Critically Endangered Ecological Community (subject land occurrence does not meet condition criteria)

BC Act

The areas of PCT 3320 Canopy, as the BC Act listing does not specify condition states, is likely to conform to the BC Act listed TEC, due to being dominated by *Eucalyptus moluccana*, including other characteristic species, and occurring on shale soils in Western Sydney. The site occurs in the annual rainfall band of 700-900mm associated with the TEC and occurs on flat/undulating terrain under 350m in elevation. A total of 10 characteristic species of the TEC were recorded within plots within the subject land (NSW Scientific Committee, 2009). This low number of species matches is reflective of the lack of native species in plots due to degraded vegetation condition. These species include *Eucalyptus moluccana*, *Glycine tabacina*, *Cyperus gracilis*, *Juncus usitatus*, *Microlaena stipoides* var. *stipoides*, *Sporobolus creber*, *Einadia nutans*, *Dichondra repens*, *Oxalis perennans*, and *Asperula conferta*.

While the BC Act listed TEC includes ‘derived’ native grasslands, resulting from the clearing of woody strata, occurrences in the subject land are not considered to conform the BC Act listing for the following reasons:

- These grasslands are not considered to be “native” as they are dominated by exotic grass species;
- Native forbs are nearly absent; and
- The only “native” grass species (*Cynodon dactylon* var. *dactylon*) with substantial coverage is considered exotic by all state herbaria with the exception of the NSW Herbarium, and this species is not listed as a characteristic species in the final



determination, despite being common in Cumberland Plain Woodland's area of occurrence.

These grassland areas do not fit the description in Paragraph 5 of the final determination as being "dominated by a diverse range of grasses including *Aristida ramosa* (Purple Wiregrass), *A. vagans* (Threeawn Speargrass), *Cymbopogon refractus* (Barbed Wire Grass), *Dichelachne micrantha* (Plumegrass), *Echinopogon caespitosus* (Forest Hedgehog Grass), *Eragrostis leptostachya* (Paddock Lovegrass), *Microlaena stipoides* (Weeping Grass), *Paspalidium distans* and *Themeda australis* (Kangaroo Grass), and with graminoids *Carex inversa* (Knob Sedge), *Cyperus gracilis*, *Lomandra filiformis* subsp. *filiformis* (Wattle Mat-rush) and *L. multiflorus* subsp. *multiflorus* (Many-flowered Mat-rush). The ground cover also includes a diversity of forbs such as *Asperula conferta* (Common Woodruff), *Brunoniella australis* (Blue Trumpet), *Desmodium varians* (Slender Tick Trefoil), *Dianella longifolia* (Blue Flax Lily), *Dichondra repens* (Kidney Weed), *Opercularia diphylla*, *Oxalis perennans* and *Wahlenbergia gracilis* (Australian Bluebell), as well as scramblers, *Glycine* spp. and *Hardenbergia violacea* (Native Sarsaparilla) and the fern *Cheilanthes sieberi* (Poison Rock Fern)".

EPBC Act

The Canopy condition zone occurrences of PCT 3320 meet the key diagnostic criteria in the Listing Advice (Threatened Species Scientific Committee, 2009) for the EPBC Act listed TEC which are:

- Distribution is limited to the Sydney Basin Bioregion with most occurrences in the Cumberland Sub-region. This covers a geographic area commonly known as the Cumberland Plain, a rainshadow coastal valley in western Sydney;
- Most occurrences are on clay soils derived from Wianamatta Group geology, with limited to rare occurrences on soils derived from Tertiary Alluvium, Holocene Alluvium, the Mittagong Formation, Aeolian Deposits and Hawkesbury Sandstone;
- Upper tree layer species must be present with these features:
 - The minimum projected foliage cover of canopy trees is 10% or more; and
 - The tree canopy is typically dominated by *Eucalyptus moluccana* (Grey Box), *E. tereticornis* (Forest Red Gum) and/or *E. fibrosa* (Red Ironbark). Other canopy species may occur in association with the typical dominants and may be locally dominant at some sites.
- A sparse lower tree layer may be present, typically with young eucalypts of upper tree canopy species and species of *Acacia*, *Exocarpos* and *Melaleuca*; and
- The understorey typically is dominated by the ground layer and shows these features:
 - The ground layer typically comprises a variety of perennial native graminoids and forbs;
 - Native graminoid species that are often present include: the grasses *Aristida ramosa* (Purple Wiregrass), *A. vagans* (Threeawn Speargrass), *Cymbopogon refractus* (Barbed Wire Grass), *Dichelachne micrantha* (Plumegrass), *Echinopogon caespitosus* var. *caespitosus* (Tufted Hedgehog Grass), *Eragrostis leptostachya* (Paddock Lovegrass), *Microlaena stipoides* subsp. *stipoides* (Weeping Grass), *Paspalidium distans* and *Themeda triandra* (Kangaroo Grass), and other graminoids *Carex inversa* (Knob Sedge), *Cyperus gracilis* (Slender Sedge), *Lomandra filiformis* subsp. *filiformis* (Wattle Mat-rush) and *L. multiflora* subsp. *multiflora* (Many flowered Mat-rush);



- Native forb and other herb species present include: *Asperula conferta* (Common Woodruff), *Brunoniella australis* (Blue Trumpet), *Cheilanthes sieberi* (Poison Rock-Fern), *Desmodium varians* (Slender Tick-trefoil), *Dianella longifolia* (Blue Flax-Lily), *Dichondra repens* (Kidney Weed), *Glycine* spp., *Hardenbergia violacea* (Native Sarsparilla), *Opercularia diphylla* (Stinkweed), *Oxalis perennans*, *Pratia purpurascens* (Whiteroot) and *Wahlenbergia gracilis* (Australian Bluebell); and
- A shrub layer may be present, to variable extent, and is often dominated by *Bursaria spinosa* (Blackthorn) while other species include: *Daviesia ulicifolia* (Gorse Bitter Pea), *Dillwynia sieberi*, *Dodonaea viscosa* subsp. *cuneata* (Wedge-leaf Hop-bush), *Indigofera australis* (Native Indigo) and *Lissanthe strigosa* (Peach Heath).

Despite the above, occurrences of PCT 3320 in the subject land do not meet the listing for the EPBC Act community due to the Federal listing not including grasslands (Threatened Species Scientific Committee, 2009), and patch size being smaller than 0.5 ha, which is below the minimum condition threshold for patch size, as outlined in Table 11 below.

Table 11 EPBC Act condition thresholds for Cumberland Plain Woodland

Category and rationale	Thresholds	Consistent with Site?
A. Core thresholds that apply under most circumstances: patches with an understorey dominated by natives and a minimum size that is functional and consistent with minimum mapping unit size applied in NSW	Minimum patch size is ≥ 0.5 ha AND $\geq 50\%$ of the perennial understorey vegetation cover is made up of native species	Inconsistent with all conditions of PCT 3320.
	OR	
B. Larger patches which are inherently valuable due to their rarity	Minimum patch size is ≥ 5 ha AND $\geq 30\%$ of the perennial understorey vegetation cover is made up of native species	Inconsistent with all conditions of PCT 3320.
	OR	
C. Patches with connectivity to other large native vegetation remnants in the landscape	Minimum patch size is ≥ 0.5 ha AND $\geq 30\%$ of the perennial understorey vegetation cover is made up of native species AND The patch is contiguous with a native vegetation remnant (any native vegetation where cover in each layer present is dominated by native species that is ≥ 5 ha in area)	Inconsistent with all conditions of PCT 3320.
	OR	
D. Patches that have large mature trees or trees with	Minimum patch size is ≥ 0.5 ha AND	Inconsistent with all conditions of PCT 3320.



Category and rationale	Thresholds	Consistent with Site?
hollows (habitat) that are very scarce on the Cumberland Plain	≥30% of the perennial understorey vegetation cover is made up of native species AND The patch has at least one tree with hollows per ha or at least one large tree (≥80cm DBH) per ha from the upper tree layer species	

4.2.2 PCT 3975 Southern Lower Floodplain Freshwater Wetland

Vegetation Formation: Freshwater Wetlands

Vegetation Class: Coastal Freshwater Lagoons

Percentage cleared: 92.99

4.2.2.1 BioNet Description

A tall to very tall freshwater sedgeland or forbland occurring in depressions on Quaternary alluvial deposits (primarily backswamps with organic-rich mud, silt or clay soils) on coastal floodplains of the Central Coast and South Coast botanical divisions. Almost all known locations occur at elevations of below 10 metres asl, however this PCT can occur at higher elevations in lagoons that have prolonged inundation, such as Ellalong Lagoon south-west of Cessnock which is just over 100 metres asl. This PCT describes non-woody freshwater wetlands on Quaternary alluvium south from the Hunter valley that are not dominated by *Phragmites australis* or *Eleocharis equisetina* and are either on low coastal floodplains or at the edges of more elevated lagoons that have prolonged inundation. Within these environmental and floristic parameters this PCT can encompass a range of sedgeland and aquatic forb assemblages. On presently available information the aquatic forb *Persicaria decipiens* is very frequently present with very sparse cover. The grasses *Cynodon dactylon* and *Paspalum distichum* and the reed *Typha orientalis* commonly occur with sparse cover, while the sedge *Eleocharis sphacelata* is occasionally present however where it does occur tends to have mid-dense cover. A diversity of other sedges, rushes and aquatic forbs are occasionally or rarely recorded, such as *Persicaria hydropiper*, *Cycnogeton microtuberosum*, *Ludwigia peploides* subsp. *montevidensis*, *Alternanthera denticulata* and species of *Juncus*. Rarely, a very sparse emergent tree layer is present, which may include *Casuarina glauca*, *melaleucas* or, very rarely, overhanging *Eucalypts*. Some sedges such as *Machaerina articulata*, *Fimbristylis velata*, *Eleocharis acuta* and *Bolboschoenus* species dominate individual sites, reflecting the floristic diversity of this PCT. This community often occurs in disturbed environments and may potentially include derived states. The assessment of new non-woody freshwater wetland plots against this PCT should primarily consider environmental domain. The grassy wetland PCT 4055 also occurs on alluvium on the far South Coast, however has a much higher median elevation (known between 100 and 200 metres asl), and includes *Isachne globosa*, *Lachnagrostis filiformis*, *Carex gaudichaudiana* and *Cyperus sphaeroideus* which are all unknown or very rare in PCT 3975.

4.2.2.2 Subject Land Description

PCT 3975 occurs as scattered patches in the northern portion of the subject land, with the largest patches at the lowest elevation areas in the centre. These patches are dominated by native aquatic species, and there are two condition states, only one of which occurs within the subject land, separated based on occurring in naturally ephemerally inundated areas, or in



artificial drainage lines. These patches occur in damp areas on quaternary alluvium on the South Creek soil landscape (EHG, 2025b; NSW DPIRD, 2025).

4.2.2.3 Condition Zones

Within the subject land PCT 3975 occurs as two condition zones, described below.

PCT 3975 Natural

This condition zone occurs in areas that experience natural ephemeral inundation, and comprise treeless wetland areas dominated by aquatic sedges, forbs and rushes. Dominant species include the sedge *Carex appressa*, the rush *Juncus usitatus*, and the grass *Paspalum distichum*. Some forbs such as *Persicaria decipiens* and *Ranunculus inundatus* (River Buttercup) are sub-dominant in some areas, and other forbs are present and include *Lythrum hyssopifolia* (Hyssop Loosestrife) and *Ottelia ovalifolia* (Swamp Lily).

Exotic aquatic species are common, and sub-dominant in some areas, with the most common species including the forb *Ranunculus sceleratus*, the sedge *Cyperus eragrostis* (Umbrella Sedge), and the grass *Paspalum dilatatum*.

An example of this condition zone is shown in Photo 3.



Photo 3 PCT 3975 Natural within the subject land

PCT 3975 Artificial

This condition zone is similar in native species composition to the 3975 Natural condition zone, however it comprises an artificial drainage line. The drainage line has been dominated by native aquatic species that have colonised it since it was excavated. Exotic species are common, and of a similar composition to that described for the 3975 Natural zone.

An example of this condition zone is shown in Photo 4.





Photo 4 PCT 3975 Artificial within the Site

4.2.2.4 Justification of PCT Selection

Justification for selection of PCT 3975 is provided in Table 12 below. A review of the SVTM (EHG, 2025c) shows these areas of the subject land and Site have generally been unmapped or have been included in polygons mapped as PCT 4025. Quantitative data from plots undertaken for PCT 3975 is shown in Table 13 for species associated with determining PCT 3975 – these are species either mentioned specifically, in the description of PCT 3975 in the BioNet Vegetation Classification Database, and/or are in the top ten most frequently recorded species in primary reference plots assigned to PCT 3975, as reported in the database.

Table 12 Justification for PCT 3975 selection

Method	Selection/Discussion
Non-Plot to PCT Tool	
Likely PCT matches from SVTM over or nearby to PCT 3975 polygons in site-specific mapping	PCT shortlist: 4025
Plot to PCT Tool	
Top 5 distance to centroid matches for each plot (n=3 plots)	PCT Shortlist: 3935, 3958, 3964, 3967, 3973, 3975, 4025, 4055
Filtered for Cumberland IBRA Subregion	PCTs Remaining: 3975, 3958, 4025
PCT Selection	
Discarded PCTs	PCT 3958 – This PCT was discarded as it is associated with tertiary alluviums, whereas alluviums in the subject land are from the quaternary period. PCT 3958 is also a placeholder



Method	Selection/Discussion
	PCT with only a small number of primary reference plots assigned to it. PCT 4025 – This PCT was discarded as it is a forested wetland PCT, typically dominated by eucalypts and with a woody shrub stratum, which were not present in plots.
Selected PCT	PCT 3975 was selected as this PCT is described as being a treeless wetland associated with coastal floodplains in the Central Coast botanical division, and vegetation onsite is not dominated by <i>Phragmites australis</i> . The PCT is described as often occurring in disturbed environments which matches the Artificial condition zone of the PCT in the subject land. Most native species recorded in plots are associated with the PCT.
Site species matches within each BAM Growth Form Group with Selected PCT	
Tree	-
Shrub	-
Fern	<i>Azolla pinnata</i>
Grass and Grass-like	<i>Carex appressa</i> , <i>Juncus usitatus</i> , <i>Cynodon dactylon</i> , <i>Lachnagrostis filiformis</i> , <i>Paspalum distichum</i>
Forb	<i>Ottelia ovalifolia</i> subsp. <i>ovalifolia</i> , <i>Ludwigia peploides</i> subsp. <i>montevidensis</i> , <i>Philydrum lanuginosum</i> , <i>Persicaria decipiens</i> , <i>Ranunculus inundatus</i>
Other	-

Table 13 Occurrence of characteristic PCT 3975 species within subject land plots

BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Tree (TG)	<i>Casuarina glauca</i>	0	0
Tree (TG)	<i>Eucalyptus amplifolia</i>	0	0
Tree (TG)	<i>Eucalyptus tereticornis</i>	0	0
Tree (TG)	<i>Melaleuca quinquenervia</i>	0	0
Shrub (SG)	<i>Melaleuca styphelioides</i>	0	0
Shrub (SG)	<i>Melaleuca linariifolia</i>	0	0
Shrub (SG)	<i>Melaleuca decora</i>	0	0
Shrub (SG)	<i>Melaleuca ericifolia</i>	0	0
Shrub (SG)	<i>Melicytus dentatus</i>	0	0
Fern (EG)	<i>Azolla pinnata</i>	0.4	33.3
Fern (EG)	<i>Azolla filiculoides</i>	0	0
Fern (EG)	<i>Marsilea hirsuta</i>	0	0
Grass & grasslike (GG)	<i>Cynodon dactylon</i>	7.3	100.0
Grass & grasslike (GG)	<i>Paspalum distichum</i>	2.2	100.0
Grass & grasslike (GG)	<i>Typha orientalis</i>	0	0



BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Grass & grasslike (GG)	<i>Eleocharis sphacelata</i>	0	0
Grass & grasslike (GG)	<i>Juncus polyanthemus</i>	0	0
Grass & grasslike (GG)	<i>Bolboschoenus caldwellii</i>	0	0
Grass & grasslike (GG)	<i>Juncus usitatus</i>	10.7	100.0
Grass & grasslike (GG)	<i>Carex appressa</i>	25.3	100.0
Grass & grasslike (GG)	<i>Bolboschoenus fluviatilis</i>	0	0
Grass & grasslike (GG)	<i>Phragmites australis</i>	0	0
Forb (FG)	<i>Persicaria decipiens</i>	2.1	100.0
Forb (FG)	<i>Cycnogeton microtuberosum</i>	0	0
Forb (FG)	<i>Persicaria hydropiper</i>	0	0
Forb (FG)	<i>Ludwigia peploides</i> subsp. <i>montevidensis</i>	0.1	33.3
Forb (FG)	<i>Alternanthera denticulata</i>	0	0
Forb (FG)	<i>Ranunculus inundatus</i>	10.0	33.3
Forb (FG)	<i>Alisma plantago-aquatica</i>	0	0
Forb (FG)	<i>Cycnogeton procerum</i>	0	0
Forb (FG)	<i>Elatine gratioloides</i>	0	0
Forb (FG)	<i>Enydra woollsii</i>	0	0
Other (OG)	<i>Amyema cambagei</i>	0	0
Unassigned (UA)	<i>Sphaeromorphaea australis</i>	0	0

Table Key: Average Cover = Average Projective Foliage Cover across PCT 3975 plots species occurred in

4.2.2.5 Alignment with Threatened Ecological Communities

BC Act Status: Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions – Endangered Ecological Community.

EPBC Act Status: Not listed

Areas mapped as the PCT 3975 Natural condition zone are considered to be the Freshwater Wetlands on Coastal Floodplains EEC due to being dominated by native aquatic/damp tolerant herbaceous species, occurring on areas experiencing periodic/ephemeral flooding on a coastal floodplain, and lacking woody vegetation. A total of ten species were recorded within plots in the subject land that are characteristic of the TEC (NSW Scientific Committee, 2011c). These are: *Carex appressa*, *Juncus usitatus*, *Paspalum distichum*, *Ottelia ovalifolia*, *Ludwigia peploides* subsp. *montevidensis*, *Philydrum lanuginosum*, *Persicaria decipiens*, *Ranunculus inundatus*, *Azolla pinnata*, and *Marsilea mutica*.

Areas mapped as the PCT 3975 Artificial condition zone within the artificial drainage line in the Site are not considered to be the TEC as the final determination states “Artificial wetlands created on previously dry land specifically for purposes such as sewerage treatment, stormwater management and farm production, are not regarded as part of this community, although they may provide habitat for threatened species”.



4.2.3 PCT 4023 Coastal Valleys Riparian Forest

Vegetation Formation: Forested Wetlands

Vegetation Class: Coastal Floodplain Wetlands

Percentage cleared: 78.22

4.2.3.1 BioNet Description

A tall *Casuarina* open forest with a dense grassy ground layer that is found adjacent to streams or on river flats, primarily in the South Creek catchment of the Cumberland Plain to the west of Sydney and from Ellalong to north of Rothbury in the central Hunter valley. The canopy is one of the distinguishing features of this PCT, very frequently including a high cover of relatively young *Casuarina glauca* amongst a mix of old and young eucalypts, commonly red gums (*Eucalyptus amplifolia* and *Eucalyptus tereticornis*) or occasionally *Eucalyptus moluccana*. The only common species in the sparse shrub layer is *Bursaria spinosa*. There is a dense ground cover, typical of river flat forests, that is typically comprised of grasses, forbs, twiners and ferns. A high cover of *Microlaena stipoides* is almost always present, with more scattered *Brunoniella australis* and *Dichondra repens* being very frequent. Common ground covers include *Solanum prinophyllum*, *Glycine tabacina*, *Cheilanthes sieberi* subsp. *sieberi*, *Oplismenus aemulus* and *Lobelia purpurascens*. It is possible that this PCT represents a successional state in a community that is re-establishing following clearing. In addition, the dominance of the salt tolerant *Casuarina glauca* may indicate saline conditions. This PCT typically occurs at elevations below 70 metres asl in a hot, dry climate. On broader floodplains of the Cumberland Plain, it grades into PCT 4025, which rarely includes *Casuarina glauca* however nevertheless has considerable floristic overlap with this PCT. Near the edge of the floodplain, it adjoins the grassy forests of either the Cumberland Plain (PCT 3320) or the Hunter Valley (PCT 3315). Again, *Casuarina glauca* is rare in these PCTs.

4.2.3.2 Subject Land Description

PCT 4023 occurs as narrow bands along the south-eastern boundary of the Site, and as several small patches in the north-east, where it adjoins PCT 4025, with both occurring on quaternary alluvium associated with the South Creek soil landscape (EHG, 2025b; NSW DPIRD, 2025).

This PCT does not occur within the subject land, however it occurs as two condition zones within the Site, one with a native dominated ground layer, and the other with a predominately exotic dominated ground layer.

4.2.3.3 Condition Zones

Within the Site PCT 4023 occurs as two condition zones, described below.

PCT 4023 Moderate

This condition zone is dominated heavily by a canopy of *Casuarina glauca* (Swamp Oak). It occurs as two small patches in the north-east of the Site. The native shrub *Bursaria spinosa* (Blackthorn) is present in the lower woody stratum.

The ground layer dominated by the native species *Microlaena stipoides* var. *stipoides* which comprises much of the groundcover. Other common native species include the sedge *Carex appressa* (Tall Sedge) and the forbs *Tetragonia tetragonioides* (New Zealand Spinach), and *Einadia nutans* subsp. *nutans*.

Exotic species are present in the ground layer, particularly where patches adjoin the more degraded condition state and adjacent PCTs. Species include the forbs *Tradescantia*



fluminensis Wandering Trad), *Solanum pseudocapsicum* (Madeira Winter Cherry), and *Stellaria media* (Chickweed), and the grasses *Ehrharta erecta*, *Lolium perenne*, and *Bromus catharticus*. There are scattered occurrences of the exotic shrub *Lycium ferocissimum* (African boxthorn).

An example of this condition zone is shown in Photo 5.



Photo 5 PCT 4023 Moderate within the Site

PCT 4023 Degraded

This condition zone is dominated heavily by a canopy of *Casuarina glauca* (Swamp Oak), with occasional occurrences of *Eucalyptus tereticornis* (Forest Red Gum) and *Melaleuca styphelioides* (Prickly-leaved Paperbark). It occurs as several patches in the north-east of the Site. The ground layer is dominated by exotic species which comprises much of the groundcover. The most common native is *Microlaena stipoides* var. *Stipoides*. Other common native species include *Carex appressa* (Tall Sedge) and the forbs *Tetragonia tetragonioides* (New Zealand Spinach), and *Einadia nutans* subsp. *nutans*.

Exotic species are dominant in the ground layer. Species include the forbs *Tradescantia fluminensis* (Wandering Trad), *Solanum pseudocapsicum* (Madeira Winter Cherry), and *Stellaria media* (Chickweed), and the grasses *Lolium perenne* and *Bromus catharticus*.

An example of this condition zone is shown in Photo 6.



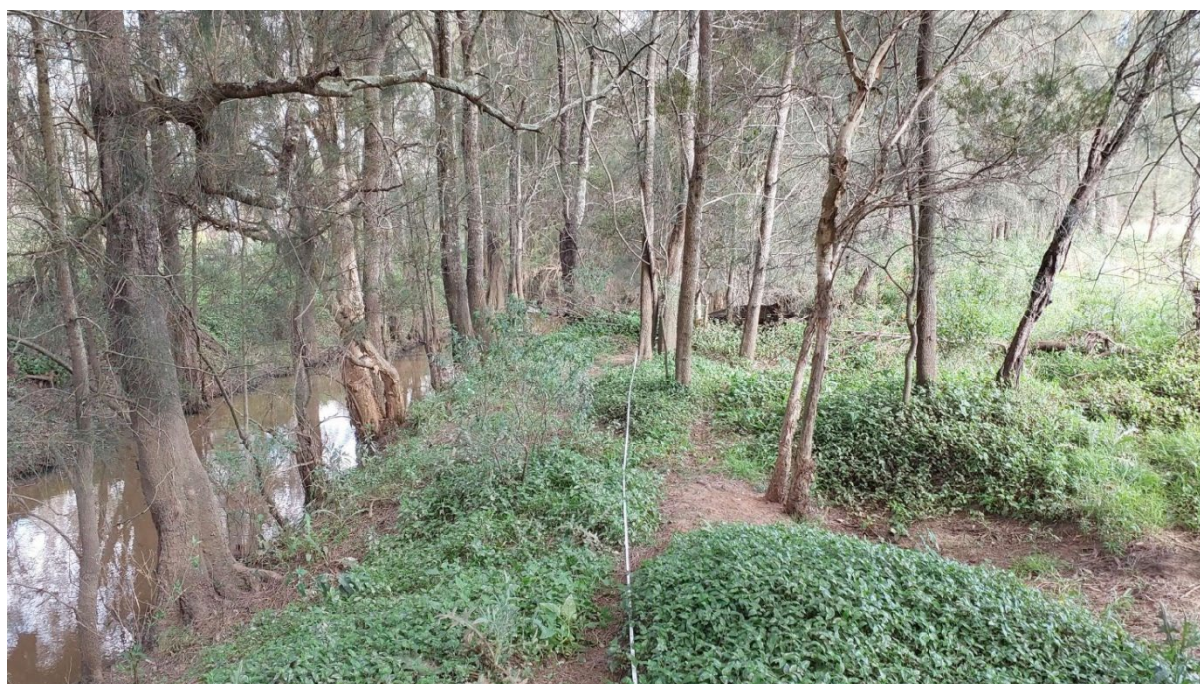


Photo 6 PCT 4023 Degraded within the Site

4.2.3.4 Justification of PCT Selection

Justification for selection of PCT 4023 is provided in Table 14 below. A review of the SVTM (EHG, 2025c) shows these areas of the Site have generally been mapped as PCT 4025, though there are some small mapped patches of PCT 4023 overlapping with areas mapped in this study in the central-east. Quantitative data from plots undertaken in the subject land is shown in Table 14 for species associated with determining PCT 4023 – these are species either mentioned specifically, in the description of PCT 4023 in the BioNet Vegetation Classification Database, and/or are in the top ten most frequently recorded species in primary reference plots assigned to PCT 4023 as reported in the database.

Table 14 Justification for PCT 4023 selection

Method	Selection/Discussion
Non-Plot to PCT Tool	
Likely PCT matches from SVTM over or nearby to PCT 4023 polygons in site-specific mapping	PCT shortlist: 4023, 4025
Plot to PCT Tool	
Top 5 distance to centroid matches for each plot (n=3 plots)	PCT Shortlist: 3336, 4016, 4023, 4024, 4027, 4051, 4073, 4088
Filtered for Cumberland IBRA Subregion	PCTs Remaining: 4023, 4024, 4025
PCT Selection	
Discarded PCTs	PCT 4024 – This PCT was discarded as it is dominated by eucalypts, and not <i>Casuarina glauca</i> , unlike these vegetation areas in the Site.



Method	Selection/Discussion
	PCT 4025 – This PCT was discarded as it is dominated by eucalypts, and not <i>Casuarina glauca</i> , unlike these vegetation areas in the Site
Selected PCT	PCT 4023 was selected as it is known from the South Creek catchment on the Cumberland Plain, and is dominated by <i>Casuarina glauca</i> . It also includes a number of other characteristic species, such as the shrub <i>Bursaria spinosa</i> , and the grass <i>Microlaena stipoides</i> , and is associated with streams/river flats in the Site, landscape which are described for the PCT.
Site species matches within each BAM Growth Form Group with Selected PCT	
Tree	<i>Acacia decurrens</i> , <i>Casuarina glauca</i> , <i>Eucalyptus tereticornis</i>
Shrub	<i>Bursaria spinosa</i> , <i>Melaleuca styphelioides</i>
Fern	-
Grass and Grass-like	<i>Carex appressa</i> , <i>Cyperus gracilis</i> , <i>Juncus usitatus</i> , <i>Lomandra longifolia</i> , <i>Cynodon dactylon</i> , <i>Microlaena stipoides</i>
Forb	<i>Centella asiatica</i> , <i>Cotula australis</i> , <i>Senecio quadridentatus</i> , <i>Wahlenbergia gracilis</i> , <i>Einadia hastata</i> , <i>Dichondra repens</i> , <i>Plectranthus parviflorus</i> , <i>Lythrum hyssopifolia</i> , <i>Oxalis exilis</i> , <i>Oxalis perennans</i> , <i>Poranthera microphylla</i> , <i>Plantago debilis</i> , <i>Veronica plebeia</i> , <i>Persicaria decipiens</i> , <i>Rumex brownii</i> , <i>Asperula conferta</i> , <i>Solanum prinophyllum</i>
Other	-

Table 15 Occurrence of characteristic PCT 4023 species within Site plots

BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Tree (TG)	<i>Casuarina glauca</i>	45.0	100.0
Tree (TG)	<i>Eucalyptus moluccana</i>	0	0.0
Tree (TG)	<i>Eucalyptus amplifolia</i>	0	0.0
Tree (TG)	<i>Acacia parramattensis</i>	0	0
Tree (TG)	<i>Eucalyptus tereticornis</i>	10.0	50.0
Tree (TG)	<i>Acacia decurrens</i>	0.1	50.0
Tree (TG)	<i>Angophora floribunda</i>	0	0
Tree (TG)	<i>Grevillea robusta</i>	0	0
Tree (TG)	<i>Angophora subvelutina</i>	0	0
Tree (TG)	<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	0	0
Shrub (SG)	<i>Bursaria spinosa</i>	1.0	50.0
Shrub (SG)	<i>Eremophila debilis</i>	0	0



BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Shrub (SG)	<i>Breynia oblongifolia</i>	0	0
Shrub (SG)	<i>Melaleuca styphelioides</i>	10.0	50.0
Shrub (SG)	<i>Melaleuca decora</i>	0	0.0
Shrub (SG)	<i>Rubus parvifolius</i>	0	0
Shrub (SG)	<i>Solanum cinereum</i>	0	0
Shrub (SG)	<i>Acacia implexa</i>	0	0
Shrub (SG)	<i>Hibbertia diffusa</i>	0	0
Shrub (SG)	<i>Melaleuca linariifolia</i>	0	0
Fern (EG)	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0	0
Fern (EG)	<i>Cheilanthes distans</i>	0	0
Fern (EG)	<i>Adiantum aethiopicum</i>	0	0
Fern (EG)	<i>Blechnum spinulosum</i>	0	0
Fern (EG)	<i>Hypolepis muelleri</i>	0	0
Fern (EG)	<i>Marsilea hirsuta</i>	0	0
Grass & grasslike (GG)	<i>Microlaena stipoides</i>	32.5	100.0
Grass & grasslike (GG)	<i>Oplismenus aemulus</i>	0	0.0
Grass & grasslike (GG)	<i>Echinopogon ovatus</i>	0	0
Grass & grasslike (GG)	<i>Cynodon dactylon</i>	2.0	50.0
Grass & grasslike (GG)	<i>Entolasia marginata</i>	0	0.0
Grass & grasslike (GG)	<i>Juncus usitatus</i>	0.4	50.0
Grass & grasslike (GG)	<i>Paspalidium distans</i>	0	0
Grass & grasslike (GG)	<i>Aristida ramosa</i>	0	0
Grass & grasslike (GG)	<i>Aristida vagans</i>	0	0
Grass & grasslike (GG)	<i>Eragrostis brownii</i>	0	0
Forb (FG)	<i>Brunoniella australis</i>	0	0
Forb (FG)	<i>Dichondra repens</i>	0.4	50.0
Forb (FG)	<i>Lobelia purpurascens</i>	0	0.0
Forb (FG)	<i>Oxalis perennans</i>	0.5	50.0
Forb (FG)	<i>Solanum prinophyllum</i>	0	0.0
Forb (FG)	<i>Centella asiatica</i>	0.5	50.0
Forb (FG)	<i>Commelina cyanea</i>	0	0.0
Forb (FG)	<i>Dianella longifolia</i>	0	0
Forb (FG)	<i>Vernonia cinerea</i>	0	0
Forb (FG)	<i>Veronica plebeia</i>	0	0.0
Other (OG)	<i>Glycine tabacina</i>	0	0.0



BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Other (OG)	<i>Desmodium varians</i>	0	0.0
Other (OG)	<i>Parsonsia straminea</i>	0	0
Other (OG)	<i>Glycine clandestina</i>	0	0.0
Other (OG)	<i>Glycine microphylla</i>	0	0
Other (OG)	<i>Clematis glycinoides</i>	0	0
Other (OG)	<i>Polymeria calycina</i>	0	0
Other (OG)	<i>Eustrephus latifolius</i>	0	0
Other (OG)	<i>Amyema cambagei</i>	0	0
Other (OG)	<i>Cayratia clematidea</i>	0	0
Unassigned (UA)	<i>Sphaeromorphaea australis</i>	0	0

Table Key: Average Cover = Average Projective Foliage Cover across PCT 4023 plots species occurred in

4.2.3.5 Alignment with Threatened Ecological Communities

BC Act Status: Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions–Endangered Ecological Community.

EPBC Act Status: Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland – Critically Endangered Ecological Community (Onsite occurrence does not meet listing criteria).

BC Act

Both condition zones of this PCT within the Site are considered to conform to the BC Act listing of the EEC, which does not provide condition criteria for inclusion or exclusion in the final determination (NSW Scientific Committee, 2011b). They are considered to conform to the EEC due to being dominated by *Casuarina glauca* and occurring on periodically inundated flats and drainage lines associated with a coastal floodplain.

Eight species were recorded within plots within the Site in PCT 4023 that are consistent with the characteristic species list in the final determination. These species are: *Casuarina glauca*, *Melaleuca styphelioides*, *Carex appressa*, *Juncus usitatus*, *Lomandra longifolia*, *Cynodon dactylon*, *Centella asiatica*, and *Persicaria decipiens*.

EPBC Act

Occurrences of both Degraded and Moderate Condition zones of PCT 4023 meet the key diagnostic characteristics for the EPBC Act listed TEC as described in the Conservation Advice (Threatened Species Scientific Committee, 2018) as they:

- Occur from south-east Queensland to southern NSW within the South Eastern Queensland, NSW North Coast, Sydney Basin, or South East Corner bioregions;
- Occur in coastal catchments at elevations up to 50 m ASL, typically less than 20 m ASL, on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. There are also minor occurrences on coastal dune swales or flats, particularly deflated dunes and dune soaks;



- Occur on soils derived from unconsolidated sediments (including alluvium), typically hydrosols (grey-black clay-loam and/or sandy loam soils) and sometimes organ sols (peaty soils). It may occur in transitional soils (or catenas) where shallow unconsolidated sediments border lithic substrates;
- Have an open woodland, woodland, forest, or closed forest structure, with a tree canopy that has a total crown cover of at least 10 per cent;
- Have a canopy of trees dominated by *Casuarina glauca* (swamp-oak, swamp she-oak); and
- Have other characteristics that may help identify the ecological community include:
 - Typically occurs where groundwater is saline or brackish;
 - Typically occurs within 30km of the coast, but in some areas, such as along tidal river catchments, the ecological community can occur more than 100km inland; and
 - Do not occur on rocky headlands, sea cliffs or other consolidated sediments.

However, the Degraded and Moderate patches do not meet the minimum condition thresholds detailed (Threatened Species Scientific Committee, 2018), as even when estimating potentially contiguous patches offsite using the SVTM to estimate offsite vegetation PCTs consistent with the TEC, all patches are evidently under the minimum 0.5 ha size threshold.

4.2.4 PCT 4025 Cumberland Red Gum Riverflat Forest

Vegetation Formation: Forested Wetlands

Vegetation Class: Coastal Floodplain Wetlands

Percentage cleared: 88.84

4.2.4.1 BioNet Description

A tall to extremely tall sclerophyll open forest with a mid-stratum of soft-leaved shrubs and small trees and dense, grassy ground layer situated on the alluvial flats alongside streams that drain the Cumberland Plain or more rarely the broad alluvial flats of the Hawkesbury and Nepean river systems to the west of Sydney. The canopy almost always includes red gums (*Eucalyptus tereticornis*, *Eucalyptus amplifolia*), occasionally associated with an apple (*Angophora floribunda*, *Angophora subvelutina*), which may be locally prominent. A sparse mid-stratum almost always includes *Bursaria spinosa* and one or more *Acacia* species, of which *Acacia parramattensis* is the most frequent and abundant. The ground layer is typically characterised by a dense cover of grasses along with soft-leaved forbs and ferns. A high cover of *Microlaena stipoides* is almost always present with more scattered *Dichondra repens*, *Oplismenus aemulus* and *Solanum prinophyllum* being very frequent. The largest remaining areas are situated along the smaller streams and, while widespread, this PCT primarily occurs in small, often disturbed patches and is threatened by ongoing weed invasion following flood events. It typically occurs in a warm, moist climate at low elevation with a mean of 60 metres asl, however may occur up to 320 metres in southern parts of the Cumberland Plain. Where saline soils occur on the floodplain, this PCT grades into PCT 4023 which includes *Casuarina glauca* in its canopy. Where the floodplain narrows in valleys with sandstone escarpments upslope, it grades into PCT 4058 which includes a wider range of shrubs and scramblers including *Sigesbeckia orientalis* subsp. *orientalis*, *Breynia oblongifolia* and *Rubus parvifolius*. As elevation or distance from the margin of the floodplain increases, this PCT grades into grassy woodlands of the Cumberland Plain (PCT 3320) in which *Eucalyptus moluccana* is common.



4.2.4.2 Subject Land Description

PCT 4025 occurs across most of the subject land, in the north occurring as a mosaic with other floodplain communities. It occurs on quaternary alluvium associated with the South Creek soil landscape (EHG, 2025b; NSW DPIRD, 2025).

The PCT occurs as three different condition zones within the Site, two with canopy species and representing different states of degradation, and the other a grassland form lacking woody species. Only the grassland and degraded condition state are present within the subject land.

4.2.4.3 Condition Zones

Within the Site PCT 4025 occurs as three condition zones, described below.

PCT 4025 Moderate

This condition zone is in the best condition state within the Site and is mostly dominated by native species in all strata, though exotic species are common, particularly in the ground layer. It occurs in the north-east corner of the subject land where historical impacts from agriculture have been less intensive than other areas. The canopy is dominated by *Eucalyptus amplifolia* subsp. *amplifolia*. There are isolated occurrences of *Casuarina glauca*. The native shrub *Bursaria spinosa* (Blackthorn) is common, and dominates the shrub layer in most areas with a moderately high coverage. There are scattered occurrences of the exotics *Solanum sisymbriifolium* and *Senecio pterophorus* in the stratum.

The ground layer varies in condition, and although has higher dominance of native species than the other condition states, is frequently co-dominated or sub-dominated by exotic species. The native species with highest coverage include the sedge *Carex appressa*, the grasses *Microlaena stipoides* var. *stipoides* and *Oplismenus aemulus* (Basket Grass), and the forb *Tetragona tetragonioides*. Other native species are common in the layer, and include the forbs *Lobelia purpurascens* (Whiteroot), *Geranium solanderi* (Native Geranium) and *Einadia nutans* subsp. *nutans*.

Exotic species are common to subdominant in the ground layer and include the forbs *Tradescantia fluminensis* (Wandering Trad), *Solanum pseudocapsicum* (Madeira Winter Cherry), and *Galium aparine* (Goosegrass), and the grasses *Ehrharta erecta*, *Lolium perenne*, and *Bromus catharticus*.

An example of this condition zone is shown in Photo 7.





Photo 7 PCT 4025 Moderate within the Site

PCT 4025 Degraded

This condition zone occurs as patches predominately in the central area of the Site. The ground layer is dominated by exotic species which comprise much of the groundcover, and the shrub layer only sparsely contains native species. The canopy is dominated by *Eucalyptus amplifolia* subsp. *amplifolia*, and *Eucalyptus moluccana* and *Eucalyptus tereticornis* occur less frequently. A sub-canopy is present in some areas, and where present is dominated by *Melaleuca decora*. The native shrub *Bursaria spinosa* is present and sparse in the shrub layer.

Microlaena stipoides var. *stipoides* (Weeping Grass) is the most common species in the ground layer, with the exception of *Cynodon dactylon* var. *dactylon* (Couch), which as mentioned previously, is considered exotic by most botanical authorities in Australia. Other native species include the sedge *Carex appressa*, the rushes *Juncus usitatus* and *Juncus subsecundus*, and the forbs *Einadia nutans* subsp. *nutans*, *Lythrum hyssopifolia*, and *Persicaria decipiens*.

Exotic species are dominant in the ground layer. Species include the grasses *Ehrharta erecta* and *Lolium perenne*, and the forbs *Senecio madagascariensis*, *Ranunculus sceleratus*, and *Plantago lanceolata*.

An example of this condition zone is shown in Photo 8.





Photo 8 PCT 4025 Degraded within the subject land

PCT 4025 Grassland

These grasslands have been mapped as a highly degraded form of PCT 4025 due to the occurrence of some native species, but are in poor condition, and heavily dominated by exotic species. This condition zone occurs across much of the subject land, in areas associated with the floodplain across the site, and subsequently quaternary alluviums. Native species present include the sedges *Carex appressa* and *Cyperus gracilis*, the rushes *Juncus subsecundus* and *Juncus usitatus*, the forbs *Wahlenbergia gracilis* (Slender Bluebell) and *Lythrum hyssopifolia*, the grasses *Microlaena stipoides* and *Sporobolus creber*.

Dominant exotic grasses include *Lolium perenne* and *Paspalum dilatatum*, and other exotics are common and includes the grasses *Axonopus fissifolius* (Carpet Grass) and *Eragrostis curvula* (African Lovegrass), the forbs *Lotus uliginosus* (Birds-foot Trefoil) and *Senecio madagascariensis*, and the sedge *Cyperus eragrostis*.

An example of this condition zone is shown in Photo 9.





Photo 9 PCT 4025 Grassland within the subject land

4.2.4.4 Justification of PCT Selection

Justification for selection of PCT 4025 is provided in Table 16 below. A review of the SVTM (EHG, 2025c) shows these areas of the subject land have generally been mapped as PCT 4025, though there are some small, mapped patches of PCT 4023. Quantitative data from plots undertaken in the subject land is shown in Table 17 for species associated with determining PCT 4025 – these are species either mentioned specifically, in the description of PCT 4025 in the BioNet Vegetation Classification Database, and/or are in the top ten most frequently recorded species in primary reference plots assigned to PCT 4025 as reported in the database.

Table 16 Justification for PCT 4025 Selection

Method	Selection/Discussion
Non-Plot to PCT Tool	
Likely PCT matches from SVTM over or nearby to PCT 4025 polygons in site-specific mapping	PCT shortlist: 4023, 4025
Plot to PCT Tool	
Top 5 distance to centroid matches for each plot (n=7 plots)	PCT Shortlist: 3334, 3146, 3336, 3973, 3319, 3328, 3958, 3975, 4023, 4024, 4025, 4039, 4055, 4073, 4078, 4079, 4081, 4088, 4089, 4138, 4139,
Filtered for Cumberland IBRA Subregion	PCTs Remaining: 3319, 3958, 3975, 4023, 4024, 4025
PCT Selection	
Discarded PCTs	PCT 3319 – This PCT was discarded as it is not a forested wetland and does not occur on floodplains, unlike these vegetation areas,



Method	Selection/Discussion
	and is also associated with Wianamatta shale-derived clays, not quaternary alluvium. PCT 3958 – This PCT was discarded as it is a mostly treeless wetland, not a forested wetland. PCT 3975 - This PCT was discarded as it is a mostly treeless wetland, not a forested wetland. PCT 4023 was discarded as it is dominated by <i>Casuarina glauca</i>, whereas these areas are dominated by eucalypts. PCT 4024 – This PCT was discarded as despite sharing many species with the vegetation in the subject land it is characterised by being dominated by <i>Eucalyptus baueriana</i> (Blue Box), and not red gums, unlike these vegetation areas in the subject land.
Selected PCT	PCT 4025 was selected as it is known to occur on the alluvial flats alongside streams that drain the Cumberland Plain. The canopy is stated to almost always include <i>Eucalyptus tereticornis</i> and <i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>, which dominate the vegetation in the subject land. It also includes a number of other characteristic species, such as <i>Eucalyptus moluccana</i>, the shrub <i>Bursaria spinosa</i>, and the grasses <i>Microlaena stipoides</i> and <i>Oplismenus aemulus</i>.
Site species matches within each BAM Growth Form Group with Selected PCT	
Tree	<i>Casuarina glauca</i> , <i>Eucalyptus amplifolia</i> , <i>Eucalyptus moluccana</i> , <i>Eucalyptus tereticornis</i>
Shrub	<i>Bursaria spinosa</i> , <i>Melaleuca decora</i>
Fern	<i>Pellaea falcata</i>
Grass and Grass-like	<i>Carex appressa</i> , <i>Cynodon dactylon</i> , <i>Cyperus gracilis</i> , <i>Entolasia marginata</i> , <i>Juncus usitatus</i> , <i>Lachnagrostis filiformis</i> , <i>Lomandra longifolia</i> , <i>Microlaena stipoides</i> , <i>Oplismenus aemulus</i> , <i>Oplismenus imbecillis</i> , <i>Sporobolus creber</i>
Forb	<i>Commelina cyanea</i> , <i>Cotula australis</i> , <i>Dichondra repens</i> , <i>Einadia hastata</i> , <i>Einadia nutans</i> , <i>Geranium homeanum</i> , <i>Geranium solanderi</i> , <i>Lobelia purpurascens</i> , <i>Oxalis exilis</i> , <i>Oxalis perennans</i> , <i>Persicaria decipiens</i> , <i>Plantago debilis</i> , <i>Plectranthus parviflorus</i> , <i>Poranthera microphylla</i> , <i>Rumex brownii</i> , <i>Solanum prinophyllum</i> , <i>Tetragonia tetragonoides</i> , <i>Veronica plebeia</i> , <i>Wahlenbergia gracilis</i>
Other	<i>Desmodium varians</i> , <i>Glycine clandestina</i> , <i>Glycine tabacina</i>

Table 17 Occurrence of characteristic PCT 4025 species within Site plots

BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Tree (TG)	<i>Eucalyptus tereticornis</i>	10.0	14.3
Tree (TG)	<i>Acacia parramattensis</i>	0	0
Tree (TG)	<i>Acacia decurrens</i>	0	0
Tree (TG)	<i>Angophora floribunda</i>	0	0
Tree (TG)	<i>Eucalyptus amplifolia</i>	30.0	42.9
Tree (TG)	<i>Eucalyptus eugenioides</i>	0	0



BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Tree (TG)	<i>Angophora subvelutina</i>	0	0
Tree (TG)	<i>Eucalyptus moluccana</i>	30.0	14.3
Tree (TG)	<i>Eucalyptus crebra</i>	0	0
Tree (TG)	<i>Casuarina glauca</i>	1.0	14.3
Shrub (SG)	<i>Bursaria spinosa</i>	0.4	57.1
Shrub (SG)	<i>Ozothamnus diosmifolius</i>	0	0
Shrub (SG)	<i>Breynia oblongifolia</i>	0	0
Shrub (SG)	<i>Acacia floribunda</i>	0	0
Shrub (SG)	<i>Rubus parvifolius</i>	0	0
Shrub (SG)	<i>Leucopogon juniperinus</i>	0	0
Shrub (SG)	<i>Olearia viscidula</i>	0	0
Shrub (SG)	<i>Exocarpos cupressiformis</i>	0	0
Shrub (SG)	<i>Kunzea ambigua</i>	0	0
Shrub (SG)	<i>Melaleuca linariifolia</i>	0	0
Fern (EG)	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	0	0
Fern (EG)	<i>Adiantum aethiopicum</i>	0	0
Fern (EG)	<i>Blechnum spinulosum</i>	0	0
Fern (EG)	<i>Pellaea falcata</i>	0	28.6
Fern (EG)	<i>Pteridium esculentum</i>	0	0
Fern (EG)	<i>Asplenium flabellifolium</i>	0	0
Fern (EG)	<i>Cheilanthes distans</i>	0	0
Fern (EG)	<i>Doodia aspera</i>	0	0
Fern (EG)	<i>Adiantum hispidulum</i>	0	0
Fern (EG)	<i>Davallia solida</i> var. <i>pyxidata</i>	0	0
Grass & grasslike (GG)	<i>Microlaena stipoides</i>	4.5	85.7
Grass & grasslike (GG)	<i>Oplismenus aemulus</i>	0	28.6
Grass & grasslike (GG)	<i>Entolasia marginata</i>	0	14.3
Grass & grasslike (GG)	<i>Echinopogon ovatus</i>	0	0
Grass & grasslike (GG)	<i>Eragrostis leptostachya</i>	0	0
Grass & grasslike (GG)	<i>Echinopogon caespitosus</i>	0	0
Grass & grasslike (GG)	<i>Themeda triandra</i>	0	0
Grass & grasslike (GG)	<i>Dichelachne micrantha</i>	0	0
Grass & grasslike (GG)	<i>Lomandra longifolia</i>	0	14.3
Grass & grasslike (GG)	<i>Paspalidium distans</i>	0	0



BAM Growth Form Group	Scientific Name	Average Cover	Occurrence (% Plots)
Forb (FG)	<i>Dichondra repens</i>	0.5	42.9
Forb (FG)	<i>Solanum prinophyllum</i>	0	14.3
Forb (FG)	<i>Lobelia purpurascens</i>	0	28.6
Forb (FG)	<i>Oxalis perennans</i>	0.5	14.3
Forb (FG)	<i>Veronica plebeia</i>	0	14.3
Forb (FG)	<i>Wahlenbergia gracilis</i>	0.1	28.6
Forb (FG)	<i>Brunoniella australis</i>	0	0
Forb (FG)	<i>Commelina cyanea</i>	0	14.3
Forb (FG)	<i>Centella asiatica</i>	0	0
Forb (FG)	<i>Einadia hastata</i>	0.1	14.3
Other (OG)	<i>Glycine tabacina</i>	0	14.3
Other (OG)	<i>Desmodium varians</i>	0	14.3
Other (OG)	<i>Glycine microphylla</i>	0	0
Other (OG)	<i>Glycine clandestina</i>	0.1	14.3
Other (OG)	<i>Clematis glycinoides</i>	0	0
Other (OG)	<i>Cayratia clematidea</i>	0	0
Other (OG)	<i>Polymeria calycina</i>	0	0
Other (OG)	<i>Geitonoplesium cymosum</i>	0	0
Other (OG)	<i>Clematis aristata</i>	0	0
Other (OG)	<i>Pandorea pandorana</i> <i>subsp. pandorana</i>	0	0
Unassigned (UA)	<i>Wurmbea dioica</i>	0	0

Table Key: Average Cover = Average Projective Foliage Cover across PCT 4025 plots species occurred in

4.2.4.5 Alignment with Threatened Ecological Communities

BC Act Status: River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions – Endangered Ecological Community

EPBC Act Status: River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria – Critically Endangered Ecological Community

BC Act

The Moderate and Degraded condition zones of this PCT within the subject land are considered to conform to the BC Act listing of the EEC, as the final determination (NSW Scientific Committee, 2011a) does not provide condition criteria for inclusion or exclusion. They are considered to conform to the EEC due to being dominated by *Eucalyptus amplifolia* and *Eucalyptus tereticornis*, and occurring on periodically inundated alluvial flats associated with a coastal floodplain. Vegetation within the Subject Land also has the characteristics that would separate it from related floodplains TECs, i.e. a lack of *Eucalyptus robusta* and *Casuarina glauca*, and a ground layer dominated by grasses and soft-leaved forbs.



A total of 25 characteristic species for the TEC were recorded in plots in the subject land. These are: *Bursaria spinosa*, *Casuarina glauca*, *Commelina cyanea*, *Desmodium varians*, *Dichondra repens*, *Einadia hastata*, *Entolasia marginata*, *Eucalyptus amplifolia*, *Eucalyptus moluccana*, *Eucalyptus tereticornis*, *Geranium solanderi*, *Glycine clandestina*, *Glycine tabacina*, *Lobelia purpurascens*, *Lomandra longifolia*, *Melaleuca decora*, *Microlaena stipoides* var. *stipoides*, *Oplismenus aemulus*, *Oxalis perennans*, *Persicaria decipiens*, *Plectranthus parviflorus*, *Poranthera microphylla*, *Solanum prinophyllum*, *Veronica plebeia*, and *Wahlenbergia gracilis*.

The Grassland zone does not conform to the BC Act listed TEC as the final determination does not describe a grassland form of the TEC, which is instead described as being a forest or woodland with a eucalypt canopy.

EPBC Act

Occurrences of the TEC in the subject land comprising the Moderate and Degraded condition zones of PCT 4025 also meet the following key diagnostic criteria in the Approved Conservation Advice (TSSC, 2020): for the EPBC Act listed TEC:

- Occur in the South East Corner and Sydney Basin IBRA7 Bioregions, in eastern Victoria and south eastern New South Wales;
- Occur within catchments of the eastern and southern watershed of the Great Dividing Range;
- Occurs at elevations up to 250 metres above sea-level (ASL), but most typically below 50 metres ASL;
- Occurs on alluvial landforms related to coastal river floodplains and associated sites where transient water accumulates, including floodplains, river-banks, riparian zones, lake foreshores, creek lines (including the floors of tributary gullies), floodplain pockets, depressions, alluvial flats, fans, terraces, and localised colluvial fans;
- Occur on alluvial soils of various textures including silts, clay loams, sandy loams, gravel and cobbles. Does not occur on soils that are primarily marine sands, or aeolian sands;
- Occur as a tall closed-forest, tall open-forest, closed forest, open forest, tall woodland, or woodland. The canopy has a crown cover of at least 20 percent; and
- Have a canopy dominated by one or a combination of the following species: *Angophora floribunda*, *A. subvelutina*, *Eucalyptus amplifolia*, *E. baueriana*, *E. benthamii*, *E. bosistoana*, *E. botryoides*, *E. botryoides* x *E. saligna*¹⁴, *E. elata*, *E. grandis*, *E. longifolia*, *E. moluccana*, *E. ovata*, *E. saligna*, *E. tereticornis*, *E. viminalis*.

The Grassland condition zone does not meet these key diagnostic criteria due to having a canopy cover of less than 20%.

The majority of the Degraded and Moderate zones of PCT 4025 both meet the listing for the EPBC Act listed TEC, with the exception of several scattered patches of the Degraded zone comprising isolated trees. This is because they meet the lowest condition criteria of the described condition thresholds (TSSC, 2020) as on average plots in both conditions have >30% cover of perennial native understorey species, with the high sub-canopy coverage of *Melaleuca decora* fulfilling this criterion for the Degraded form. This means collectively patches are greater than 0.5 ha. All patches are also contiguous with a patch of native vegetation >5 ha with >50% perennial native cover, by having no gaps greater than 30m between onsite vegetation and the vegetation along South Creek to the east of the subject land. Finally, in all



plots there are greater than four native groundcover species. A summary of this is provided in Table 18.

Table 18 EPBC Act assessment for Riverflat Eucalypt Forest

Condition thresholds	Large patch The patch is ≥2ha OR Small contiguous ⁶ patch The patch is ≥0.5ha within a larger area of native vegetation ≥5ha	Small patch The patch is ≥0.5ha	Consistent with Site?
High condition ≥80% of its total perennial understorey vegetation cover ¹ is comprised of native species AND Ground cover richness ² ≥ 10 native species per sample plot AND ≥20 large trees ³ per ha	CLASS A1 Large or contiguous patch in good condition	Class B1 Small patch in high condition	Inconsistent with all of conditions of PCT 4025
Good condition with arboreal mammals ≥50% of its total perennial understorey vegetation cover ¹ is comprised of native species AND Ground cover richness ² ≥ 6 native species per sample plot AND ≥10 large trees ³ per ha AND Evidence of 4 or more species of arboreal mammals ⁴ detected ⁵ in the patch	CLASS A2 Large or contiguous patch in good condition with arboreal mammals	CLASS B2 Small patch in good condition with arboreal mammals	Inconsistent with all of conditions of PCT 4025
Good condition ≥50% of its total perennial understorey vegetation cover ¹ is comprised of native species AND Ground cover richness ² ≥ 6 native species per sample plot AND ≥10 large trees ³ per ha	CLASS B3 Large or contiguous patch in good condition	CLASS C1 Small patch in good condition	Inconsistent with all of conditions of PCT 4025
Moderate condition ≥30% of its total perennial understorey vegetation cover ¹ is comprised of native species AND Ground cover richness ² ≥ 4 native species per sample plot	CLASS C2 Large or contiguous patch in moderate condition		Consistent with Degraded and Moderate condition states of PCT 4025



Due to the presence of vegetation conforming to the EPBC Act listing for Riverflat Eucalypt Forest, a Referral to the Commonwealth was prepared for the project. A decision was made on zyx by the Minister that declared that the project was not a controlled action.

4.3 Other Vegetation Types

4.3.1 Exotic Woody Vegetation

This vegetation community comprises areas of exotic trees and shrubs over a ground layer dominated by exotic species, such as a species of *Salix* present next to some dams, occurring over exotic grass species, and large patches of dense *Rubus fruticosus* (Blackberry).

An example of this community is shown in Photo 10.



Photo 10 Exotic Woody Vegetation within the subject land

4.4 Threatened Ecological Communities

All three PCTs within the subject land have been assessed as conforming to a TEC listed under the BC Act. Table 19 summarises the PCTs identified within the subject land that conform to TECs as listed under the BC Act and their distribution is shown in Figure 10.



Table 19 Threatened ecological communities within the subject land

TEC	BC Act Status	EPBC Act Status	Associated PCT	Approximate Area within subject land (ha)
Cumberland Plain Woodland	CEEC	-	3320	0.72
Freshwater Wetlands	EEC	-	3975	0.55
Riverflat Eucalypt Forest	EEC	CEEC	4025	5.69

*In some cases total may not equal the appropriate total number due to rounding

4.5 Vegetation Integrity Assessment

The native vegetation identified within the subject land was assigned to a vegetation zone based on PCTs and broad condition states. Patch sizes were subsequently assigned for each vegetation zone. The extent of vegetation zones and patch size classes within the subject land are shown in Figure 11.

Each vegetation zone was assessed using survey plots/transects (see Section 2.3.2) to determine the vegetation integrity score. Composition, Structure and Function attributes were assessed against benchmark data as per the BioNet Vegetation Classification. Plot data utilised to determine the vegetation integrity score is provided in Appendix C. Field data sheets and electronic copies of raw data are provided separately to this document as attachments within the BAM-C.

Vegetation zones, patch sizes and vegetation integrity scores for the subject land are summarised in Table 20.

Table 20 Vegetation zones within the subject land

Vegetation Zone	PCT #	Condition Name	Area (ha)	Patch Size Class	Presence of Hollow-bearing Trees	Vegetation Integrity Score
1	3320	Canopy	0.07	101	Yes	41.3
2	3320	Grassland	0.65	101	No	8.2
3	3975	Artificial	0.03	101	No	52.6
4	3975	Natural	0.52	101	No	71
5	4025	Degraded	0.16	101	Yes	58.6
6	4025	Grassland	5.53	101	No	9.5



NATIVE VEGETATION EXTENT

FIGURE 8

- LEGEND**
- Subject Land
 - The Site
 - Vegetation Extent**
 - Native Vegetation
 - Exotic Vegetation
 - Farm Dam



Image Source:
Image © NearMap 2026 Dated: 22/6/2025
DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

	0	160	320
m			
Coordinate System:	GDA 1994 MGA Zone 56		
Scale:	1:8,431 at A3		
Project Number:	625.010786.00001		
Date Drawn:	18-Mar-2026		
Drawn by:	JL		



FIGURE 9

- LEGEND**
- Subject Land
 - The Site
 - Plant Community Type**
 - PCT 3320: Cumberland Shale Plains Woodland
 - PCT 3975: Southern Lower Floodplain Freshwater Wetland
 - PCT 4023: Coastal Valleys Riparian Forest
 - PCT 4025: Cumberland Red Gum Riverflat Forest



Image Source:
Image © NearMap 2026 Dated: 22/6/2025
DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

0 160 320 m

Coordinate System: GDA 1994 MGA Zone 56

Scale: 1:8,431 at A3

Project Number: 625.010786.00001

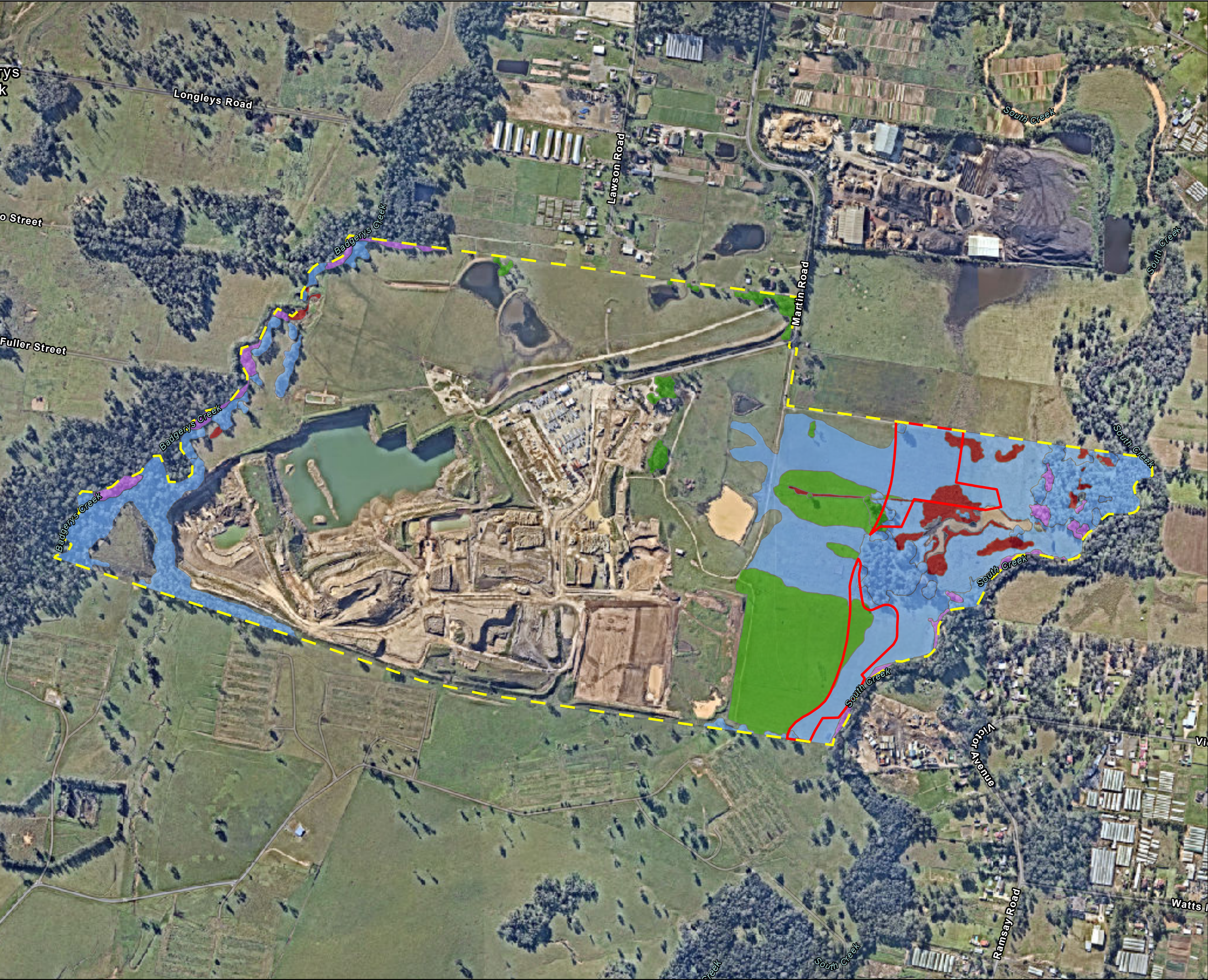
Date Drawn: 18-Mar-2026

Drawn by: JL



THREATENED ECOLOGICAL COMMUNITIES

FIGURE 10



LEGEND

Subject Land

The Site

Threatened Ecological Community

- Cumberland Plain Woodland in the Sydney Basin Bioregion
- Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions
- River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions
- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

Image Source:
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0 160 320 m

Coordinate System: GDA 1994 MGA Zone 56

Scale: 1:8,431 at A3

Project Number: 625.010786.00001

Date Drawn: 18-Mar-2026

Drawn by: JL



VEGETATION ZONES

FIGURE 11

LEGEND

Subject Land

The Site

Management Zone

Full Clearing

Retained

Vegetation Zone

Zone 1: PCT 3320_Canopy

Zone 2: PCT 3320_Grassland

Zone 3: PCT 3975_Artificial

Zone 4: PCT 3975_Natural

Zone 5: PCT 4025_Degraded

Zone 6: PCT 4025_Grassland

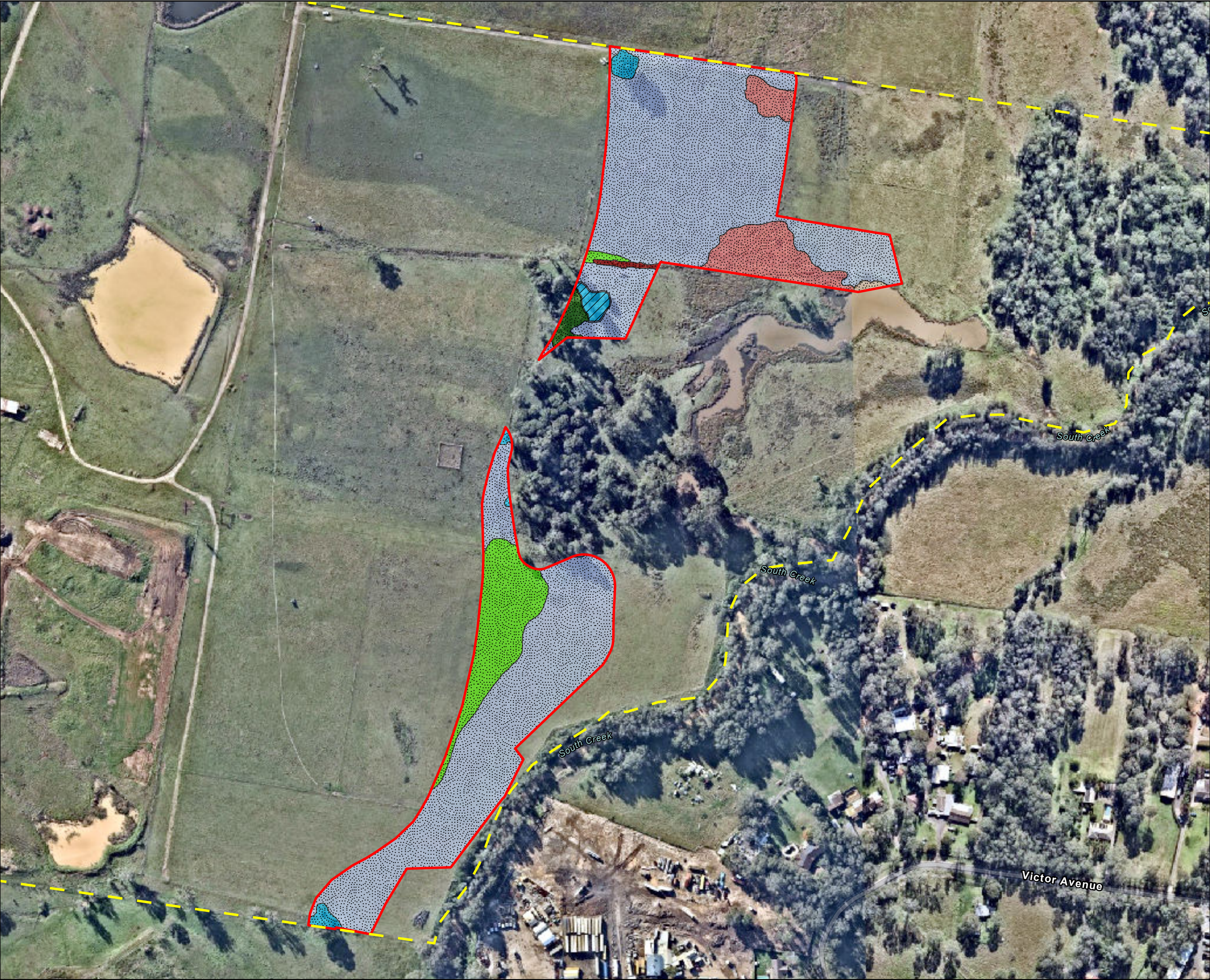


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 0 55 110 m

Coordinate System: GDA 1994 MGA Zone 56

Scale: 1:3,043 at A3

Project Number: 625.010786.00001

Date Drawn: 18-Mar-2026

Drawn by: JL



5.0 Threatened Species

5.1 Identifying Threatened Species for Assessment

The BAM-C generates a list of threatened species requiring assessment utilising several variables. The following criteria have been utilised to predict the threatened species requiring further assessment in the BAM-C:

- IBRA region: Sydney Basin;
- IBRA subregion: Cumberland; and
- Associated PCTs:
 - Percent native vegetation cover in the assessment area: 23.54%;
 - Patch size: >100 ha; and
 - Credit type: Ecosystem and/or species credit species.

Based on the above variables, the BAM-C generated a list of 34 ecosystem credit species and 44 species credit species. These totals include twelve dual credit species which are considered as ecosystem credit species for their foraging habitat and as species credit species for their breeding habitat. Ecosystem credit species and species credit species are assessed further in Section 5.2 and Section 5.3, respectively.

5.2 Ecosystem Credit Species

5.2.1 Overview

Table 21 lists the predicted ecosystem credit species for the vegetation zones within the subject land and whether they have been retained within the assessment following consideration of habitat constraints, geographic limitations, vagrancy and quality of microhabitats. All ecosystem species have been retained in the assessment. The highest sensitivity class of these species is “High Sensitivity to Potential Gain”, which has subsequently been utilised by the BAM-C for the calculation of ecosystem credits.

5.2.2 Justification for Removal

No ecosystem credit species have been removed from the assessment; therefore, no justification for removal is provided.

Table 21 Ecosystem credit species requiring further assessment

Scientific Name	Common Name	Relevant PCT	Sensitivity to Gain Class	Retained in Assessment?
<i>Anthochaera phrygia</i>	Regent Honeyeater (foraging)	3320, 4025	High	Yes
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	3320, 4025	Moderate	Yes
<i>Botaurus poicilotilus</i>	Australasian Bittern	4025	Moderate	Yes
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo (foraging habitat)	3320, 4025	Moderate	Yes
<i>Calyptorhynchus lathami</i>	Glossy Black- Cockatoo (foraging)	3320, 4025	High	Yes



Scientific Name	Common Name	Relevant PCT	Sensitivity to Gain Class	Retained in Assessment?
<i>Chthonicola sagittate</i>	Speckled Warbler	3320, 4025	High	Yes
<i>Circus assimilis</i>	Spotted Harrier	3320, 4025	Moderate	Yes
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	3320, 4025	High	Yes
<i>Daphoenositta chrysoptera</i>	Varied Sittella	3320, 4025	Moderate	Yes
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	3320, 4025	High	Yes
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	3320, 4025	Moderate	Yes
<i>Falco subniger</i>	Black Falcon	3320, 4025	Moderate	Yes
<i>Glossopsitta pusilla</i>	Little Lorikeet	3320, 4025	High	Yes
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (foraging)	3320, 4025	High	Yes
<i>Hieraaetus morphnoides</i>	Little Eagle (foraging)	3320, 4025	Moderate	Yes
<i>Hirundapus caudacutus***</i>	White-throated Needletail	3320, 4025	High	Yes
<i>Irediparra gallinacean</i>	Comb-crested Jacana	4025	Moderate	Yes
<i>Lathamus discolor</i>	Swift Parrot (foraging)	3320, 4025	Moderate	Yes
<i>Limosa limosa</i>	Black-tailed Godwit (foraging)	4025	High	Yes
<i>Lophoictinia isura</i>	Square-tailed Kite (foraging)	3320, 4025	Moderate	Yes
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	3320	Moderate	Yes
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	3320, 4025	High	Yes
<i>Miniopterus australis</i>	Little Bent-winged Bat (foraging)	3320, 4025	High	Yes
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat (foraging)	3320, 4025	High	Yes
<i>Neophema pulchella</i>	Turquoise Parrot	3320, 4025	High	Yes
<i>Pandion cristatus</i>	Eastern Osprey (foraging)	3320, 4025	Moderate	Yes
<i>Petroica boodang</i>	Scarlet Robin	3320	Moderate	Yes
<i>Petroica phoenicea</i>	Flame Robin	3320, 4025	Moderate	Yes
<i>Pteropus poliocephalus</i>	Grey-headed Flying Fox (foraging)	3320, 4025	High	Yes
<i>Pycnoptilus floccosus</i>	Pilotbird	4025	Moderate	Yes
<i>Rostratula australis</i>	Australian Painted Snipe	4025	Moderate	Yes
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	3320, 4025	High	Yes



Scientific Name	Common Name	Relevant PCT	Sensitivity to Gain Class	Retained in Assessment?
<i>Stagonopleura guttata</i>	Diamond Firetail	3320, 4025	Moderate	Yes
<i>Varanus rosenbergi</i>	Rosenberg's Goanna	3320, 4025	High	Yes

*** Species not listed under BC Act but listed under Commonwealth EPBC Act.

5.3 Species Credit Species

5.3.1 Overview

A total of 44 species credit species are predicted, including 13 dual credit species which are considered as species credit species for their breeding or important habitat.

Table 22 lists the flora and fauna species credit species predicted for the vegetation zones within the subject land, and whether they have been retained within the assessment following consideration of habitat constraints, geographic limitations, vagrancy and quality of microhabitats. Under Sections 5.2.2 and 5.2.3 of the BAM, further species credit species can be excluded from further assessment if an assessment of habitat constraints and microhabitats determines that the habitat within the subject land is substantially degraded such that the species credit species is unlikely to occur.

Detailed habitat assessments of the subject land were undertaken as described in Section 2.5. The habitat assessments focussed on habitat features relevant to species credit species predicted to occur. This included determining the presence/absence of the habitat constraints identified for the predicted threatened species and the condition of these habitat constraints and other microhabitats.

The habitat assessment surveys conducted during September 2025 focused on determining if habitat for any potential species credit species (or relevant breeding component for dual credit species) was either not present or substantially degraded such that the species is unlikely to utilise the subject land or a specific vegetation zone in accordance with the requirements of Step 3 (a) of Section 6.4 of the BAM. Based on the results of the survey, a number of species were removed from consideration due to either the habitat being too degraded or required habitat constraints not being present as shown in Table 22.

Out of the assessed predicted species, 12 fauna species and 12 flora species have been retained for further assessment and have been targeted during surveys outlined in Section 2.4 and Section 2.5, respectively.

Table 22 Species credit species

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Sensitivity to Gain Class	Retained in Assessment?
Flora					
<i>Acacia pubescens</i>	Downy Wattle	V	V	High	Yes
<i>Commersonia prostrata</i>	Dwarf Kerrawong	E	E	High	No
<i>Deyeuxia appressa</i>	-	E	E	High	No
<i>Dillwynia tenuifolia</i>	-	V	-	Moderate	No
<i>Eucalyptus benthamii</i>	Camden White Gum	CE	V	Moderate	Yes
<i>Eucalyptus glaucina</i>	Slaty Red Gum	V	V	High	Yes



Scientific Name	Common Name	BC Act Status	EPBC Act Status	Sensitivity to Gain Class	Retained in Assessment?
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Juniper-leaved Grevillea	V	-	Moderate	Yes
<i>Gyrostemon thesioides</i>	-	E	-	High	No
<i>Hibbertia puberula</i>	-	E	-	High	Yes
<i>Hibbertia</i> sp. <i>Bankstown</i>	-	CE	CE	High	Yes
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> endangered population	-	E	-	Moderate	Yes
<i>Maundia triglochinosoides</i>		V	-	High	Yes*
<i>Micromyrtus minutiflora</i>	-	E	V	High	Yes
<i>Persicaria elatior</i>	Tall Knotweed	V	V	High	No
<i>Persoonia hirsuta</i>	Hairy Geebung	V	-	Moderate	Yes
<i>Persoonia nutans</i>	Nodding Geebung	E	E	Moderate	Yes
<i>Pimelea curviflora</i> var. <i>curviflora</i>	-	V	V	High	Yes
<i>Pimelea spicata</i>	Spiked Rice-flower	E	E	High	Yes
<i>Pomaderris brunnea</i>	Brown Pomaderris	E	V	High	Yes
<i>Pomaderris prunifolia</i> – endangered population	-	E	-	High	No
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	E	E	Very High	No
<i>Pultenaea parviflora</i>	-	E	V	Moderate	No
<i>Pultenaea pedunculata</i>	Matted Bush-pea	E	-	High	Yes
<i>Senna acclinis</i>	Rainforest Cassia	E	-	High	No
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E	V	High	Yes
<i>Wahlenbergia multicaulis</i> – endangered population	Tadgell's Bluebell – endangered population	E	-	High	No
Fauna					
<i>Anthochaera Phrygia</i>	Regent Honeyeater (Breeding)	CE	CE	High	No
<i>Burhinus grallarius</i>	Bush Stone-curlew	E	-	High	Yes
<i>Calidris ferruginea</i>	Curlew Sandpiper (Breeding)	CE	CE	High	No
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo (Breeding)	E	E	High	No
<i>Calyptorhynchus lathami</i>	South-eastern Glossy Black Cockatoo (Breeding)	V	V	High	No



Scientific Name	Common Name	BC Act Status	EPBC Act Status	Sensitivity to Gain Class	Retained in Assessment?
<i>Cercatetus nanus</i>	Eastern Pygmy Possum	V	-	High	No
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	E	E	Very High	No
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (Breeding)	V	-	High	No
<i>Hieraaetus morphnoides</i>	Little Eagle (Breeding)	V	-	Moderate	No
<i>Lathamus discolor</i>	Swift Parrot (Breeding)	E	CE	Moderate	No
<i>Limosa limosa</i>	Black-tailed Godwit (Breeding)	V	E	High	No
<i>Litoria aurea</i>	Green and Golden Bell Frog	E	V	High	Yes
<i>Lophnoictina isura</i>	Square-tailed Kite (Breeding)	V	-	Moderate	No
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	E	-	High	Yes
<i>Miniopterus australis</i>	Little Bent-winged Bat (Breeding)	V	-	Very High	No
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat (Breeding)	V	-	Very High	No
<i>Myotis macropus</i>	Southern Myotis	V	-	High	Yes
<i>Ninox connivens</i>	Barking Owl	V	-	High	Yes
<i>Ninox strenua</i>	Powerful Owl	V	-	High	Yes
<i>Pandion cristatus</i>	Eastern Osprey (Breeding)	V	-	Moderate	No
<i>Petauroides norfolcensis</i>	Squirrel Glider	V	-	High	Yes
<i>Phascolarctos cinereus</i>	Koala	E	E	High	Yes
<i>Pteropus poliocephalus</i>	Grey-headed Flying Fox (Breeding)	V	V	High	No
<i>Tyto novaehollandiae</i>	Masked Owl	V	-	High	Yes

Key: E = Endangered, CE = Critically Endangered, V = Vulnerable

5.3.2 Justification for Removal

5.3.2.1 Threatened Flora Species

Deyeuxia appressa

Deyeuxia appressa has been excluded from further assessment as it has not been recorded since 1942 as per the TBDC and is only known from two locations pre-1942 that are remote from the subject land (Killara and Georges River, south of Bankstown). Further, microhabitats associated with the ground layer are considered degraded due to a long history of agricultural use and likely compaction from cattle and grazing.



Dillwynia tenifolia

Dillwynia tenifolia has been excluded from further assessment because the subject land is outside the core distribution for the species, which extends from Penrith east to Colbee. Outside of this range, and within Western Sydney, the species has been found within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest, neither of which are present in the subject land.

Gyrostemon thesioides

Gyrostemon thesioides has been excluded from further assessment because the subject land does not contain, or is not within 50m from, a watercourse. Additionally, the species is only known from five locations within NSW (Lake Burragorang, Long Point, Collo River, Georges River and Nepean River), none of which are near to the subject land.

Hibbertia* sp. *Bankstown

Hibbertia sp. *Bankstown* has been excluded from further assessment because the species is only known to occur at one population at Bankstown Airport, in tertiary alluvial soil along Airport Creek, which is outside of the subject land.

Maundia triglochinoides

Maundia triglochinoides has been excluded from further assessment because the subject land is outside of the known range for the species. The southern limit of the species is Wyong, which is north of the subject land, with all former sites around Sydney now extinct.

Persicaria elatior

Persicaria elatior has been excluded from further assessment because the subject land is outside of the range for the species. Within NSW, the species is known from Mount Dromedary, Moruya State Forest, Upper Avon River, Bermagui, Picton Lakes, Raymond Terrace and Grafton, none of which are nearby the subject land.

Pomaderris brunnea

Pomaderris brunnea has been excluded from further assessment as the subject land is outside of the range for this species. The species is only found in very limited areas around the Colo, Nepean and Hawkesbury Rivers, none of which are near the subject land.

Pterostylis saxicola

Pterostylis saxicola has been removed from further assessment because it is only known to occur in five locations within western Sydney: Georges River National Park, close to Yeramba Lagoon, Peter Meadows Creek, and St Marys Towers, none of which are in the subject land. This species is associated with sandstone rock shelves above cliff lines, or mossy rocks in gullies, neither of which are present in the subject land.

Pultenaea parviflora

Pultenaea parviflora has been removed from further assessment as microhabitats are not present within the subject land. *Pultenaea parviflora* is known to exist in scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest, with a dominant canopy of species including *Eucalyptus fibrosa*, *Eucalyptus globoidea* and *Eucalyptus longifolia* (amongst others), none of which are present within the subject land.



Senna acclinis

Senna acclinis has been removed from further assessment as microhabitats are not present within the subject land. This species grows on the margins of subtropical, littoral and dry rainforests, none of which are present within the subject land.

Syzygium paniculatum

Syzygium paniculatum has been excluded from further assessment as microhabitats are not present within the subject land. The species is restricted to remnant stands of littoral rainforests, which are not present within the subject land.

5.3.2.2 Threatened Fauna Species

Regent Honeyeater (Breeding)

The Regent Honeyeater (*Anthochaera phrygia*) has been excluded from further assessment as the subject land is not located on the 'Mapped Important Areas' for the species map. Breeding habitat for these species is limited to specific areas that are not associated with, or in the vicinity of, the subject land, therefore since the species credit species component for this species is associated with breeding habitat only, the Regent Honeyeater was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.

Bush Stone Curlew

The Bush-stone Curlew (*Burhinus grallarius*) has been removed from further assessment as microhabitats are not present within the subject land. This species requires fallen timber, and as the subject land consists of a paddock with scattered trees, no fallen timber is present within the subject land.

Curlew Sandpiper (Breeding)

The Curlew Sandpiper (*Calidris ferruginea*) has been excluded from further assessment as the subject land is not located on the 'Mapped Important Areas' for the species map. Breeding habitat for these species is limited to specific areas that are not associated with, or in the vicinity of, the subject land, therefore since the species credit species component for this species is associated with breeding habitat only, the Curlew Sandpiper was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.

Gang-gang Cockatoo (Breeding)

The Gang-gang Cockatoo (*Callocephalon fimbriatum*) has been excluded from further assessment as the subject land does not contain trees with hollows with ≥ 7 cm diameter hollows. Breeding habitat is therefore not present within the subject land, and since the species credit species component for this species is associated with breeding habitat only, the Gang-gang Cockatoo was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.

Glossy Black Cockatoo (Breeding)

The Glossy Black Cockatoo (*Calyptrorhynchus lathami lathami*) has been excluded from further assessment as the subject land does not contain trees with hollows with ≥ 15 cm diameter hollows. Breeding habitat is therefore not present within the subject land, and since the species credit species component for this species is associated with breeding habitat only, the Glossy Black Cockatoo was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.



Eastern Pygmy Possum

The Eastern Pygmy Possum (*Cercartetus nanus*) has been excluded from further assessment because this species relies on a shrubby understorey and feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes. The subject land does not provide these microhabitats, and the native vegetation present largely comprises canopy trees over grassland and shrubby regrowth lacking banksias, eucalypts and bottlebrushes, and the species is unlikely to use the habitat. The subject land occurs in a highly cleared rural landscape that has undergone extensive fragmentation and disturbance and the microhabitats within the subject land are considered to be too degraded for this species to occur. It is also noted that the species has never been recorded within a 10 km radius of the subject land according to BioNet (EES 2022).

Large-eared Pied Bat

The Large-eared Pied Bat (*Chalinolobus dwyeri*) has been removed from the assessment as the habitat constraints for the species are absent from the subject land. The TBDC lists the following habitat constraint for the species: Within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels. None of these habitat features, or records held within BioNet, are present within the subject land or within two kilometres of the subject land.

White-bellied Sea-Eagle (Breeding)

The White-bellied Sea-Eagle (*Haliaeetus leucogaster*) has been removed from the assessment because this species' habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat (OEH 2019b). Habitat within the subject land is degraded and contains few large trees to support the species. South Creek is located approximately 700 m to the east, and Badgery's Creek approximately 1.4 km to the west, which both contain large tracts of native vegetation that would be utilised by this species for breeding, rather than a few isolated trees surrounded by agricultural lands. No large nests suitable for the species were recorded during field surveys of the subject land. Therefore, the microhabitats within the subject land are considered to be too degraded for this species to occur. Breeding habitat is therefore not present within the subject land, and since the species credit species component for this species is associated with breeding habitat only, the White-bellied Sea-Eagle was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.

Little Eagle (Breeding)

The Little Eagle (*Hieraaetus morphnoides*) has been excluded from further assessment as the habitat within the subject land is degraded and contains minimal native vegetation cover and mature large nesting trees to support the species in breeding. No large stick nests were observed in the subject land. The subject land occurs in a highly cleared rural landscape, and the majority of the potentially suitable habitat has undergone large degrees of fragmentation and disturbance. This species preys on birds, reptiles and mammals (NSW Government 2017e) and the highly degraded subject land is unlikely to support prey populations that would support this species. Therefore, the microhabitats within the subject land are considered to be too degraded for this species to occur. Breeding habitat is therefore not present within the subject land, and since the species credit species component for this species is associated with breeding habitat only, the Little Eagle was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.



Swift Parrot (Breeding)

The Swift Parrot (*Lathamus discolor*) has been excluded from further assessment as the subject land is not located on the 'Mapped Important Areas' for the species (EH&H, 2026). Breeding habitat for these species is limited to specific areas that are not associated with, or in the vicinity of, the subject land, therefore since the species credit species component for this species is associated with breeding habitat only, the Swift Parrot was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.

Black-tailed Godwit (Breeding)

The Black-tailed Godwit (*Limosa limosa*) has been excluded from further assessment as the subject land is not located on the 'Migratory Shorebird Important Habitat Map' for the species (EH&H, 2022). Breeding habitat for these species is limited to specific areas that are not associated with, or in the vicinity of, the subject land, therefore since the species credit species component for this species is associated with breeding habitat only, the Black-tailed Godwit was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.

Square-tailed Kite (Breeding)

The Square-tailed Kite (*Lophoictinia isura*) has been excluded from further assessment due to the lack of nest trees in the subject land. Breeding habitat for these species is limited to large stick nests within living trees on forest edges, and as such no nests were recorded in or within the vicinity of, the subject land, therefore since the species credit species component for this species is associated with breeding habitat only, the Square-tailed Kite was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.

Little Bent-winged Bat (Breeding)

The Little Bent-winged Bat (*Miniopterus australis*) has been removed from the assessment as the habitat constraints for the species are absent from the subject land. The TBDC lists the following habitat constraint for the species: Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'; observation type code 'E nest-roost'; with numbers of individuals >500; or from the scientific literature. None of these habitat features, or records held within BioNet, are present within the subject land. Breeding habitat is therefore not present within the subject land, and since the species credit species component for this species is associated with breeding habitat only, the Little Bent-winged Bat was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.

Large Bent-winged Bat (Breeding)

The Large Bent-winged Bat (*Miniopterus orianae oceanensis*) has been removed from the assessment as the habitat constraints for the species are absent from the subject land. The TBDC lists the following habitat constraint for the species: Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'; observation type code 'E nest-roost'; with numbers of individuals >500; or from the scientific literature. None of these habitat features, or records held within BioNet, are present within the subject land. Breeding habitat is therefore not present within the subject land, and since the species credit species component for this species is associated with breeding habitat only, the Large Bent-winged Bat was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.



Eastern Osprey (Breeding)

The Eastern Osprey (*Pandion cristatus*) has been excluded from further assessment due to the lack of nest trees in the subject land. Breeding habitat for these species is limited to large stick nests within dead trees, or in dead crowns of live trees within coastal environments, and as such no nests were recorded in or within the vicinity of the subject land therefore since the species credit species component for this species is associated with breeding habitat only, the Eastern Osprey was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.

Grey-headed Flying Fox (Breeding)

The Grey-headed Flying Fox (*Pteropus poliocephalus*) has been excluded from further assessment due to the lack of breeding camps present in the subject land. The nearest breeding camp to the subject land is located at Cecil Hill, approximately 7 km to the northeast of the subject land. As no breeding camps were recorded in or within the vicinity of the subject land therefore since the species credit species component for this species is associated with breeding habitat only, the Grey-headed Flying Fox was excluded from further assessment and assessed as ecosystem credit species for foraging habitat only.

5.3.3 Presence of Candidate Species Credit Species

5.3.3.1 Surveys

Twelve predicted threatened flora species and eight predicted threatened fauna species were assessed as candidate species credit species requiring further assessment (i.e. retained in assessment as per Table 22. Targeted threatened flora surveys were undertaken within the subject land as described in Section 2.4, and targeted threatened fauna surveys as described in Section 2.5. Table 5 and Table 6 summarise the targeted species, survey dates and survey methods.

5.3.3.2 Expert Report

This assessment has not utilised any expert reports.

5.3.3.3 Candidate Species Occurrence

None of the candidate species credit species, or their habitat component (e.g. large stick nests) were detected within the subject land during targeted surveys.

The results from the ultrasonic bat detection devices are provided in Appendix D.

5.3.3.4 Non-Candidate Species Occurrence

The Grey-headed Flying-Fox (*Pteropus poliocephalus*) was recorded during field surveys flying overhead and are assumed to be foraging. As the habitat constraints for breeding of Grey-headed Flying-fox (breeding camps) are absent from the subject land, this species has been assessed as ecosystem credit species for foraging habitat only.

The Eastern Bent-winged Bat (*Miniopterus orianae oceanensis*) was recorded using the subject land by ultrasonic bat detection devices (Appendix D). As the habitat constraints for breeding of the Eastern Bent-winged Bat (caves, mines) are absent from the subject land, this species has been assessed as an ecosystem credit species for foraging only.

The White-bellied Sea Eagle was also observed on 2 December 2025 flying over the subject land and was assumed to be in transit between foraging or breeding habitat. As the habitat constraints for breeding of the White-bellied Sea-Eagle (large stick nests) are absent from the subject land, this species has been assessed as ecosystem credit species for foraging habitat only.



6.0 Prescribed Impacts

Prescribed impacts are identified in Clause 6.1 of the Biodiversity Conservation Regulation 2017. Prescribed impacts are those that are additional to the clearing of native vegetation and associated habitat. These include:

- Development on the habitat of threatened species or ecological communities associated with:
 - Karst, caves, crevices, cliffs, rock outcrops and other geological features of significance;
 - Human-made structures; and
 - Non-native vegetation.
- Development on areas connecting threatened species habitat, such as movement corridors;
- Development on water quality, water bodies and hydrological processes that sustain threatened species and TECs (including from subsidence or “upsidence” from underground mining);
- Wind turbine strikes on threatened and protected animals; and
- Vehicle strikes on threatened species or on animals that are part of a TEC.

An assessment of the relevance of these prescribed impacts to the project is provided in Table 23. The location of prescribed impacts is shown in Figure 12.

Table 23 Identification of prescribed impacts on the development site

Prescribed Impact	Relevance to the Project
Karst, caves, crevices, cliffs, rock outcrops and other geological features of significance	Not relevant. No karsts, caves, crevices, cliffs or areas of geological significance have been identified within the subject land. Prescribed impact not relevant.
Human-made structures	Not relevant. The subject land comprises open paddocks that have been used for agriculture. Prescribed impact not relevant.
Non-native vegetation	Not relevant. The entire subject land has been assigned a native PCT and so this prescribed impact is not relevant.
Habitat connectivity	Relevant. The subject land contains native vegetation that has some minor connectivity for highly mobile, aerial species to the riparian corridor of South Creek to the east. The project will not fragment or break existing levels of connectivity but will result in a minor reduction to the area of ‘stepping-stone’ habitat available.
Waterbodies, water quality and hydrological processes	Relevant. No waterbodies are present within the subject land. The project will alter current hydrological processes and has the potential to impact water quality. Any changes to water quality and/or hydrological processes will be appropriately managed through design and are anticipated to meet all requirements as outlined in the SEARs. The impacts to water quality and hydrological processes would primarily occur during construction and would be short-term.
Wind farm developments	Not relevant. The project does not comprise a wind farm development and therefore this prescribed impact is not relevant.



Prescribed Impact	Relevance to the Project
Vehicle strikes	Relevant. The subject land comprises paddocks for agriculture, and so currently there is no risk of vehicle strikes. The proposed development will require vehicles for the construction of the warehouses and the drainage basins within the subject land and thereby increase the potential of vehicle strike.



FIGURE 12

LEGEND

- Subject Land
- The Site
- Prescribed Impact**
- Habitat Connectivity
- Waterbodies, water quality and hydrological processes

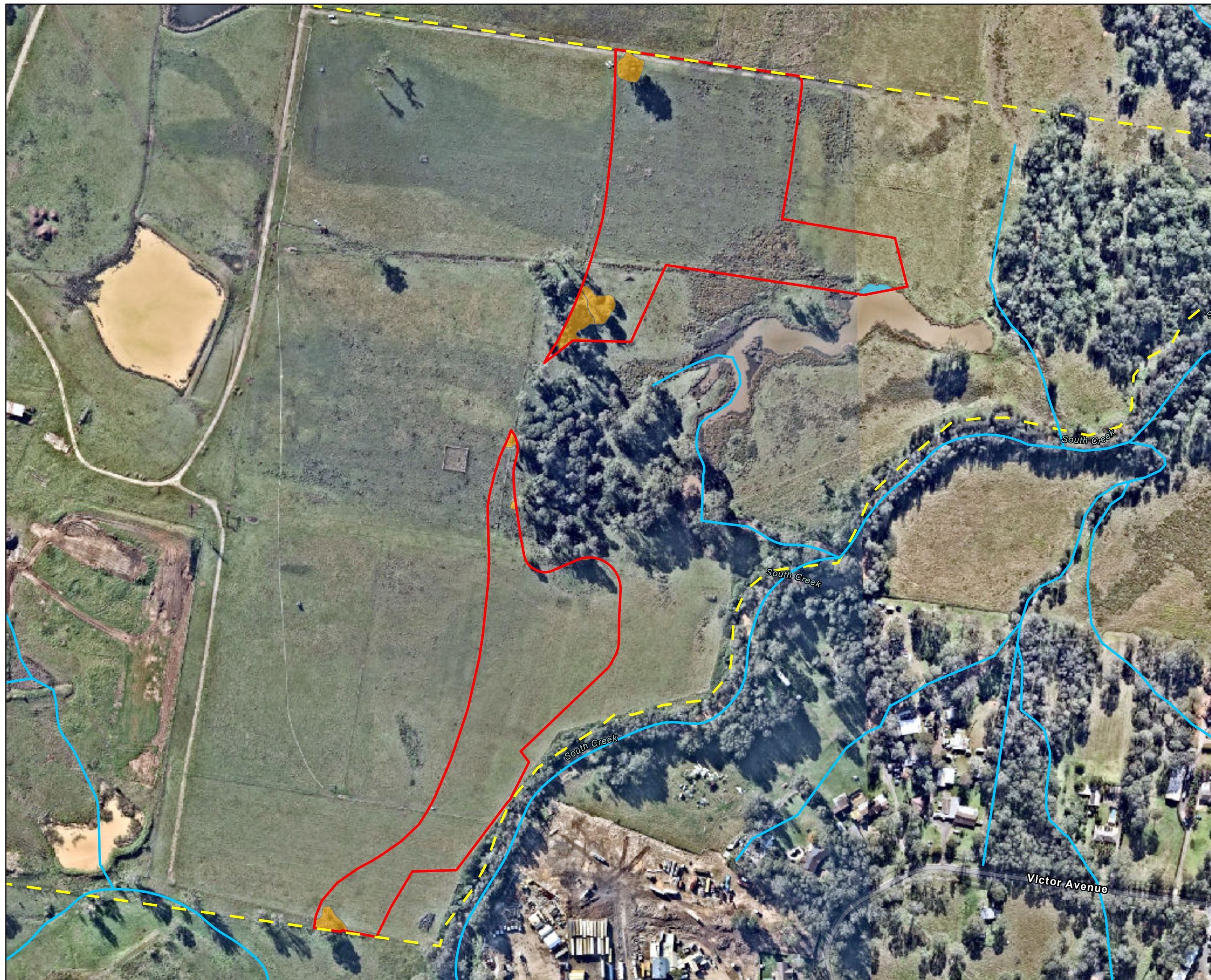


Image Source:
Image © NearMap 2026 Dated: 22/6/2025
DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

0 55 110 m
Coordinate System: GDA 1994 MGA Zone 56
Scale: 1:3,043 at A3
Project Number: 625.010786.00001
Date Drawn: 18-Mar-2026
Drawn by: JL

7.0 Avoid and Minimise Impacts

This chapter includes demonstration of efforts to avoid and minimise impacts on biodiversity values identified within the subject land, which includes assessment of direct, indirect and prescribed impacts. Any mentioning of the development footprint within this chapter is synonymous with the subject land.

7.1 Requirements under the BAM

Section 7 of the BAM (Stage 2: Impact assessment (biodiversity values and prescribed impacts) provides guidance and outlines requirements to apply the hierarchy of avoid, minimise and offset for assessing direct, indirect or prescribed impacts on biodiversity values. Broadly the two main factors that require consideration (emphasis added) include:

- Locate the proposal to avoid or minimise direct and indirect impacts on native vegetation, threatened species, threatened ecological communities and their habitat; and
- Design the proposal to avoid or minimise direct and indirect impacts on native vegetation, threatened species, threatened ecological communities and their habitat.

As per Section 10.1(2) of BAM 2020, the residual impact is the remaining impact after all reasonable measures are made to avoid or minimise the impacts of the proposal as per Chapter 7.

The BAM 2020 Stage 2 Operational Manual provides further guidance on avoidance and minimisation strategies. As per Section 3.1 of the Stage 2 Operation Manual measures, examples of measures to avoid impacts on biodiversity values include (but are not limited to):

- Alternatives for the location and design of the proposal have been evaluated with evidence of analysis of social, economic and environmental considerations;
- Details of constraints that have influenced the selection of the proposal's location (e.g. areas of biodiversity, wind modelling for a wind farm development, location of resource deposits for a mine development); and
- Constraints for matters other than biodiversity that might restrict the availability of alternative sites or footprints (e.g. areas of flooding, proximity to neighbours with odour or noise concerns, zonings).

As per Section 3.2 of the Stage 2 Operational Manual where an impact cannot be avoided, reasonable measures must be identified to minimise the proposed impact.

These requirements for avoidance and minimisation are addressed in the following sections.

7.2 Avoid and Minimise Direct and Indirect Impacts on Native Vegetation and Habitat

This section summarises the need for the proposed project in the local area, the suitability of the location chosen for the project, and the specific considerations for the design of the development footprint, including consideration of biodiversity values as well as non-biodiversity constraints.

7.2.1 Need for the Project

The SSD supports the essential site preparation works to rehabilitate the area disturbed by quarrying and brick making operations and establish the landform that can support the delivery of employment and warehousing floorspace as well as landscape and amenity space. This



will allow the Site to realise the objectives of the Enterprise zone and create an industrial precinct in accordance with the WSAP.

While the Site under the existing project approval and mining lease allows for the rehabilitation of disturbed land and, through consultation with DPHI, the Applicant proposes to submit a new SSDA to allow for site preparation works to be undertaken outside the approved extent. The proposed development approach would also allow for the use of fill from un-disturbed areas around the site for the purposes of backfilling, reducing the requirement for fill import and supporting the efficient and timely rehabilitation of the Site.

This SSDA is instrumental to supporting the demand for industrial and employment land in a key location within the Badgerys Creek Precinct within the Western Sydney Aerotropolis. The proposal also reflects a cohesive rehabilitation, quarrying and bulk earthworks strategy that aligns with the WSAP and Connecting to Country guidelines.

7.2.1.1 Greater Sydney Region Plan: A Metropolis of Three Cities – Connecting People

The Greater Sydney Region Plan: A Metropolis of Three Cities – connecting people (‘the Region Plan’) provides the overarching strategic plan for growth and change in Sydney. It is a 20-year plan with a 40-year vision that seeks to transform Greater Sydney into a metropolis of three cities - the Western Parkland City, Central River City and Eastern Harbour City. It identifies key challenges facing Sydney including increasing the population to eight million by 2056, 817,000 new jobs and a requirement of 725,000 new homes by 2036.

The Site is identified to be within the Badgerys Creek Aerotropolis. The Australian and NSW Governments will deliver the first stage of the North South Rail Link from St Marys to the Western Sydney Airport and Badgerys Creek Aerotropolis. A potential new east-west mass transit corridor will connect the Western Parkland City to the Central River City.

The delivery of the Western Sydney Airport and Badgerys Creek Aerotropolis will be driven by a Western Sydney City Deal. It will transform the Western Parkland City into a thriving, productive and sustainable area, with the Western Sydney Airport as the economic catalyst.

The intended future use for the Site for industrial purposes is consistent with the Greater Sydney Region Plan objectives outlined above as the Site is strategically located within the Western Sydney Aerotropolis, specifically, the Badgerys Creek Precinct which has been proposed to facilitate future enterprise uses to support the growth of the proposed Airport. The development will facilitate site preparation works and support the future planned employment growth within Western Sydney in close proximity to new residential and other employment areas including Bradfield.

7.2.1.2 Our Greater Sydney 2056: Western City District Plan – Connecting Communities

Our Greater Sydney 2056: Western City District Plan – connecting communities (‘the District Plan’) is a 20-year plan to manage growth in the context of economic, social and environmental matters to implement the objectives of the Greater Sydney Region Plan (the ‘Regional Plan’). The intent of the District Plan is to inform local strategic planning statements and local environmental plans, guiding the planning and support for growth and change across the district.

The District Plan contains strategic directions, planning priorities and actions that seek to implement the objectives and strategies within the Regional Plan at the district-level. The Greater Sydney Structure Plan identifies the key centres, economic and employment locations, land release and urban renewal areas and existing and future transport infrastructure to deliver growth aspirations.



The Site is located within the Western City District. The District Plan sets out planning priorities and actions for improving the quality of life for residents. The district is expected to accommodate, 464,450 new residents, 370,200 jobs and 184,500 dwellings by 2036.

The intended future use of the Site is consistent with the Region Plan objectives outlined above. The Site's close proximity to the Western Sydney Airport, as previously mentioned, will assist in the growth of the Western Economic Corridor, driving industrial development and employment growth within the Badgerys Creek Precinct. The proposed works will ultimately support the industry, freight and logistics opportunities of the precinct to further assist in the growth of the industrial sector in Western Sydney.

7.2.1.3 Western Sydney Aerotropolis

Western Sydney Aerotropolis Plan

The WSAP provides a high-level strategic plan for the Aerotropolis. The vision for the Aerotropolis is a global gateway underpinned by a landscape led and Recognise Country approach. It emphasises the importance of the aerotropolis as an employment centre.

The Site is located in the Badgerys Creek Precinct which is identified as an initial precinct under the WSAP. The project supports the vision for the Aerotropolis within the WSAP by facilitating the delivery of industrial, employment generating land to support the Western Sydney Airport. These industries will leverage its proximity to freight transport networks and can appropriately respond to the limitations of the airport operations. In addition, the eastern portion of the Site identified as the ENZ zone is located within the Wianamatta-South Creek Initial Precinct.

Western Sydney Aerotropolis Precinct Plan

The WSAP details the vision for the Aerotropolis and sets the specific vision and objectives for each Precinct. The Site is situated within the Badgerys Creek Initial Precinct with a portion of ENZ zoned land to the east within the Wianamatta (South Creek) Initial Precinct. The WSAP outlines several additional precinct objectives for these Precincts.

In accordance with Chapter 4 Western Sydney Aerotropolis of the Parklands SEPP, the following clause states that development within the Aerotropolis must align with the WSAP:

4.39 Development must be consistent with precinct plan:

1. Development consent must not be granted to development on land to which a precinct plan applies unless the consent authority is satisfied that the development is consistent with the precinct plan.
2. Subsection (1) does not apply if—
 - a) the consent authority has considered a written request from the applicant that seeks to justify an inconsistency by demonstrating that—
 - i. the inconsistency is minor, and
 - ii. consistency with the plan is unreasonable or unnecessary in the circumstances, and
 - iii. sufficient environmental planning grounds justify the inconsistency, and
 - b) the consent authority is satisfied that—
 - i. the applicant's written request adequately addresses the matters required to be demonstrated by paragraph (a), and



- ii. the development is consistent with the strategic vision and general objectives for the precinct.
3. The consent authority must keep a written record of its assessment of the matters in the applicant's written request that were required to be demonstrated by subsection (2)(a).

The proposed development is generally consistent with the WSAP, delivering upon the Badgerys Creek Precinct vision by facilitating the delivery of employment generating uses that will leverage its proximity to the Western Sydney Airport and access to major infrastructure corridors. The project will support the vision for the Wianamatta-South Creek Corridor Precinct by celebrating the biodiversity and waterways which traverse the Site directed by Connecting with Country engagement and strategies.

The Site is identified for Enterprise uses under the WSAP and will have direct frontage to the future Eastern Ring Road (ERR) in addition to a future arterial road that will connect the ERR to Devonshire Road to the east.

Aerotropolis Sector Plan 2025

The Aerotropolis Sector Plan, released by INSW in February 2025, outlines and prioritises key enabling infrastructure to support development within the Western Sydney Aerotropolis. The Plan coordinates planning, development and infrastructure to provide greater certainty on delivery timeframes for key enabling infrastructure, which are critical to unlocking employment land and realising the Aerotropolis vision.

The subject land is situated within the Badgerys Creek Precinct, which the Plan identifies as being partially serviced by 2027, with the key constraints to development being Elizabeth Drive and the ERR. The upgrade works within the Precinct to be delivered by 2027 only relate to the Elizabeth Drive upgrades (between Badgerys Creek Road and Devonshire Road) and the delivery of the M12 Motorway. The larger remaining portions of the Precinct will not be fully serviced until 2040, which is when the ERR and the remainder of the Elizabeth Drive corridor is anticipated to be delivered.

The subject land is currently accessed via Martin Road which connects into Elizabeth Drive to the north. The sector plan acknowledges that the full capacity of the Precinct cannot be unlocked until the ERR is delivered and operational. As such, Goodman is proposing to bring forward the design (100%) and delivery (50%) of the ERR (as part of a separate External works SSDA) between the site and Elizabeth Drive to facilitate the development. The delivery of this portion of the ERR is also likely to provide wider regional public benefits.

In relation to water related services, the Plan identifies critical connections for the Precinct which provides servicing to the site, including:

- Badgerys Creek Wastewater Network – the timing of this network service area is intended to serve Badgerys Creek and Aerotropolis Core precincts between 2025 to 2028;
- Badgerys Creek Road Drinking Water Network – drinking water mains are currently in place to support the construction of the Bradfield City Centre and the Sydney Metro Station, which has a direct interface with the IPG site; and
- Recycled Water Network – the recycled water networks along the ERR and BMLR within the IPG site is anticipated to be delivered beyond 2030.

7.2.1.4 Draft Sydney Plan

Sydney is home to one of the fastest-growing populations in Australia. By 2045, it will be home to more than 6.5 million people.



The Sydney Plan is a strategic land use plan that will guide how the NSW Government manages growth in the Sydney region over the next 20 years. It covers 33 LGAs and sets out how Sydney will accommodate a growing population, while ensuring that communities have access to housing, infrastructure, jobs, sustainability and vibrant places to live and work now and into the future.

The plan will guide:

- State and local strategic planning and assessment processes;
- Infrastructure planning and prioritisation; and
- Public and private investment decisions.

Industrial lands in Sydney have different roles and functions. They are essential to service the growing population and to support the broader state and national economy. The NSW Government introduced a new policy of categorising industrial lands to support strategic planning so that industrial areas are able to operate effectively and remain competitive.

This plan implements the *draft Statewide Policy for Industrial Lands* (draft statewide policy) as it applies to Sydney (Figure 40, Table 2 and further detail at Appendix H). The draft statewide policy aims to:

- Respond to the changing needs of industry; and
- Support the diversification, adaptation and intensification of industrial lands.

It includes three categories of industrial lands:

- **State significant** industrial lands are critical infrastructure of state or national significance. Examples include Port Botany, Sydney and Western Sydney Airports;
- **Regionally significant** industrial lands are essential to supply chains and broader city functions such as waste; and
- **Locally significant** industrial lands serve the local area and support local uses urban services such as mechanics or last-mile delivery.

The Site has been identified in the draft statewide policy as containing industrial land that is state significant (in accordance with Figure 40 of the Sydney Plan), and so the development of the Site is in line with the objectives of the draft statewide policy.

7.2.2 Project Location

Section 7.1.1 of the BAM states that knowledge of biodiversity values should inform the decision-making process relating to the location of a project. Measures to avoid or minimise impacts from clearing native vegetation and threatened species habitat can include locating the project in areas lacking or with low biodiversity values, avoiding areas mapped on the important habitat map, or avoiding native vegetation that is a TEC. A discussion of the considerations, measures and constraints relevant to avoidance are discussed in the sections below.

7.2.2.1 Considerations

In selecting the project's final development footprint, the following matters were considered in accordance with the BAM:

- a. Knowledge of biodiversity values should inform decisions about the location of the proposal.*



The location of the project was guided by the planned growth for Western Sydney as outlined in the Parklands SEPP. The strategic location of the project benefits from its adjacency to the Western Sydney Airport and its connection to critical regional infrastructure, being ERR and M12 Motorway. The project will have the ability to leverage the logistic operations of the abovementioned infrastructure to create a strategically located Warehouse and Logistics Precinct that aligns with the vision of the Enterprise zoning and the objectives of the Badgerys Creek Precinct. Therefore, the master planned layout of the project has responded to the growing demand for industrial and employment land in the Badgerys Creek Precinct within the Western Sydney Aerotropolis whilst considering the potential impacts of the development including alignment with the WSAP, Sydney Water Regional Stormwater network, consultation with Traditional Custodians and site remediation requirements as a result of former site uses.

The project has largely been located within the bio-certified parts of the Site, and so in accordance with the Growth Centres SEPP these areas are excluded from biodiversity assessment under the BC Act and the EPBC Act. The subject land consists of an area of approximately 6.97 ha that sits within the non-certified portion of the site and is largely comprised of derived native grassland that is dominated by exotic species.

The project proposes to remove a small patch (0.07 ha) of the canopy condition state of Cumberland Plain Woodland, however this patch is comprised of scattered trees, consisting of three stags and a combination of small-medium *Eucalyptus moluccana*, *Eucalyptus tereticornis*, *Eucalyptus ampifolia* var *amplifolia* and *Melaleuca decora*, over a largely exotic understorey that is utilised as a paddock. Additionally, one large *Eucalyptus tereticornis* and one medium *Eucalyptus euginoides* will be removed from the northern portion and southern portions of the subject land respectively, however both of these trees are isolated and offer very little biodiversity value.

b. Selecting a final proposal location may be an iterative process.

The final proposal location was chosen based on the WSAP, and so there was limited influence to affect the developable area. Notwithstanding this, the project has been largely situated in previously disturbed portions of the Site as to limit the impact on biodiversity.

c. Impacts from clearing native vegetation and threatened species habitat can be avoided or minimised by locating the proposal in areas lacking biodiversity values.

The project will remove approximately 6.97 ha of native vegetation – 0.16 ha of which consists of scattered trees over an exotic dominated understorey, 0.55 ha of Freshwater Wetland that is dominated by exotic species, and 6.18 ha of exotic dominated derived native grassland. The subject land has been utilised for agricultural purposes over the past few years, and so it is highly disturbed and degraded, and offers little in respect to threatened species habitat.

The patch of canopy Cumberland Plain Woodland to be removed consists of three stags and four *Melaleuca* individuals, none of which are considered within the 'large tree threshold'. One of the stags contains small crevices that microbats were observed using, but there are no other hollows present within any of the remaining trees. No nests were observed within the subject land.

The Cumberland Plain Woodland to be removed is located on higher ground on the edge of a patch of moderate condition River-flat Eucalypt Forest, and so is likely subject to edge effects. Edge effects are impacts that occur at the interface between natural habitats, especially forests and disturbed or developed land (Yahner 1988). When an edge is created between woodland and a cleared area, such as in the case of the subject land between the Cumberland Plain Woodland and the grassland paddock, changes to ecological processes within the vegetation can extend between 10 m and 100 m from the edge (Yahner 1988). These include microclimatic changes in light, temperature, humidity and wind, which can favour a suite of



different species and therefore cause significant changes to the ecology of the patch (Lindenmayer and Fischer 2006). Edge effects can also result from the increase in noise and artificial light from a project.

The current location of the project avoids the areas of better-quality woodland in the eastern and western portion of the site, within the riparian corridors of Badgery's Creek and South Creek, which have the highest biodiversity values within the Site. Additionally, a small patch of Riverflat Eucalypt Forest (0.07ha) is to be retained within the subject land, as shown in Figure 11.

- d. *Impacts from clearing native vegetation and threatened species habitat can be avoided or minimised by locating the proposal in areas where the native vegetation or threatened species habitat is in the poorest condition (i.e., areas that have a low vegetation integrity score).*

The majority of the project within the non-certified land is located within the grassland condition state of River-flat Eucalypt Forest, which has a VI score of 10. The patch of Cumberland Plain Woodland to be removed has a VI score of 41.3, which is considered moderate, however the portion of the patch to be removed consists of consisting of three stags and a combination of small-medium *Eucalyptus moluccana*, *Eucalyptus tereticornis*, *Eucalyptus ampifolia* var *ampifolia* and *Melaleuca decora*, none of which meet the 'large tree threshold' for the community or have hollows suitable for arboreal mammals. Additionally, these trees are over an exotic dominated understorey that is utilised as an agricultural paddock, and so the community is highly disturbed and is not improving under the current land management.

Vegetation is to be retained and enhanced within the eastern and western portions of the Site, within the non-certified land and the riparian corridor of Badgery's Creek. Vegetation within these areas have a much higher VI score and provides more species habitat than within the subject land, including hollow-bearing trees, wetland areas and stick nests.

- e. *Impacts from clearing native vegetation and threatened species habitat can be avoided or minimised by locating the proposal in areas that avoid habitat for species with a high biodiversity risk weighting or land mapped on the important habitat map, or native vegetation that is a TEC or a highly cleared PCT.*

The patch of canopy Cumberland Plain Woodland within the subject land comprises the most species habitat, as it contains crevices for threatened microbats and foraging habitat for threatened aerial species. Within the subject land, this comprises an area of 0.07 ha (Figure 11), all of which will be removed or modified as part of the project in the central portion of the subject land. Furthermore, there is more suitable habitat, including hollow-bearing trees for breeding, that will be retained in the eastern portion of the Site, particularly within the riparian corridor of South Creek.

The project includes the removal of 0.72 ha of Cumberland Plain Woodland, 0.65 ha of which is grassland, 5.69 ha of Riverflat Eucalypt Forest, 5.53 ha of which is grassland and 0.55 ha of Freshwater Wetlands, all of which are TECs. The impact to these areas is unavoidable due to the requirement for Sydney Water Infrastructure required under the Parklands SEPP and A Draft Sydney Water Scheme Plan.

The subject land occurs outside of areas mapped on the important habitat maps.

- f. *Impacts from clearing native vegetation and threatened species habitat can be avoided or minimised by locating the proposal in areas outside of the buffer area around breeding habitat features such as nest trees or caves.*

Breeding habitat is present in the form of crevices within one of the stags located within the subject land, which will be removed as a result of the project, however, better quality habitat



including hollow-bearing trees is due to be retained within the riparian corridors of Badgerys Creek and South Creek.

No caves or nest trees are located within the subject land.

7.2.2.2 Measures

In selecting the project's final development footprint, the following avoidance and minimisation measures have been considered in accordance with the BAM:

- a. *Consideration of alternative modes or technologies that would avoid or minimise impacts on biodiversity values.*

The project is limited in usage of alternative technologies as warehouses and drainage basins are being built. There are no alternative technologies that would provide for the area required to service the needs of the project within the subject land which would reduce biodiversity impacts in the form of vegetation clearing.

- b. *Consideration of alternative routes that would avoid or minimise impacts on biodiversity values.*

The project considered alternate routes at the planning phase, however the desired objectives for the project would not have been met.

- c. *Consideration of alternative locations that would avoid or minimise impacts on biodiversity values.*

The project was based off the Aerotropolis Precinct Plan, and so no other locations were considered.

- d. *Consideration of alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values.*

The proposed development has been designed in accordance with the controls contained in the Parklands SEPP, WSAP and Sydney Water Regional Stormwater network. To realise the vision of the Badgerys Creek Precinct and the objectives of the ENZ zoned land, the project facilitates the delivery of employment generating uses that will leverage its proximity to the Western Sydney Airport and access to major infrastructure corridors. The project has undergone an iterative design process, as well as a State Design Review Panel process and Connecting with Country engagement process to inform the built form, urban design, landscape and civil alignments. These considerations have driven the landscape and country led masterplan layout to create a future-ready estate, designed to balance and support the environment and ecosystems, sustainability, country, place and function.

7.2.3 Project Design

In determining the design of the project masterplan, the project has sought to avoid and minimise direct impacts on native vegetation and habitat by:

- Reducing the size of the output from the drainage basin in the north. Originally, this was proposed to extent into a patch of Swamp Oak Floodplain Forest, which would have caused the removal of further native vegetation, and an additional TEC;
- Channeling the outputs from the drainage basin so that they are in line with the pre-existing drainage line within the Site;
- The regional basins have been optimised and designed to fit within the allocated stormwater management areas within the Sydney Water draft infrastructure scheme. These are smaller than originally envisaged under the SEPP for the western side of the site (Badgerys Creek), thus minimising the impact on clearing of biodiversity; and



- Minimise impacts to biodiversity through the implementation of a suite of mitigation measures (Chapter 9), including sedimentation control, tree protection measures and clearing protocols such as pre-clearance and ecological clearance supervision.

7.3 Avoid and Minimise Prescribed Impacts

7.3.1 Habitat Connectivity

Due to the historical clearing of the site, the habitat connectivity in the subject land is limited to the patches of woodland and forest that function as stepping-stone habitat connecting larger patches of vegetation beyond the subject land.

When considering the requirements associated with the ENT zoning and the extent of earthworks required for the site to be compatible with an industrial development, in combination with the scattered nature of the native vegetation in the subject land, opportunities to avoid impacts native vegetation are limited. Hence, impacts on habitat connectivity are not able to be avoided.

7.3.2 Waterbodies, Water Quality and Hydrological Processes

Potential indirect impacts to water quality and hydrological processes would primarily occur as a result of sediment inputs during construction and cannot be completely avoided. Erosion and sediment control measures will be implemented during construction in accordance with the Technical Guidance for Achieving Wianamatta–South Creek Stormwater Management Targets (DPE, 2022).

7.3.3 Vehicle Strikes

The project will result in the creation of access roads within the subject land. As such, there is likely to be an increase in vehicle traffic within the subject land and thereby increasing the potential of vehicle strikes. The implementation of traffic control measures, primarily speed limits along access roads and driveways will reduce the potential for vehicle strikes on native fauna species.



Table 24 Summary table of options considered for the project to avoid and minimise impact

Action	Adopted (Yes/No/In part)	Justification	Timing (if adopted)	Responsibility (if adopted)	Outcome (if adopted)
Implementation of a suite of mitigation measures	Yes	To minimise the impacts on biodiversity, and TEC's in particular, a suite of mitigation measures will be implemented such as the delineation of clearing areas, Erosion Sedimentation and Pollution control, timing of vegetation clearance, pre-clearance surveys, clearance supervision, weed management and Dam Decommissioning Plan.	Pre and post construction and during operation phase	Proponent and consultant team	Minimise impacts on biodiversity
Design amendments to various elements of the project design	Yes	Several design amendments have been implemented for the project to avoid and minimise impacts on biodiversity.	During design and approval	Proponent and consultant team	Avoid and minimise direct and indirect impacts on TECs and fauna habitat.
Partial development of the Site to avoid/minimise impacts on biodiversity and achieve greater tree retention	No	The option to only undertake a partial development of the site, to avoid clearing and retain all TECs, is not in line with the objectives of the ENT zone or the WSAP. Partial development would also result in increased fragmentation and isolation of existing vegetation patches and would likely lead to natural attrition and loss of existing fragments in the long term.	-	-	-
'Do-nothing' option to avoid all impacts on biodiversity	No	The 'do nothing' option for the project would maintain current vegetation cover on site but would not enable redevelopment to achieve the zone objectives for the ENT zone or the WSAP. Considering the surrounding land use, the existing patches of native vegetation may be subject to further degradation over time. Furthermore, under a 'do nothing' option, the subject land would likely remain in its current	-	-	-



Action	Adopted (Yes/No/In part)	Justification	Timing (if adopted)	Responsibility (if adopted)	Outcome (if adopted)
		degraded state with vegetation limited to scattered trees over a paddock grassland.			
Consideration of alternative sites and layouts for the development within the Site	Yes	The sites selected for development were determined in order to meet the objectives of the land zoning and the WSAP whilst minimising the impact to native vegetation. subject land. Development layouts were considered and the final location selected has consideration to both biodiversity values and the development yield associated with the WSAP.	During design and approval	Proponent and consultant team	Minimise impacts on biodiversity



8.0 Assessment of Impacts

8.1 Direct Impacts

8.1.1 Native Vegetation Clearing

The direct impact resulting from the proposed development is the loss of vegetation and associated habitat within the subject land. Table 25 identifies the extent of impacts to vegetation within the subject land.

Table 25 Extent of clearing impacts

Vegetation Zone	PCT #	PCT Condition Class	BC Act Status	EPBC Act Status	Subject Land (ha)
1	3320	Canopy	CEEC	-	0.07
2	3320	Grassland	CEEC	-	0.65
3	3975	Artificial	EEC	-	0.03
4	3975	Natural	EEC	-	0.52
5	4025	Degraded	EEC	CEEC	0.16*
6	4025	Grassland	EEC	-	5.53
Total:					6.97

**of which 0.07ha is to be retained*

8.1.2 Change in Vegetation Integrity Score

Table 26 details the change in vegetation integrity score for each vegetation zone and management zone. The direct impacts of the project on each vegetation zone only involve one management zone, being the total clearing of vegetation within the subject land.

Table 26 Change in vegetation integrity score for vegetation zones

Vegetation Zone	PCT # / Condition	Area (ha)	Current VI Score	Future VI Score	Change in VI Score
1	3320 Canopy	0.07	41.3	0	-41.3
2	3320 Grassland	0.65	8.2	0	-8.2
3	3975 Artificial	0.03	52.6	0	-52.6
4	3975 Natural	0.52	71	0	-71
5	4025 Degraded	0.16*	58.6	31.8	-26.8
6	4025 Grassland	5.53	10	0	-10

8.2 Indirect Impacts

Table 27 outlines the indirect impacts to native vegetation and habitat. Due to the existing highly modified nature of the vegetation both within and adjacent to the subject land, the indirect impacts of the project are not considered to be significant.



Table 27 Indirect impacts of the project

Indirect Impact	Nature	Extent	Duration	Threatened Entities Likely Affected	Consequences
Inadvertent impacts on adjacent habitat or vegetation	Construction activities may result in inadvertent impacts on retained vegetation, such as increased sedimentation.	Retained vegetation within the Site	Short term (during construction)	Cumberland Plain Woodland, Riverflat Eucalypt Forest, Freshwater Wetlands, Ecosystem credit species	Increased human activity during construction has the potential to disturb fauna within adjacent habitat areas. Resulting impacts to fauna include heightened vigilance and predator avoidance, which can disrupt foraging and roosting efficiency or deter wildlife from using particular areas. The civil works is likely to result in a temporary and minor permanent impact to ecological values due to increased human presence on site during the construction period.
Reduced viability of adjacent habitat due to edge effects	Impact unlikely. The vegetation to be removed is either already along the edge of a patch, or isolated trees throughout the subject land, and so the removal of this is unlikely to cause any further edge effects.				
Reduced viability of adjacent habitat due to noise, dust or light spill	The construction activities associated with the project are likely to increase the noise, dust and light above current levels within the subject land.	Retained vegetation within subject land and Site	Short term (during construction) Potential long-term for light spill due to change in land use and increase in buildings	Ecosystem credit species	Construction noise is expected to elicit some avoidance response from fauna using the surrounding vegetation though, with consideration of the extent of habitat available in the Site, this is likely to be a temporary and negligible to minor impact. Artificial light from buildings may affect nocturnal and diurnal animals by disrupting patterns, with quality of light



Indirect Impact	Nature	Extent	Duration	Threatened Entities Likely Affected	Consequences
			(warehouses etc)		(e.g. wavelength and colour), intensity and duration potentially evoking different responses. Impacts from increased light levels include disorientation from or attraction toward artificial sources of light; mortality from collisions with structures; and effects on light- sensitive cycles of species (e.g. breeding and migration for fauna and flowering in plants). The presence and intensity of artificial light will have most impact at the edge of adjacent vegetation communities. Furthermore, the civil works is likely to result in a negligible impact to wildlife due to the buffers proposed.
Transport of weeds and pathogens from the site to adjacent vegetation	A number of weeds are known to occur within the subject land and may be inadvertently spread to retained vegetation.	Retained vegetation within the Site	Potential long-term	Ecosystem credit species, TECs	Reduced condition of the adjoining foraging habitat.
Rubbish dumping	Increased pedestrian access may result in increased debris/ rubbish	Retained vegetation within subject land and Site	Long-term	Cumberland Plain Woodland, Riverflat Eucalypt Forest, Freshwater Wetlands, Ecosystem credit species	Inappropriate disposal of non-hazardous wastes can attract vermin and other wildlife. This may exacerbate other indirect impacts (e.g. road mortality). Litter may also enter wetlands, impacting on water quality. Fencing and signage will help reduce rubbish impacts.
Increased risk of starvation, exposure and loss of shade or shelter	Impact unlikely. Although the project will result in removal of several trees, these habitats are likely dominated	-	-	-	-



Indirect Impact	Nature	Extent	Duration	Threatened Entities Likely Affected	Consequences
	by hardy, urban adapted species. Further habitats are retained in the wider Site as well as open space areas. Thus, the project is unlikely to cause displacement of fauna such that it increases the risk of starvation, exposure and loss of shade or shelter.				
Trampling of threatened flora species	Impact unlikely. No threatened flora species have been observed and none are likely to occur, considering the disturbed nature of the subject land.	-	-	-	-
Inhibition of nitrogen fixation and increased soil salinity	Impact unlikely. The subject land is already highly modified from prior land uses and is likely to have elevated levels of nutrients such as Nitrogen and Phosphate.	-	-	-	-
Fertiliser drift	Impact unlikely. Any application of fertiliser will be managed and monitored under a management plan.	-	-	-	-
Wood collection	Impact unlikely to occur, considering the nature of the subject land and the project as warehouses.	-	-	-	-
Bush rock removal and disturbance	Impact unlikely. No bush rock has been identified	-	-	-	-



Indirect Impact	Nature	Extent	Duration	Threatened Entities Likely Affected	Consequences
	within the subject land or immediate vicinity, therefore the project is not considered to result in this indirect impact.				
Increase in predatory species populations	Impact unlikely. As the subject land already occurs in a highly modified landscape the project is considered unlikely to result in an increase in predatory species populations.	-	-	-	-
Increase in pest animal populations	Impact unlikely. As the subject land already occurs in a highly modified landscape the project is considered unlikely to result in an increase in pest species populations.	-	-	-	-
Increased risk of fire	Impact unlikely. The project is unlikely to increase the risk of bushfire.	-	-	-	-



8.3 Prescribed Impacts

The project has been assessed as resulting in four prescribed impacts (see *Chapter 6*). An assessment of these prescribed impacts is provided below.

8.3.1 Habitat Connectivity

8.3.1.1 Nature

The subject land contains some scattered patches of remnant native vegetation that exist as canopy trees above a highly modified understorey. The vegetation within the subject land connects to a larger patch of native vegetation to the east of the subject land, which will be retained. The vegetation within the subject land forms part of a patch of native vegetation that is >100 ha in size. The patch size is large due to stepping-stone connectivity to the riparian corridor of South Creek.

The vegetation proposed to be removed from within the subject land will result in a small area, predominantly comprising grassland, along the edge of a larger patch to be removed, reducing the overall extent of the remaining patch of vegetation. It is unlikely that threatened species that potentially utilise this patch will be significantly affected by the removal of a small area of native woody vegetation within the subject land.

8.3.1.2 Extent

Habitat connectivity will be marginally reduced by the removal of 0.16ha of woody native vegetation.

8.3.1.3 Duration

Direct impacts to habitat connectivity would occur during the construction and operational phase of the project. The reduction of habitat connectivity is a long-term impact. However, proposed revegetation within the non-certified portion of the Site, as well as landscaping as part of the project will improve habitat connectivity across the subject land.

8.3.1.4 Threatened Entities Affected

The habitat provided by native woody vegetation may provide foraging habitat for ecosystem species, such as the Grey-headed Flying-fox, microbats and birds.

8.3.1.5 Consequences

The project will result in the reduction of 0.16ha of woody native vegetation within the subject land that provides stepping-stone habitat. Although the clearing of the subject land will result in a reduction of habitat, the reduction of this small area of habitat is not considered to significantly impact the movement of mobile fauna species as better-quality habitat is located in the assessment area. For example, the Grey-headed Flying-fox forages opportunistically, often at distances up to 30 km from camps, and occasionally up to 60-70 km per night, in response to patchy food resources (NSW Scientific Committee, 2004). Woodland birds and microbats are also highly mobile and are unlikely to be restricted in movement due to the removal of the small areas of native vegetation from within the subject land. Therefore, it is considered unlikely that native fauna would be solely reliant on the habitat within the subject land for movement between different areas of habitat.



8.3.2 Waterbodies, Water Quality and Hydrological Processes

8.3.2.1 Nature

No waterbodies are present; however, the project has the potential to impact on water quality and hydrological processes.

8.3.2.2 Extent

The extent of impacts on water quality and hydrological processes are largely limited to the subject land; however, impacts outside of the subject land may occur during clearing operations if sediment controls are not appropriately implemented and maintained.

8.3.2.3 Duration

Impacts to water quality and hydrological processes are most likely to take place during construction. These will be managed through erosion and sediment control measures to prevent sediment laden run-off from leaving the subject land. Any minor changes to surface run-off will be permanent if the development is constructed.

8.3.2.4 Threatened Entities Affected

Any changes to water quality and hydrological processes are unlikely to affect threatened entities within the subject land or beyond.

8.3.2.5 Consequences

The consequences of impacts to water quality and hydrological processes are likely to be minor and would primarily take place during the construction phase. These impacts can be mitigated through implementation of erosion and sediment control measures.

8.3.3 Vehicle Strike

8.3.3.1 Threatened Entities Affected

Ecosystem species, such as the Grey-headed Flying-fox, microbats and birds.

8.3.3.2 Nature

The construction of access roads and warehouses will result in an increase in the number of vehicles that will be accessing the subject land and will thereby increase the risk of fauna vehicle strike.

8.3.3.3 Extent

The risk of vehicle strike will largely occur during the construction phase of the project.

8.3.3.4 Duration

The impacts of vehicle strike are long-term but are likely to be sporadic.

8.3.3.5 Consequences

The construction of warehouses and drainage basins will result in an increase in the number of vehicles that will be accessing the subject land and will thereby increase the risk of fauna vehicle strike during the construction phase of the project. Furthermore, due to the industrial



nature of the proposed development, it is expected vehicle movement will be slow (40km/hr speed limits or less) and the potential increase in fauna vehicle strike will be minimal.

8.4 Impacts to the Aerotropolis Biodiversity Values

For the preparation of this BDAR, relevant plans and guidelines for the Aerotropolis have also been reviewed. It is noted that a portion of the subject land has been mapped on the High Biodiversity Value Areas Map (Figure 5).

8.4.1 High Biodiversity Value Areas

When a proposed development is predicted to impact land identified on the High Biodiversity Value Areas Map within the Aerotropolis Precinct, the consent authority needs to consider Clause 4.25 “Preservation of trees and vegetation in Environment and Recreation Zone and Cumberland Plain” before making a determination on a DA.

The objectives of Clause 4.25 are as follows:

The objectives of this section are—

- a) To preserve the amenity of the Western Sydney Aerotropolis through the preservation of trees and vegetation, and
- b) To promote the conservation of, and minimise the impact of development on, native vegetation.

Approximately 0.17 ha within the subject land is mapped on the High Biodiversity Value Areas Map. Table 28 includes an assessment of paragraph 4 of Clause 4.25. The relevant text from each of the paragraphs in the Parklands SEPP are recreated in the first column of the table, whilst responses to each paragraph are provided in the second column.

Table 28 Clause 2.4.2 performance outcomes

Parklands SEPP	Response
Development consent under subsection (3) must not be granted unless the consent authority is satisfied that, in relation to the disturbance of native vegetation caused by the clearing—	
(a) there is no reasonable alternative available to the disturbance of the native vegetation	The developable area of the project is zoned ENT under the Parklands SEPP and will support warehousing development as envisaged under the WSAP. It is important to note that the Parklands SEPP Zoning Maps do not align with the Biodiversity Certification Mapping and exhibits conflicts in the boundaries. This includes three areas of ENT zoned land that are not bio-certified with a total area of 2.34 ha. The proposed design achieves the envisaged land uses within the ENT zone as well as achieved the Sydney Water Infrastructure required under the Parklands SEPP and A Draft Sydney Water Scheme Plan. The project will deliver regional stormwater and drainage infrastructure (on behalf of Sydney Water) identified within the ENT land, to align with Sydney Water Draft Stormwater Scheme. Continued engagement with Sydney Water has informed this design to ensure it integrates with Sydney Waters regional stormwater system. Therefore, the proposed development approach seeks to minimise the disturbance of native vegetation where possible whilst meeting the requirements of the WSAP and Sydney Water.
(b) any impact of the proposed clearing on	To reduce the impact on biodiversity values, the footprints of the required drainage basins have been optimised and designed to fit within the allocated stormwater management areas within the



Parklands SEPP	Response
biodiversity values is avoided or minimised	Sydney Water draft infrastructure scheme. These are smaller than originally envisaged under the SEPP for the western side of the Site (Badgerys Creek), minimising the impact on clearing of biodiversity. These stormwater management areas have been derived based on the contributing catchment areas as determined by Sydney Water. Additionally, tail out channels are a requirement from Sydney Water to convey high flows from the basins to the existing creek beds. Where possible, the project has tied in with existing stream alignments to reduce vegetation clearing and impact on the species zones and also minimised the effects to the creek alignment by pulling the channels back to avoid any clearing.
(c) the disturbance of the native vegetation will not increase salinity	The disturbance of native vegetation will be for constructing the regional water sensitive urban design (WSUD) basins and vegetated trunk drainage channels. These features serve to intercept, slow down, treat and re-use stormwater, and filter out salt and pollutants before they reach waterways. This would have the effect of mitigating the risk of increased salinity.
(d) native vegetation inadvertently disturbed for the purposes of construction will be re-instated where possible on completion of construction	0.07ha of the vegetation mapped on the High Biodiversity Map is due to be retained as part of the project, and will be subject to a suite of mitigation measures to protect the patch during construction. The connecting vegetation to the east, including the riparian corridor of South Creek to be retained, will also be subject to these mitigation measures, and so the risk of a negative impact to adjoining, retained vegetation is minimal.
(e) the loss of remnant native vegetation caused by the disturbance will be compensated by revegetation on or near the land to avoid a net loss of remnant native vegetation	Although not relevant to the current SSDA, a VMP has been prepared for the Internal Works BDAR (SSDA-97688711) for the ENZ-zoned land, which will enhance, revegetate and rehabilitate the native vegetation within the Site, with a focus on the TECs that are being removed from the subject land. As a result, the vegetation within the Site will increase past current conditions.
(f) the clearing of the vegetation is unlikely to cause or increase soil erosion, salination, land slip, flooding, pollution or other adverse land or water impacts.	The introduction of the tail out channels will improve any soil erosion, salination, land slip, flooding and pollution effects as they have been designed in accordance with Sydney water guidelines, including, shallow batters, vegetation planting zones and minimum grades. The Channels will convey mostly treated water from the Sydney Water regional basins back into the creek system, improving water quality in the creeks and surrounds.

8.4.2 Aerotropolis DCP

8.4.2.1 Clause 2.4.2 Protection of Biodiversity

The Aerotropolis DCP has a specific clause (Clause 2.4.2) that relates to the Protection of Biodiversity, and as the subject land is within the Western Sydney Aerotropolis, this clause therefore applies to the subject land. The ecological objectives are to ensure that any proposed development will not detrimentally affect the environment and ensure that satisfactory measures are incorporated to mitigate any impacts arising from the proposal development. Specifically, the objectives are as follows:

- Ensure consistency with the requirements of the relevant biodiversity certification for the subject land where applicable;



- Ensure construction and operational works avoid and minimise impacts to native vegetation and ecological communities;
- Retain and protect native vegetation areas, particularly those with Aboriginal cultural value, and provide for areas with a size and configuration that will allow for the survival and improvement of the native vegetation communities;
- Implement the Sydney Region Growth Centres Biodiversity Certification Order where applicable;
- Implement the Cumberland Plain Conservation Plan (CPCP) where applicable; and
- Manage fire risk by regimes that protect biodiversity and habitats in the long term.

Table 29 below lists the performance outcomes as required under Clause 2.4.2 of the Aerotropolis DCP, and how the proposed development will be managed to meet these outcomes.

Table 29 Clause 2.4.2 performance outcomes

Performance Outcome	Response
Populations of threatened species are retained, and the condition of suitable habitat improves within areas of the Cumberland subregion most likely to support long-term viability.	Due to the nature of the development, all native vegetation within the subject land will be removed as part of the project, however approximately 40 ha of native vegetation will be retained in the ENZ-zoned lands in the eastern and western portions of the Site. Temporary fencing will be installed around all areas of native vegetation that is to be retained in the Site, and access will be prohibited to non-essential personnel. The Cumberland Plain Land Snail has not been recorded within the subject land or Site, however the road structure has an open structure and has been designed in accordance with the actions described in the Save our Species Program. Asset Protection Zones (APZs) for bushfire protection have been wholly located within the certified land, thus minimising impact to the native vegetation within the non-certified land. Where possible, hollows will be salvaged for re-use within the Site. Furthermore, seed is proposed to be collected and propagated for rehabilitation within retained parts of the Site. Historic geospatial datasets indicate the ecosystems formerly present on the Site have undergone extensive degradation. OXMAN PNV Classification, microclimate simulation, and planting optimisation tools will inform the rewilding of disturbed areas to restore ecosystem function above and beyond the extant site as it exists today.
Development facilitates the connected movement of native animals through the landscape	The safe movement of key fauna across the Site has been accounted for through rigorous research, simulation, and site design. Input from site custodians cross-referenced with research into the movement behaviour and preferences of local fauna helped define key species groups for consideration. These groups included slow moving amphibian species, small ground-foraging mammals, larger macropods, and foraging microbats.



Performance Outcome	Response
	The master plan was optimised to provide sheltered habitat of a functional size, aggregated along the designed fauna corridor and in conjunction with the introduction of fauna underpasses for safe-crossing at each road intersection.
Within land subject to the Cumberland Plain Conservation Plan only, development adjoining conservation areas provides ecological setbacks to threatened species.	Not applicable – subject land is not subject to the Cumberland Plain Conservation Plan.
Noise and light adjacent, and near, conservation areas does not result in any disturbance to wildlife.	The project does not include any conservation areas, however the ENZ-zoned land will be retained and protected through a suite of mitigation measures. All management plans for the project have been prepared to meet airport safeguarding requirements regarding light. Building handstand have been oriented away from riparian areas where possible.
Bushfire risk is minimised.	A Bushfire Management Plan has been prepared by Blackash for the project that outlines appropriate fire management regimes and hazard reduction techniques for native vegetation areas, waterways, and riparian zones.
Retain and protect Koala populations and their habitats through mitigating indirect and ongoing impacts from development.	No Koala populations, or evidence of historical Koala populations, have been recorded in the subject land or Site, however there are Koala Feed Trees (KFTs) and Koala Use Trees present. The trees to be removed as part of the project are either totally isolated (the single tree in the north and single tree in the south), or on the edge of a degraded patch, and so even if Koalas were present, they would be unlikely to utilise these trees, especially as there are much higher quality areas available immediately to the east.

8.4.2.2 Clause 2.4.3 Protection of Trees and Vegetation

The Aerotropolis DCP also has a specific clause (Clause 2.4.3) relating to the protection of trees and vegetation within the Aerotropolis precinct. The ecological objectives are to ensure that any proposed development will not detrimentally affect the environment and ensure that satisfactory measures are incorporated to mitigate any impacts arising from the proposed development. Specifically, the objectives of this clause are as follows:

- Conserve and manage existing vegetation and contribute to the increase of habitat and tree canopy cover within the Aerotropolis;
- Retain and preserve significant trees and other vegetation to contribute to the Western City Parkland vision, vegetated ridgelines, and urban cooling and to mitigate effects of climate change;
- Protect and enhance native vegetation communities, TECs, significant tree habitat and canopy, while appropriately mitigating risks from natural hazards;
- Mitigate impacts of development and associated works on TECs to improve and enhance ecological condition over the long term;



- Prioritise development on land clear of vegetation and avoid locating development on steep and densely vegetated land; and
- Where site conditions require it, adopt the use of underground engineered tree pits to harvest rainwater and provide sufficient space for the development of tree roots and avoid conflict with surrounding infrastructure.

Table 30 below lists the performance outcomes as required under Clause 2.4.3 of the Aerotropolis DCP, and how the proposed development will be managed to meet these outcomes.

Table 30 Clause 2.4.3 performance outcomes

Performance Outcome	Response
Existing trees and vegetation are retained, protected, enhanced, and incorporated into the development, wherever possible.	Due to the nature of the development, all native vegetation within the subject land will be removed as part of the project, however approximately 40 ha of native vegetation will be retained in the ENZ-zoned lands in the eastern and western portions of the Site. Historic geospatial datasets indicate the ecosystems formerly present on the Maverick site have undergone extensive degradation. OXMAN PNV Classification, microclimate simulation, and planting optimization tools will inform the rewilding of disturbed areas to restore ecosystem function above and beyond the extant site as it exists today. Where possible, hollows will be salvaged for re-use within the Site. Furthermore, seed is proposed to be collected and propagated for rehabilitation within retained parts of the Site.
Minimise threats to the long-term survival of existing trees through tree preservation zones and pruning techniques.	All works on canopy trees or within the tree protection zones (TPZs) will be in the presence of the project arborist and will follow the guidelines described in Recovering Bushland on the Cumberland Plain: Best Practice Guidelines for the Management and Restoration of Bushland (Department of Environment and Climate Change NSW, 2005). The subject land has been located to largely avoid impacts to canopy trees, with only 0.7 ha of wooded vegetation to be removed as part of the project. These impacts are unavoidable, due to the requirements of the ENT-zoning and the WSAP, however, where possible, hollows will be salvaged and seed collected for use during rehabilitation of the Site.
Where hollow-bearing tree cannot be retained and are removed, they shall be replaced with nesting boxes, as close as possible to where the removed tree was located.	Although not relevant to this SSDA, the VMP prepared for the Internal Works SSDA (SSD-97688711) for the project has a chapter 'Hollow Offset Replacement Strategy and Nestbox Management Plan', that provides guidelines on installing nest boxes for the project (our reference: 625.010786-R1-VMP-20260320). Only one hollow-bearing tree (containing crevices) has been identified within the subject land, however, if more are identified during the pre-clearance surveys, then additional nest boxes will be installed.



9.0 Mitigation Measures

A range of mitigation measures have been developed for the project to mitigate the impacts to native vegetation and habitat that are unable to be avoided. These include a range of measures to be undertaken before and during construction to limit the impact of the project. Each mitigation measure is discussed in detail below, and a summary is provided in Table 31.

It is important to note that the proposed works that extend outside the current certified land under the Growth Centres SEPP are required to facilitate the development in accordance with the WSAP. It therefore prevents any ability to mitigate on the non-certified land in order to deliver works in accordance with the WSAP and associated zoning as envisaged under the SEPP.

9.1 Mitigation of Impacts to Native Vegetation and Habitat

9.1.1 Delineation of Clearing Areas

To avoid unnecessary removal or damage to the TEC's or other retained vegetation, the clearing area will be clearly demarcated with temporary fencing and signed, where appropriate, to ensure no vegetation beyond these boundaries will be inadvertently cleared during the construction process.

No machinery should be parked on areas beyond the temporary fencing, and no access should be allowed during construction. Ancillary facilities such as stockpile sites, site compounds and construction zones should not be located beyond the limits of clearing. Site inductions are to be given by the civil contractor to ensure all site workers and visitors are aware of any no-access areas.

9.1.2 Erosion, Sedimentation and Pollution Control

The project may result in erosion and transport of sediments as a result of soil disturbance during construction. In order to prevent this impact, construction activities will be undertaken in accordance with Technical Guidance for Achieving Wianamatta–South Creek Stormwater Management Targets (DPE, 2022). These include implementation of the following measures:

- Installation of sediment control fences;
- Covering soil stockpiles; and
- Avoiding soil disturbance prior to heavy rainfall.

To reduce sedimentation on the construction site, erosion control measures should be implemented. This includes minimising the amount of exposed soils on the site at any given time. All soil stockpiles should be adequately covered when not in use to prevent erosion from heavy rainfall. Sediment fences should be established around the perimeter of the development area to prevent the impacts of sedimentation on the adjoining vegetation. During development, precautions should be taken to ensure that no pollution, such as petrochemical substances or water containing suspended solids, escapes the construction site. Pollution traps and efficient removal of pollution to an off-site location are required to help to minimise pollution impacts.

9.1.3 Vegetation Clearance Timing

The clearance of woodland shall only occur outside of Winter (June, July and August) when fauna (particularly microbats) are most likely to self-relocate during the clearing.



9.1.4 Pre-clearance Surveys

In order to avoid impacts to fauna species during construction, pre-clearing surveys should be undertaken by a suitably qualified ecologist. Pre-clearing surveys will be undertaken ahead of clearing, to limit fauna injury and mortality and to identify habitat features to be relocated. Pre-clearance surveys will be conducted by suitably qualified ecologists and all fauna found during these surveys will be encouraged to move on or relocated by the ecologists in areas of similar habitat nearby that will not be impacted.

Pre-clearing surveys will include:

- Demarcation of key habitat features such as hollow-bearing trees, nests and fallen logs;
- Checking trees for the presence of bird nests and arboreal mammals, such as possums, and bats;
- Animals found to be occupying trees and habitat will be safely removed and relocated into nearby wooded habitat (where possible);
- Identification and nomination of hollow-bearing trees or hollows suitable to be salvaged and relocated within the ENZ zoned land for reuse as fauna habitat; and
- Provision of a report following the completion of a pre-clearing survey, detailing the location and type of each habitat feature, and a record of all fauna species encountered.

9.1.5 Staging of Clearing

The clearing will be conducted using a two-stage clearing process as follows:

- Stage 1: Clearing will commence following the identification of potential habitat features by a qualified ecologist. Hollow-bearing trees marked during pre-clearing will not be cleared during the first stage; however, all vegetation around these trees will be cleared to enable isolation of the feature. Other habitat features, such as hollow-bearing logs, can be removed during Stage 1 only if done under supervision by a qualified ecologist. Identified hollow-bearing trees will be left at a minimum overnight after Stage 1 clearing to allow resident fauna to voluntarily move from the area; and
- Stage 2: After hollow-bearing trees have been left overnight, the trees will be cleared using the following protocols:

Trees marked as containing hollows will be shaken by machinery prior to clearing to encourage any animals remaining to leave the hollows and move on:

- Use a bulldozer or excavator to start pushing the tree over. Move the bulldozer over the roots and continue gently pushing the tree over;
- Remove branches with hollows and sections of trunk and set aside for immediate transfer to a storage area for placement within retained vegetation; and
- All hollows will be investigated by an ecologist for the presence of fauna following felling of the tree.

The felled habitat tree will be left overnight to allow any remaining fauna time to leave the hollows and move on.

The two-stage clearing process enables fauna a chance to self-relocate upon nightfall, when foraging typically occurs.



Provisions will be made to protect any native fauna during clearing activities by the following means:

- All staff working on the vegetation clearing will be briefed about the possible fauna present and should avoid injuring any present;
- Animals disturbed or dislodged during the clearance but not injured will be assisted to move to adjacent bushland or other specified locations; and
- If animals are injured during the vegetation clearance, appropriate steps will be taken to humanely treat the animal by an appropriately trained/qualified person (either taken to the nearest veterinary clinic for treatment, or if the animal is unlikely to survive, it will be humanely euthanised).

At the end of clearing works (or relevant stages thereof), a clearing supervision report will be provided detailing the total number and species of individuals recorded and details of their release and/or treatment in case of injured fauna.

9.1.6 Habitat Salvage

Any timber that would be suitable to create habitat within the riparian corridor should be salvaged during clearing. These should be identified by the ecologist during clearance supervision and should be separated from remaining material that could be mulched on site. Timber suitable for salvage should include larger logs and branches that are unlikely to decompose between clearing and revegetation. Salvaged features should be stockpiled away from areas impacted by earthworks to ensure the features do not become mixed with soil.

9.1.7 Weed Management

In order to minimise the spread of weeds throughout the subject land, appropriate weed control activities will be undertaken in accordance with all state and regional weed management plans.

The subject land lies within the Greater Sydney Local Land Services Area and is subject to the Greater Sydney Regional Strategic Weed Management Plan 2022 – 2027 (Local Land Services, 2022) and management of Weeds of National Significance.

The NSW *Biosecurity Act 2015* and regulations provide specific legal requirements for state level priority weeds and high-risk activities, as provided in the Appendices of the Greater Sydney Regional Strategic Weed Management Plan 2022 – 2027 (Local Land Services, 2022). In order to comply with the objectives of the Greater Sydney Regional Strategic Weed Management Plan 2022 – 2027, it is recommended the following measures be implemented as part of a management plan for the subject land.

9.1.7.1 Prevention

Appropriate construction site hygiene measures will be implemented to prevent entry of new weeds to the area such as the use of wash bays.

9.1.7.2 Eradication

Initial weed management will be carried out over the development site with a focus on targeting species listed under Appendices 1 and 2 of the Greater Sydney Regional Strategic Weed Management Plan 2022 – 2027 (Local Land Services, 2022).

Initial weed treatment will include eliminating woody species and targeting large dominant infestations of exotic herbs. In particular, High Threat Exotic weed species occurring within the subject land will be managed in order to prevent further spread. Prior to any vegetation



clearance, High Threat Exotic weeds should be demarcated in order for these to be disposed of separately from native material.

9.1.7.3 Containment

Follow-up monitoring and maintenance should be undertaken in areas of the development site that have received past primary weeding treatments in the following months, to contain any re-emergence of weed species.

9.1.7.4 Minimisation

Minimisation of weed species that cannot be effectively controlled on the site, such as exotic grasses, will be prevented from further spread through construction and operational phase site hygiene procedures.

9.1.8 Dam Decommissioning Plan

A Dam Decommissioning Plan has been prepared by SLR that includes:

- A review of existing data for the subject land and wider locality, including previous records of threatened aquatic species;
- Details of a proposed aquatic survey methodology;
- Identification of a relocation site for species encountered during decommissioning activities; and
- Survey and reporting requirements.

An approved Dam Decommissioning Plan will need to be in place prior to the commencement of decommissioning works (our reference: 625.010786.0001-R1-DDP-20260326).

9.1.9 Fencing and Signage

Areas of vegetation set aside for retention are to be fenced off to protect areas from inappropriate access, and trampling while revegetation works are undertaken.



Table 31 Summary of mitigation measures for impacts to native vegetation and habitat

Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of Residual Impacts
Delineation of clearing limits	Clearing limits marked either by high visibility tape on trees of metal/wooden pickets, fencing or an equivalent boundary marker. Disturbance, including stockpiling, restricted to clearing limits.	Construction	Once	Contractor	High	Unnecessary damage to trees to be retained in the Site.
Erosion, sedimentation and pollution control	Construction activities will be undertaken in accordance with "The Blue Book" (Landcom, 2004). These include implementation of the following measures: • Installation of sediment control fences; • Covering soil stockpiles; and • Avoiding soil disturbance prior to heavy rainfall	Construction	Throughout construction period	Contractor	High	Sedimentation into retained and adjoining vegetation.
Vegetation Clearance Timing	The clearance of trees and vegetation would only occur outside of winter (June, July and August).	Construction	Prior to clearing	Contractor	Moderate	Increased and unnecessary mortality of native fauna.
Pre-clearance survey	Pre-clearance surveys will be conducted in all areas of vegetation that are required to be cleared. Pre-clearing surveys will be undertaken within one week of clearing. Habitat features will be marked during the pre-clearing survey.	Construction	Once	Contractor	Moderate	Increased and unnecessary mortality of native fauna.
Staging of clearing	Vegetation clearing will be conducted using a two-stage clearing process. Animals disturbed or dislodged during the clearance but not injured will be assisted to move to adjacent bushland or other specified locations	Construction	Once	Contractor	High	Increased and unnecessary mortality of native fauna.



Mitigation Measure	Proposed Techniques	Timing	Frequency	Responsibility	Risk of Failure	Risk and Consequences of Residual Impacts
	If animals are injured during the vegetation clearance, appropriate steps will be taken to humanely treat the animal (either taken to the nearest veterinary clinic for treatment, or if the animal is unlikely to survive, it will be humanely euthanised)					
Weed management	Appropriate weed control activities will be undertaken in accordance with the Greater Sydney Regional Strategic Weed Management Plan 2022 – 2027 (LLS: Greater Sydney, 2022).	Construction	Prior to construction, following vegetation clearing	Contractor	High	Spread of weeds throughout the Site and surrounding land.
Dam Decommissioning Plan	Prior to dam decommissioning activities a Dam Decommissioning Plan is to be prepared that includes a strategy for decommissioning of the three dams within the subject land and a relocation site for any fauna captured.	Construction	Once	Contractor	Moderate	Increased and unnecessary mortality of native fauna.
Fencing and signage	Fencing and signing of areas of vegetation to be retained.	Construction and operation	Throughout duration of the civil works	Contractor	Moderate	Trampling of vegetation, disturbance to fauna



9.2 Mitigation of Prescribed Impacts

The following mitigation measures, described in Section 9.1, are relevant to the prescribed impacts applicable to the project:

- Delineation of clearing limits;
- Sedimentation control measures;
- Pre-clearance survey;
- Clearing supervision and protocols;
- Habitat Salvage; and
- Dam Decommissioning Plan.

The following additional mitigation measures are proposed for the prescribed impact of vehicle strike.

- Signage: appropriate signage notifying vehicles of potential fauna presence should be installed along the access road;
- Speed limits: Speed limits will be introduced to restrict the speed of vehicles travelling along the access road; and
- Lighting: Low wattage lighting, and minimal / well-spaced streetlights should be considered. The use of lights with flat glass aero screen rather than reflector glass covers may be an option to reduce glare, thus reducing impact on nocturnal fauna. The location of streetlights is subject to the final road design plans.

9.3 Adaptive Management for Uncertain Impacts

The project is considered unlikely to result in any uncertain impacts that require adaptive management.

9.4 Use of Biodiversity Credits to Mitigate or Offset Indirect or Prescribed Impacts

The project does not propose to use additional biodiversity credits to mitigate or offset indirect or prescribed impacts as the impacts are not considered to be significant when the proposed management strategies for these impacts are taken into consideration.



10.0 Thresholds for Assessment

10.1 Introduction

The assessment thresholds that must be considered include the following:

- Impacts on an entity that is at risk of a serious and irreversible impact;
- Impacts for which the assessor is required to determine an offset requirement;
- Impacts for which the assessor is not required to determine an offset requirement; and
- Impacts that do not require further assessment by the assessor.

The following sections outline these assessment thresholds and their relevance to the project.

10.2 Impacts on Serious and Irreversible Impact Entities

One SAI entity, Cumberland Plain Woodland CEEC, will be impacted by the project. The location of the Cumberland Plain Woodland in relation to the development footprint is shown in Figure 13. Approximately 0.72 ha of Cumberland Plain Woodland (occurring in two condition states) will be removed within the subject land. Section 9.1 of the BAM requires the provision of additional information regarding SAI entities that are TECs. The additional information is required to assist the consent authority to evaluate the nature of an impact on a potential entity at risk of a serious and irreversible impact.

The additional information requirements, and the responses to each requirement, are shown in Table 32.



Table 32 Information in relation to the additional impact assessment provision for TECs at risk of an SAIL, for Cumberland Plain Woodland CEEC in the subject land

BAM Section 9.1.1 Criteria	Additional Impact Assessment Provisions	Response
1	The action and measures taken to avoid the direct and indirect impact on the TEC at risk of an SAIL (or reference to where these have been addressed in the relevant section of the BDAR).	Avoidance of impacts to biodiversity values is addressed in detail in Chapter 7 of this BDAR. When considering the requirements associated with the ENT zoning, the objectives of the Growth Centres SEPP and the Parklands SEPP and the extent of earthworks required for the site to be compatible with an industrial development, in combination with the scattered distribution of the native vegetation within the subject land, opportunities to avoid impacts to biodiversity values are limited. As a result, all areas of Cumberland Plain Woodland CEEC within the subject land are proposed to be removed as part of the project.
2	The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including:	
(a)	Evidence of reduction in geographic distribution (Principle 1, clause 6.7(2)(a) BC Regulation) as the current total geographic extent of the TEC in NSW AND the estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the proposal).	The current total geographic extent of Cumberland Plain Woodland varies depending on the source interrogated. The current extent of Cumberland Plain Woodland in the TBDC (EES, 2026) is described as “only 9% of the original extent remaining” but does not include an estimated area for the community. BioNet Classification System (EES, 2026) estimates the current area of occupancy of the community based on available data on the two associated PCTs (conforming to CPW as approximately 11,153 ha, This includes PCT 3319 which is estimated at 3,312 ha and PCT 3320 which is estimated at 7,841 ha. The BioNet Classification System also identifies the original ‘Pre-European Extent’ is estimated to be 130,605 ha, which is the combined are of PCT 3319 (18,141 ha) and PCT 3320 (112,464 ha). As such, the extent of Cumberland Plain Woodland remaining when calculated using these values is approximately 8.5% or a percentage cleared of 91.5%). The Final Determination for Cumberland Plain Woodland (NSW Scientific Committee, 2011a) identifies that the TEC is restricted in geographic distribution to the Sydney Basin Bioregion and was estimated to have an extant area of approximately 11,054 ha (±1,564 ha) according to mapping by Tozer (2003), which covered the Cumberland Plain. The Final determination states this



BAM Section 9.1.1 Criteria	Additional Impact Assessment Provisions	Response
		represents 8.8% ($\pm 1.2\%$) of the pre-European distribution, suggesting the pre-European distribution of the community was approximately 125,613 ha. Cumberland Plain Woodland is also associated with a targeted recovery plan for the Cumberland Plain that was prepared by the Department of Environment, Climate Change and Water (DECCW – now DPIE) (2011). This document is the currently accepted standard for the retention and recovery of TECs in the Cumberland Plain. Table 2 of the recovery plan estimates a current total of Cumberland Plain Woodland of 24,530 ha. However, it is reported that a small portion of this total may not meet the listing criteria for the CEEC under the BC Act. The same table also estimates the 'Pre-1750 (ha)' total of the community at 125,449 ha resulting in a percentage cleared estimate of approximately 80.5% or a remainder of ~19.5% of the original extent. Of the current total area, the recovery plan reports approximately 967 ha identified as occurring within reserves. According to the Map of Critically Endangered Ecological Communities NSW Version 6 dated 25/02/2020 (DPIE, 2020a) the extent of Cumberland Plain Woodland in NSW is approximately 23,021 ha. This mapping dataset has been derived from the extraction of relevant vegetation map units contained in a variety of existing vegetation mapping projects held by DPIE. According to the Threatened Ecological Communities Greater Sydney Mapping dataset (DPIE, 2026) the extent of Cumberland Plain Woodland in NSW is approximately 21,951 ha (Figure 13). This mapping dataset has been derived from the extraction of relevant vegetation map units contained in a variety of existing vegetation mapping projects held by DPIE and expert input. However, it noted that the dataset acknowledges that one of the limitations of the dataset is that areas identified as a TEC may be a different TEC. Following a review of the above information for the extent of Cumberland Plain Woodland, both current and prior to European settlement, it is clear there is some variation in area calculations. Therefore, the total current area of the community is likely to be an in the middle of these areas. It is noted however, that it is unanimously accepted by all sources that the community has suffered extensive clearing to a level that the community requires significant external intervention to maintain and recover the community within the Sydney Basin Bioregion.



BAM Section 9.1.1 Criteria	Additional Impact Assessment Provisions	Response
		The estimated reduction in the geographic extent of Cumberland Plain Woodland since 1970 is not available in the TBDC, BioNet, the final determination or the recovery plan, and was not identified from a search of available literature. Nonetheless, the pre-European extent of Cumberland Plain Woodland is listed as approximately 125,449 ha within the Cumberland Plain Recovery Plan as previously mentioned. No published data was found in the literature on the 1970 extent of Cumberland Plain Woodland and an accurate estimate of the reduction in distribution between the current extent and the 1970 geographic extent cannot be provided.
(b)	The extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes (Principle 2, clause 6.7(2)(b) BC Regulation) indicated by: • Change in community structure; • Change in species composition; • Disruption of ecological processes; • Invasion and establishment of exotic species; • Degradation of habitat; and • Fragmentation of habitat.	According to the final determination for Cumberland Plain woodland CEEC (NSW Scientific Committee, 2011a), the ecological community has undergone, is observed, estimated, inferred or reasonably suspected to have undergone or is likely to undergo a very large reduction in the ecological function of the community through processes such as: • Extensive removal of large old trees; • Tree-felling for crops and pastures; • Fragmentation of habitat; • Grazing by livestock and rabbits; • Modification of understory, to be dominated by woody exotic species; • Soil chemical and structural modification associated with agricultural uses; • Changes in frequency of fire regimes; • Prevention of recruitment of species, through continued under-scrubbing and mowing; and • Reduction of understorey complexity, through the reduction of native shrub cover, resulting in degradation of habitat.
(c)	Evidence of restricted geographic distribution (Principle 3, clause 6.7(2)(c) BC Regulation), based on the TEC's geographic range in NSW according to the: • extent of occurrence; • area of occupancy, and	Paragraph 11 of the NSW Scientific Final Determination for Cumberland Plain Woodland notes that the TEC is restricted to the Sydney Basin Bioregion. Based on map data from Tozer (2003), the TEC was estimated to occur within an extent of occurrence of 2,810km² and an area of occupancy of just under 2,100 m².



BAM Section 9.1.1 Criteria	Additional Impact Assessment Provisions	Response
	number of threat defined locations.	As previously discussed in this assessment, based on current available information from various mapping projects it is estimated that the current area of occupancy is between approximately 11,000 ha and 25,000 ha according to resources reviewed for Criteria 2(a). No threat defined location are specifically identified in the TBDC, however the ecological community is critically endangered across its range. According to the final determination, small protected areas of the community exist in reserves such as Kemps Creek, Mulgoa and Windsor Downs, Scheyville NP, and Leacock, Rouse Hill and Western Sydney Regional Parks.
(d)	Evidence that the TEC is unlikely to respond to management (Principle 4, clause 6.7(2)(d) BC Regulation).	This principle is not identified as applicable to Cumberland Plain Woodland. The TEC does respond to management, with several successful management measures outlined in the Best Practice Guidelines for Cumberland Plain Woodland (DEC (NSW), 2005).
3	Where the TBDC indicates that data is 'unknown' or 'data deficient' for a TEC for a criterion listed in Section 9.1.1(2), the assessor must record this in the BDAR.	Not applicable.
4 (a)	The impact on the geographic extent of the TEC (Principles 1 and 3) by estimating the total area of the TEC to be impacted by the proposal: - in hectares; and - as a percentage of the current geographic extent of the TEC in NSW.	The proposal will remove approximately 0.72ha of Cumberland Plain Woodland in the subject land, comprising two condition classes – 0.07ha of Woodland and 0.65ha of Grassland. The extent of the TEC in NSW differs depending on the information source. Based on a review of vegetation mapping layers, the estimated geographic extent in NSW is between approximately 11,000 ha and 25,000 ha according to resources reviewed for <i>BAM Section Criteria 2. a)</i>. However, based on the existing literature, the lowest number quoted for the estimated geographic extent of Cumberland Plain Woodland is 11,054 ha (NSW Scientific Committee, 2011a). Based on the lowest estimated geographic extent of the TEC in NSW, the extent of Cumberland Plain Woodland to be impacted by the proposal is approximately 0.006% of the current geographic extent of the TEC in NSW.
(b)	The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes (Principle 2) of the TEC by:	



BAM Section 9.1.1 Criteria	Additional Impact Assessment Provisions	Response
	Estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500m of the development footprint or equivalent area for other types of proposals.	The proposal requires the removal of 0.72ha of CPW within the subject land. The proposal is not likely to result in the isolation of CPW from other areas of PCT CPW, as the subject land occurs on the edge of a larger patch of the TEC. The 2013 OEH mapping for the Cumberland Plain, as well as the TEC Greater Sydney mapping (DPIE 2026) estimate 19.57ha of CPW within 500m of the development footprint. Hence, the removal of 0.72ha of Cumberland Plain Woodland in the subject land represents 3.32% of the occurrence of the TEC within 500m of the development footprint as per the 2013 OEH mapping. However, it is noted that areas mapped as CPW within the subject land during surveys are not mapped as CPW in the broadscale mapping while some areas of CPW from the broadscale mapping have been remapped as other native communities or exotic vegetation. The broadscale mapping is also limited to woodland areas and does not appear to include potential areas of grassland. Therefore, the proportion of CPW cleared from within the subject land from the occurrence within 500m is likely to be inaccurate.
	Describing the impacts on connectivity and fragmentation of the remaining areas of the TEC measures by: Distance between isolated areas of the TEC, presented as the average distance if the remnant is retained AND the average distance if the remnant is removed as proposed.	Approximately 0.72ha of Cumberland Plain Woodland occurs within the subject land. The closest area of CPW to the subject land is approximately 300m to the east. The removal of CPW within the subject land will not increase the separation between areas outside the subject land, as the adjacent part of the patch is to be retained. However, the proposed development includes the establishment of a greenway corridor across the Site (Section 7.3.1). The creation of the riparian corridor will provide improved connectivity of areas of the TEC across the subject land and wider Site.
	Estimated maximum dispersal distance for native flora species characteristic of the TEC.	The main dispersal mechanisms for flora species associated with Cumberland Plain Woodland include one or a combination of the following: • Animals; • Wind; • Water runoff; and • Gravity.



BAM Section 9.1.1 Criteria	Additional Impact Assessment Provisions	Response
		Eucalypts within the community are likely to rely on animal assisted dispersal by highly mobile vertebrate pollinators (birds and bats) which disperse pollen over large areas when foraging (Southerton S.G., 2003). The maximum dispersal distance for native flora species characteristic of the community is estimated to be at least 1000 m and potentially much further. The proposed development includes the establishment of a greenway corridor across the subject land and Site. Although scattered paddock trees will be further isolated by the proposed development, the creation of a greenway corridor will provide connectivity across the subject land and minimise dispersal distances for native flora species. Additionally, fauna underpasses are proposed to further assist safe fauna passage across the Site.
	Other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development.	The areas of CPW within the subject land and surrounds occur in discrete 'clumps' or 'clusters' comprising a mix of canopy and grassland. The difference between the area to perimeter ratio before and after the proposed clearing is minimal, therefore, the proposed development will result in removal of small fragmented patches of CPW rather than larger areas of vegetation. As previously described, the project is not considered to significantly affect the connectivity of the TEC, as the vegetation proposed for removal consists of a fragmented patches within a highly degraded landscape. Furthermore, the establishment of a greenway corridor between the two ENZ-zoned lands will continue to facilitate and contribute to the connectivity of the TEC within the Site.
	Describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone (s) (Section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone.	Within the site Cumberland Plain Woodland corresponds to PCT 3320 and two vegetation zones. The occurrence of the TEC in the subject land is mainly limited to canopy trees with a degraded understory and as low diversity grassland. As per the BAM plot data, the calculated integrity scores are: Zone 1 3320 Canopy: The vegetation integrity score is: 41.3 - The composition score is: 40.2 - The structure score is: 36.2 - The function score is: 48.3



BAM Section 9.1.1 Criteria	Additional Impact Assessment Provisions	Response
		Zone 3320 Grassland: The vegetation integrity score is: 8.2 - The composition score is: 16 - The structure score is: 34.9 - The function score is: 0
5	The assessor may also provide new information that demonstrates that the principle identifying that the TEC is at risk of an SAI is not accurate.	As previously outlined in this assessment, based on review of the resources available including mapping datasets, the current extent of CPW varies considerably. Review of various more recent sources accessed as part of this assessment confirmed inaccuracies in mapping in that areas confirmed by ground-truthing studies to be CPW are mapped as other TECs, thereby potentially underestimating the current extent of CPW. Records of biodiversity credit markets indicate a high proportion of trades and retirement of credits for CPW, indicating that significant areas of CPW are conserved in perpetuity within approved Biobank or Stewardship sites. However current available sources of information do not appear to provide an indication of the extent of CPW conserved in approved Biobank or Stewardship sites.



10.3 Impacts that Require an Offset

10.3.1 Native Vegetation

In accordance with the BAM, the project requires offsets for the clearing of native vegetation as the following criteria are met:

- A vegetation zone that has a vegetation integrity score ≥ 15 where the PCT is representative of an EEC or CEEC.

The PCT and vegetation zones requiring offsets are documented in Table 33. These areas are mapped in Figure 14.

Table 33 Summary of impacts to native vegetation requiring an offset

Vegetation Zone	PCT #	PCT Name	Area (ha)	Current VI Score	Future VI Score	Total VI loss
1	3320	Cumberland Shale Plains Woodland	0.07	41.3	0	-43.3
3	3975	Southern Lower Floodplain Freshwater Wetland	0.03	71	0	-71
4	3975	Southern Lower Floodplain Freshwater Wetland	0.52	52.6	0	-52.6
6	4025	Cumberland Red Gum Riverflat Forest	0.16	-58.6	31.8	-26.8

10.3.2 Impacts that do not Require an Offset

In accordance with Appendix D of the BAM, no offsetting is required for the Zone 2 (PCT 3320_Grassland) and Zone 5 (PCT4025_Grassland) as the vegetation integrity scores are <15 , as shown in Table 34. These areas are shown in Figure 11.

Table 34 Summary of impacts to native vegetation that do not require an offset

Vegetation Zone	PCT #	PCT Name	Area (ha)	Current VI Score	Total VI loss
2	3320	Cumberland Shale Plains Woodland	0.65	8.2	-8.2
5	4025	Cumberland Red Gum Riverflat Forest	5.53	9.5	-9.5

10.4 Application of the No Net Loss Standard

The BAM sets a standard that will result in no net loss of biodiversity values where the impacts on biodiversity values are avoided, minimised and mitigation, and all residual impacts are offset by retirement of the required number of biodiversity credits. The project will result in the removal of 0.72 ha native vegetation that conforms to the TEC Cumberland Plain Woodland (PCT 3320), 5.69 ha of native vegetation that conforms to the TEC Riverflat Eucalypt Forest (PCT 4025) and 0.55 ha of native vegetation that conforms to the TEC Freshwater Wetlands (PCT 3975).

The ecosystem credit requirement for the project is summarised in Table 35, whilst the 'like for like' offsetting options for the ecosystem credits are provided in Table 36.

A credit summary report from the BAM-C has been included in Appendix E.



Table 35 Summary of ecosystem credit liability

PCT #	PCT Name	TEC	Area (ha)	Credits Required
3320	Cumberland Shale Plains Woodland	Cumberland Plain Woodland	0.07	2
3975	Southern Lower Floodplain Freshwater Wetland	Freshwater Wetlands	0.55	19
4025	Cumberland Red Gum Riverflat Forest	Riverflat Eucalypt Forest	0.16	2

Table 36 Like for like offsetting options

Any PCT with the below TEC	Containing Hollow-bearing Trees?	In the below IBRA Subregions
Cumberland Plain Woodland in the Sydney Basin Bioregion. This includes PCTs:3319, 3320	Yes	Cumberland, Burragorang, Pittwater, Sydney Cataract, Wollemi and Yengo. or Any IBRA subregion that is within 100 kilometres of the outer edge of the impacted site.
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. This includes PCTs:1738, 3958, 3959, 3961, 3962, 3964, 3965, 3967, 3971, 3973, 3975, 3976.	No	Cumberland, Burragorang, Pittwater, Sydney Cataract, Wollemi and Yengo. or Any IBRA subregion that is within 100 kilometres of the outer edge of the impacted site.
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. This includes PCTs: 3145, 3181, 3185, 3188, 3192, 3258, 3328, 4024, 4025, 4039, 4041, 4058, 4138.	Yes	Cumberland, Burragorang, Pittwater, Sydney Cataract, Wollemi and Yengo. or Any IBRA subregion that is within 100 kilometres of the outer edge of the impacted site.



SERIOUS AND IRREVERSIBLE IMPACTS

FIGURE 13

LEGEND

- Subject Land
- The Site
- Locality (500 m)
- Serious and Irreversible Impact Entity**
 - Cumberland Plain Woodland in the Sydney Basin Bioregion

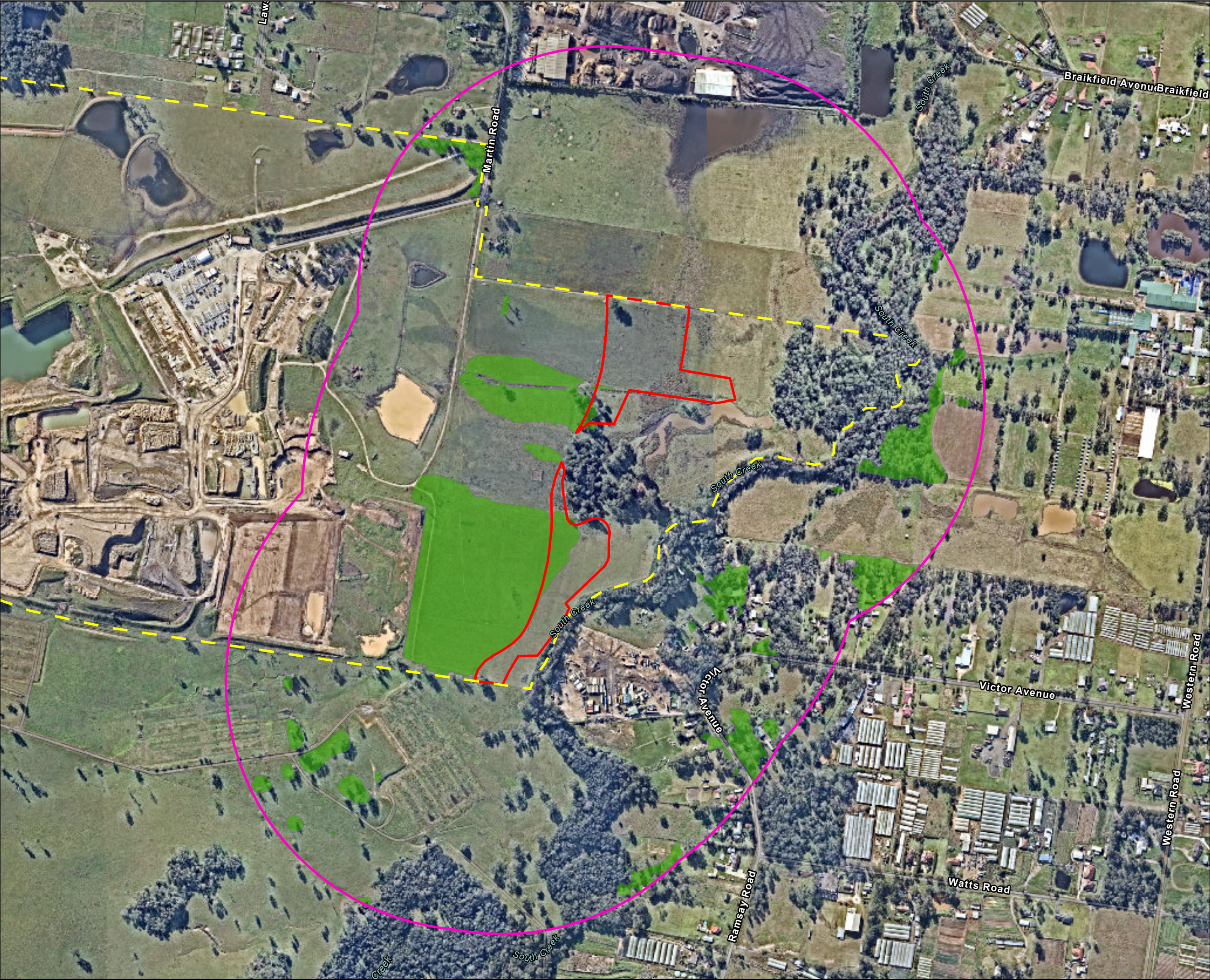
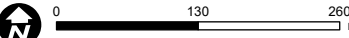


Image Source:
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Coordinate System: GDA 1994 MGA Zone 56

Scale: 1:6,938 at A3

Project Number: 625.010786.00001

Date Drawn: 18-Mar-2026

Drawn by: JL

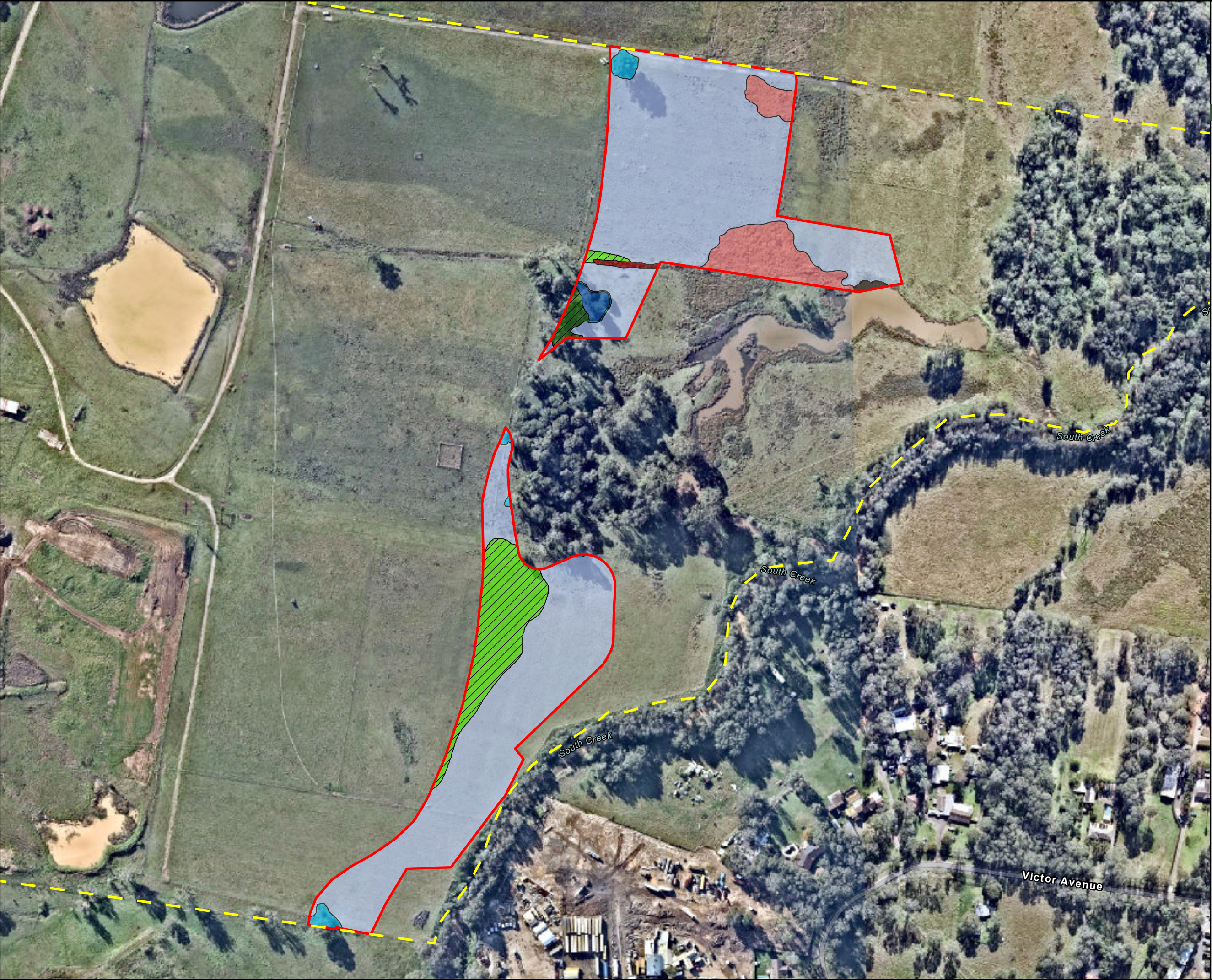
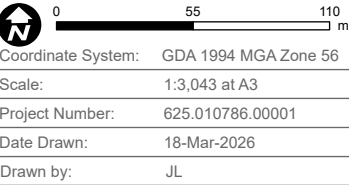


THRESHOLDS OF ASSESSMENT

FIGURE 14

- LEGEND**
- Subject Land
 - The Site
 - Serious and Irreversible Impact Entity**
 - Cumberland Plain Woodland in the Sydney Basin Bioregion
 - Areas Requiring an Offset**
 - Zone 1: PCT 3320_Canopy
 - Zone 3: PCT 3975_Artificial
 - Zone 4: PCT 3975_Natural
 - Zone 5: PCT 4025_Degraded
 - Zone 6: PCT 4025_Grassland
 - Areas Not Requiring an Offset**
 - Zone 2: PCT 3320_Grassland
 - Zone 5: PCT 4025_Degraded
 - Zone 6: PCT 4025_Grassland
 - Areas Not Requiring Further Assessment**
 - Farm Dam

Image Source:
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11.0 Conclusion

This BDAR has been prepared to assess the impacts of the proposed development on biodiversity values, in accordance with the BAM. This SSD relates to site preparation works only (i.e. no buildings, retaining walls or other infrastructure works), including the rehabilitation of areas disturbed by historic mining and brick-making operations, as well as remediation and bulk earthworks across other areas of the subject land to make it suitable for intended future land use. This BDAR will form part of the required EIS to support an application for an SSD under Part 4, Division 4.7 of the EP&A Act.

Native vegetation occurring within the subject land occurs as scattered patches and consists of planted and remnant native vegetation. Three PCTs have been identified within the subject land, PCT 3320, PCT 3975 and PCT 4025, each occurring in multiple condition states. The PCTs within the subject land align with three TECs listed under the BC Act, including Cumberland Plain Woodland CEEC, Riverflat Eucalypt Forest EEC and Freshwater Wetlands EEC.

The project requires the almost full clearance of the land including the removal of native vegetation within the subject land, with only a 0.07ha patch of Riverflat Eucalypt Forest to be retained in the central portion of the subject land. As the project includes the removal of native vegetation, a number of offsets are required in the form of ecosystem credits. This assessment indicates that the removal of the native vegetation within the subject land requires a total of 2 ecosystem credits of PCT 3320, 19 ecosystem credits for PCT 3975 and 2 ecosystem credits for PCT 4025.

No threatened flora species that are considered as species credit species were recorded within the subject land and none are considered likely to occur. Therefore, no flora species credits species are required to be offset. No threatened fauna species were recorded within the subject land and therefore no fauna species credits species are required to be offset.

When considering the requirements associated with the ENT zoning, the WSAP and the extent of earthworks required for the site to be compatible with an industrial development, in combination with the scattered nature of the native vegetation within the subject land, opportunities to avoid impacts to biodiversity values are limited. Nevertheless, the project has been designed to avoid and minimise impacts to higher quality vegetation where possible.

Further impacts of the project may entail potential indirect impacts, including inadvertent impacts on adjacent habitat and reduced viability of adjacent habitat due to noise, dust or light spill, and prescribed impacts such as impacts to connectivity of different areas of habitat that facilitates movement across a species range have been considered.

A suite of mitigation measures is proposed to minimise and manage the impacts to biodiversity values, such as, weed management, pre-clearance surveys, sediment management, staging of clearing, and a Dam Decommissioning Plan.

With the implementation of the proposed mitigation measures and the offsetting described previously, it is considered that the impacts of this project on biodiversity, in particular on TEC and threatened species, will be limited and can be enhanced and appropriately managed in the future.

The proposed development is considered to be consistent with the No Net Loss standard as impacts to biodiversity values have been avoided/minimised/mitigated where feasible and all residual impacts are to be offset by retirement of the required number of biodiversity credits.



12.0 Closure

Sincerely,



Alix Murray, MSc
Senior Ecologist



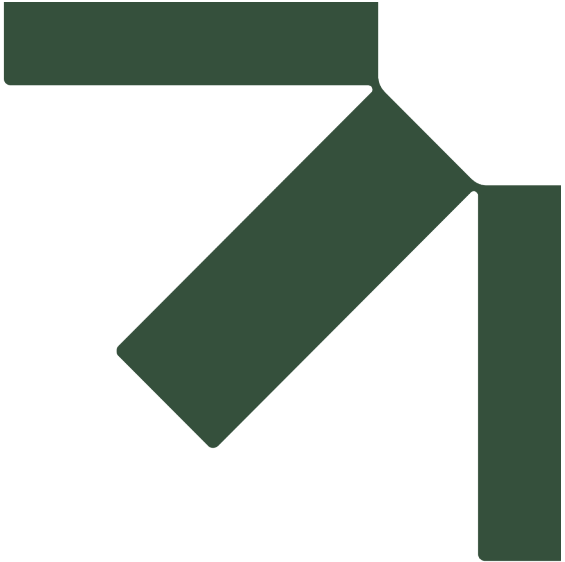
Matt Freeman, BNatSci
Principal Ecologist



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- SLR. 2026c. Riparian Lands Assessment for 225-245 Martin Road, Bradfield, Bulk Earthworks, Quarrying and Rehabilitation SSD- 97711727
- SLR. 2026d. Dam Dewatering Plan for 225-245 Martin Road, Bradfield, Bulk Earthworks, Quarrying and Rehabilitation SSD- 97711727
- SLR 2026e. Wildlife Hazard Assessment and Management Plan for 225-245 Martin Road, Bradfield, Internal Works SSD- 97688711





Appendix A **BAM Compliance Table**

Biodiversity Development Assessment Report

225 - 245 Martin Road, Bradfield Bulk Earthworks, **Rehabilitation and Quarrying
SSD-97711727**

Goodman Property Services (Aust) Pty Ltd

SLR Project No.: 625.010786.00001

20 March 2026

BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
Introduction	Information		
	Introduction to the biodiversity assessment including:		
	- Identification of development/biodiversity stewardship site footprint, including: - Operational footprint - Construction footprint indicating clearing associated with temporary construction facilities and infrastructure		Section 1.5.1
	General description of development/biodiversity stewardship site		Section 1.5.2
	Sources of information used in the assessment, including reports and spatial data.		Section 1.6, Section 2.1
	Maps and Data		
	Site Map (as described in Section 4.2)		Figure 1
	Location Map (as described in Section 4.2)		Figure 2
	Digital shape files for all maps and spatial data		To be provided in BOAMs
Landscape Features	Information		
	Identification of landscape features at the development/biodiversity stewardship site, including:		
	IBRA bioregions and subregions, NSW landscape region and area (ha)	Subject land area (ha) IBRA bioregions and subregions BioNet NSW Landscapes	Figure 1
	Native vegetation extent in the buffer area		Figure 1
	Cleared areas	Cleared areas	Figure 2
	Evidence to support differences between mapped vegetation extent and aerial imagery		N/A



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Rivers and streams classified according to stream order	Rivers, streams and estuaries	Section 3.2.2, Figure 2
	Wetlands within, adjacent to and downstream of the site	Wetlands within, adjacent to and downstream of the site	Section 3.2.3, Figure 2
	Connectivity features	Connectivity of areas of habitat including areas identified as priority investment areas, flyways for migratory species	Section 3.2.4, Figure 12
	Areas of geological significance and soil hazard features	Areas of geological significance and soil hazard features	Section 3.2.5, Section 3.2.8
		Areas of Outstanding Biodiversity Value	Section 3.2.6
	- Site context components, including: - Identification of method applied (i.e. linear or site-based) - Percent native vegetation cover in the landscape (development site and biodiversity stewardship site).	Percent native vegetation cover including: - Buffer area - Justification to support differences between aerial imagery used for the assessment and final mapped native vegetation cover.	Section 3.3
	Maps and Data		
	IBRA bioregions and subregions (as described in Paragraphs 4.2.1.3–4.2.1.4)	IBRA bioregions and subregions	Figure 1 and Figure 2
	NSW landscape regions (as described in Paragraph 4.2.1.5)	BioNet NSW landscapes	Figure 1 and Figure 2
	Rivers and streams (as described in Paragraph 4.2.1.6)	Rivers, streams (using Strahler stream ordering) and estuaries	Figure 2
	Wetlands (as described in Paragraph 4.2.1.7)	Wetlands	Figure 2



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Connectivity of different areas of habitat (as described in Paragraphs 4.2.1.8–4.2.1.11)	Connectivity	Figure 1 and Figure 2
	Areas of geological significance and soil hazard features (as described in Paragraphs 4.2.1.12–4.2.1.15)	Areas of geological significance and soil hazards	Figure 1 and Figure 2
	Native vegetation extent (as described in Subsection 4.3.2)	Native vegetation cover	Figure 2 and Figure 8
		Boundary of the subject land	Figure 2
		Areas of Outstanding Biodiversity Value	Not applicable – See Section 3.2.6
Native Vegetation	Information		
	Identify native vegetation extent within the development/biodiversity stewardship site, including cleared areas and evidence to support differences between mapped vegetation extent and aerial imagery.	Native vegetation cover on subject land and justification to support differences between mapped native vegetation cover and aerial imagery.	Section 4.1 and Figure 8
	Describe PCTs within the development/biodiversity stewardship site, including:	PCTs within the subject land, including:	Section 4.2
	vegetation class	vegetation class	Section 4.2
	vegetation type	vegetation type (i.e. PCT names and ID numbers)	Section 4.2
	area (ha) for each vegetation type	area (ha)	Table 8
	species relied upon for identification of vegetation type and relative abundance	species relied upon for identification of vegetation type and relative abundance	Section 4.2
	justification of evidence used to identify a PCT (as outlined in Paragraph 5.2.1.12)	evidence and justification of decision pathway used in identification of PCT (e.g. vegetation structure and	Section 4.2, Table 9, Table 12, Table 14, Table 16



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
		landscape position/geomorphology).	
	TEC status (as outlined in Paragraphs 5.2.1.14–5.2.1.15)	TEC status	Section 4.4
	estimate of percent cleared value of PCT (as outlined in Paragraph 5.2.1.16)	estimate of percent cleared value of the PCT (available in the BioNet Vegetation Classification)	Section 4.2
	Perform a vegetation integrity assessment of the development/biodiversity stewardship site, including:	Vegetation integrity assessment of the subject land, including:	Section 4.5
	mapping vegetation zones (Subsection 5.3.1)	description of vegetation zones within the subject land with justification for assigning vegetation zones to PCTs area (ha) of each vegetation zone	Section 4.2 and Figure 11
	patch size (development site and biodiversity stewardship site)	patch size for each vegetation zone	Figure 1 and Figure 2
	assessing vegetation integrity using benchmark data (Subsection 5.3.3)		N/A
	survey effort as described in Subsection 5.3.4 (number of plots)	survey effort	Section 2.3, Table 4
	determining the vegetation integrity score (Appendix 6):	composition, structure, function and vegetation integrity condition scores.	Section 4.5, Table 20
	- composition condition score - structure condition score - function condition score - vegetation integrity score.	Where use of local data is proposed, identify: source of information for local benchmark data justification of use of local data in preference to database values.	
	Maps and Data		



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Map of native vegetation extent within the development/biodiversity stewardship site (as described in Section 5.1)	Native vegetation extent within the subject land.	Figure 8
	Map of PCTs within the development/biodiversity stewardship site (as described in Section 5.2)	Distribution of PCTs within the subject land.	Figure 9
	Map of plot locations relative to PCTs	Plot locations relative to PCTs including GPS coordinates (GDS zone, eastings, northings and bearings)	Figure 6
	Map of TECs	TECs on the subject land	Figure 10
	Plot field data (MS Excel format)		To be provided in BOAMs
	Plot field data sheets	Plot field data and sheets	Collected in Survey123 application so no datasheets available
		Vegetation zones	
	Patch size of intact native vegetation (as described in Subsection 5.3.2)	Patch size of intact native vegetation	Figure 1 and Figure 2
	Table of current vegetation integrity scores for each vegetation zone within the development/biodiversity stewardship site.	Table of vegetation integrity scores for each vegetation zone within the subject land	Table 20
Threatened Species	Information		
	Identify ecosystem credit species associated with PCTs on both the development site and biodiversity stewardship site as outlined in Section 6.2, including:		
	list of species derived	List of predicted ecosystem credit species associated with PCTs on the subject land	Section 5.2. Table 21



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	justification for exclusion of any ecosystem credit species predicted above.	Justification for exclusion of any ecosystem credit species predicted above	Section 5.2.2
	Identify species credit species on both the development site and the biodiversity stewardship site as outlined in Sections 6.3 to 6.5, including:	Identify species credit species on the subject land, including:	
	list of candidate species	list of candidate species assessed	Section 5.3, Table 22
	justification for inclusions and exclusions based on habitat features	justification for inclusions and exclusions of any species credit species predicted above based on habitat features, or vagrancy	Section 5.3.2
	indication of presence based on targeted survey or expert report	indication of presence based on targeted survey or expert report (see below)	Section 5.3.3
	details of targeted survey technique, effort, timing and weather	details of targeted survey including technique, effort, timing and weather	Section 2.4, Section 2.5, Table 5, Table 6
	species polygons	species polygons	N/A
	biodiversity risk weighting for the species	biodiversity risk weighting for the species	N/A
		area of suitable habitat or number of individuals counted	N/A
	threatened species survey		
	additional requirements for wind farm developments.		N/A
	Where use of local data is proposed:	Where use of local data is proposed:	N/A



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	identify relevant species	identify relevant species or population	N/A
	identify aspect of species data		N/A
	identify source of information for local data	identify source of information for local data	N/A
	justify use of local data in preference to database values.	justify use of local data in preference to database values.	N/A
	Where expert reports are used in place of targeted survey:	Where expert reports are used in place of targeted survey:	N/A
	identify the relevant species	identify the relevant species or population	N/A
	justify the use of an expert report	justify the use of an expert report	N/A
	indicate and justify the likelihood of presence of the species and information considered in making this assessment	flag the likely presence of the species or population and the evidence to support this assessment including all information considered	N/A
	estimate the number of individuals or area of habitat (whichever unit of measurement applies to the species/individual) for the development site or biodiversity stewardship site, including a description of how the estimate was made	estimate the number of individuals or area of suitable habitat, including a description of how the estimates were made (e.g. reference populations, past reports)	N/A
	identify the expert and provide evidence of their expert credentials.	identify the expert and provide evidence of their expert credentials.	N/A
		Identify potential prescribed biodiversity impacts on threatened species.	N/A



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Maps and Data		N/A
	Table of habitats or habitat components and their sensitivity classes	Table of habitats or habitat components and their sensitivity classes.	N/A
	Table detailing the list of species credit species and presence status on site as determined by targeted survey, indicating also where presence was assumed and/or where presence was determined by expert report	Table detailing the list of species credit species; presence on subject land as determined by targeted survey, indicating where presence is assumed or by expert report.	N/A
		Mapped targeted survey locations including GPS coordinates of survey sites.	N/A
	Species credit species polygons (as described in Paragraph 6.4.1.33)	Species credit species polygons including GPS locations of any individuals counted.	N/A
	Table detailing species and habitat feature/component associated with species and its abundance on site (as described in Paragraph 6.4.1.34)	Table detailing species habitat features associated with the species and its location (GPS coordinates) and abundance on the subject land.	N/A
	Table detailing biodiversity risk weighting for species on site (as described in Section 6.6)	Table detailing biodiversity risk weighting for species credit species on the subject land.	N/A
		Map location of prescribed biodiversity impacts on the subject land	Figure 12
	For wind farm developments: maps of habitual flight paths for nomadic and migratory species likely to fly over the site and maps of likely habitat for threatened aerial species resident on the site	For wind farm developments, maps of habitual flight paths for nomadic and migratory species	



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
		likely to fly over the site and maps of likely habitat for threatened aerial species and raptor species resident on site.	
Avoid and Minimise Impacts	Information Demonstration of efforts to avoid and minimise impact on biodiversity values in accordance with Section 8.0.	Demonstration of efforts to avoid or minimise impacts on native vegetation, threatened species habitat and prescribed impacts during project planning including: 1. locating the project – options considered (including maps and why they were not feasible/suitable) analyses associated with alternative options (e.g. routes, locations, sites within the property, constraints) justification for selecting proposed location 2. designing the project – temporary and permanent ancillary construction and maintenance facilities required for the proposal options for avoiding these features (e.g. alternative locations, engineering solutions, modes of technology, constraints) justification for selecting proposed location	Section 7.0



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
		measures taken to minimise impacts long-term management of areas avoided.	
	Assessment of direct and indirect impacts unable to be avoided at the development site in accordance with Sections 9.1 and 9.2. The assessment would include but not be limited to: type, frequency, intensity, duration and consequence of impact.	Determination of the impacts on native vegetation and threatened species habitat including: describing impacts of clearing describing the nature, extent, frequency, duration and timing of indirect and prescribed impacts including during construction and operation phases, on adjacent vegetation	Section 8.0
		calculating the change in VI score and habitat suitability	Section 8.1.2 and Section 8.2
		describing impacts that are uncertain and their management/mitigation	Section 9.3
		evaluating consequences of indirect and prescribed impacts	Section 8.3 and Section 8.4
		documenting limitations to data, assumptions and predictions.	N/A
	For major projects: details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (Section 9.4).		
	Maps and Data		
		Table of biodiversity mitigation measures to be implemented	Table 31



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the project, including action, outcome, timing and responsibility	before, during and after construction to avoid and minimise the impacts of the project, including action, outcome, timing and responsibility. Unique identifiers (e.g. BIO01) should be included for tracking through management plans and compliance auditing.	
		Map of alternative locations or sites within the development site that were considered when locating and designing the project including constraints to the final selection.	N/A
	Map of final project footprint, including construction and operation	Map of the final development site footprint, including demarcation of any prescribed impacts and measures to minimise impacts.	Figure 14
		Showing the areas of biodiversity value on the site map of where impact has been avoided will assist in demonstrating the reasonable measures that the proponent has taken to avoid and minimise impacts.	Figure 14
	Maps demonstrating indirect impact zones where applicable	Map of sites within the subject land likely to be impacted by direct, indirect and prescribed impacts where applicable.	Figure 14
	Information		



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
Impact Summary		Identification of impacts:	
	Identification and an assessment of the impacts which are potential serious and irreversible impacts, in accordance with Subsections 10.2.2 for impacts on CEECs and 10.2.3 for threatened species.	on entities at risk of a serious and irreversible impact (SAIL), including addressing the assessment criteria in Subsection 10.2.2 (TECs) and 10.2.3 (species) of the BAM All relevant information required by the consent authority to determine whether the proposed impact is serious and irreversible including: clear documentation of the sources of information where confidence in the information provided is low or of questionable reliability how proposed additional measures will contribute to the recovery of the entity where information is not available, for example where impact thresholds for the entity have not been provided.	Section 10.2
	Identification of impacts requiring offset in accordance with Section 10.3.	requiring offsets	Section 10.3.1
	Identification of impacts not requiring offset in accordance with Paragraph 10.3.2.2.	not requiring offsets	Section 10.3.2
	Identification of areas not requiring assessment in accordance with Section 10.4.	not requiring further assessment.	N/A



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	Maps and Data		
		Mapped locations:	
	Map showing the location of serious and irreversible impacts	that support an entity at risk of a serious and irreversible impact (SAII)	Figure 13
	Map of impacts requiring offset	where offsets are required	Figure 14
	Map of impacts not requiring offset	where offsets are not required, and	Figure 14
	Map of areas not requiring assessment	where no further assessment is required.	Figure 14
		Maps illustrating the extent of a TEC or species distribution and any other data used to address the assessment criteria for an entity at risk of an SAII.	Figure 13
Impact Summary	Information		
		The assessor is required to report on:	
	Ecosystem credits and species credits that measure the impact of the development on biodiversity values, including:		
	future vegetation integrity score for each vegetation zone at the development site (Equations 17 and 18 in Appendix 6)		Table 33
	change in vegetation integrity score (Subsection 9.1.3)		Table 33
		the biodiversity risk weighting (BRW) for each ecosystem and species credit requirement generated	N/A



BDAR Section	BAM Requirements	Operational Manual Requirements	Assessment of Compliance and Recommendations
	number of required ecosystem credits for the impact of development on each vegetation zone at a development site (Subsection 11.2.3)	the number of ecosystem credits for each PCT/TEC	Table 35
	number of required species credits for each threatened species that is impacted on by development (Subsection 11.2.4).	the number of species credits for each species credit species impacted by the proposal	N/A
	Maps and Data		
	Table of PCTs requiring offset and the number of ecosystem credits required		Table 35
	Table of threatened species requiring offset and the number of species credits required		N/A
	Submitted proposal in the Credit Calculator	All digital data must be submitted using the Upload Files function in BOAMS: digital shape files for all maps and spatial data completion of all required data fields in BOAMS and the BAM-C. Finalised case in the BAM-C (can be returned to assessor for editing).	To be submitted in BOAMS
Biodiversity Credit Report	Information		
	Credit classes for ecosystem credits and species credits at the development site.	biodiversity credit report from the BAM-C, which defines the number and class of ecosystem and species credits from the proposed impact.	Appendix E
	Maps and Data		
	Table of credit class and matching credit profile		Table 36





Appendix B Referral Decision

Biodiversity Development Assessment Report

225 - 245 Martin Road, Bradfield Bulk Earthworks, Rehabilitation and Quarrying SSD-97711727

Goodman Property Services (Aust) Pty Ltd

SLR Project No.: 625.010786.00001

20 March 2026



Australian Government

Department of Climate Change, Energy,
the Environment and Water

Notification of referral decision – not controlled action

Project Maverick Bulk Earthworks and Internal Works (EPBC 2026/10429)

This decision is made under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

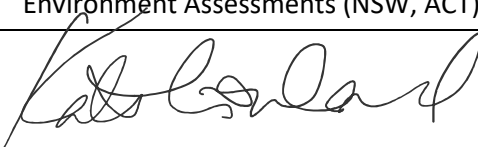
Proposed Action

person proposing to take the Action	Goodman Property Services (Aust) Pty Ltd ACN: 088 981 793
proposed Action	To demolish existing structures and undertake earthworks for the development and operation of 14 warehouses, open spaces, amenities and infrastructure in Bradfield, NSW (See EPBC Act referral 2026/10429).

Referral decision: not a controlled action

status of proposed Action	The proposed Action is not a controlled action.
----------------------------------	---

Person authorised to make decision

name and position	Kate Gowland Branch Head Environment Assessments (NSW, ACT)
signature	
date of decision	19 March 2026



Appendix C BAM Plot Data

Biodiversity Development Assessment Report

225 - 245 Martin Road, Bradfield Bulk Earthworks, Rehabilitation and Quarrying SSD-97711727

Goodman Property Services (Aust) Pty Ltd

SLR Project No.: 625.010786.00001

20 March 2026

Plot	PCT	Area	Patch	Condition Class	Zone	Easting	Northing	Bearing	Comp Tree	Comp Shrub	Comp Grass	Comp Forbs	Comp Ferns	Comp Other
1	3320	1	101	Woodland	56	293240.87	6246978.97	80	1	0	6	8	0	1
2	3975	1	101	Artificial	56	293125.27	6247022.29	90	0	0	7	3	0	0
3	4025	1	101	Degraded	56	293263.17	6246832.92	315	2	2	5	6	0	1
4	4023	1	101	Native Ground	56	293722.3	6246916.92	45	1	1	4	8	0	0
5	4023	1	101	Degraded	56	293636.06	6247053.18	0	3	1	4	8	1	0
6	4025	1	101	Grassland	56	293476.89	6247045.9	270	0	0	6	1	0	0
7	3975	1	101	Natural	56	293370.13	6247023.12	200	0	0	6	4	2	0
8	4025	1	101	Grassland	56	293349.6	6247117.51	90	0	0	7	3	0	0
9	3320	1	101	Grassland	56	293144.32	6246951.8	90	0	0	6	1	0	0
10	4025	1	101	Grassland	56	293267.34	6246703.97	310	0	0	4	0	0	0
11	4025	1	101	Degraded	56	293229.14	6246885.35	35	1	2	7	6	0	0
12	3975	1	101	Natural	56	293463.52	6247113.96	135	0	0	6	3	0	0
13	4025	1	101	Moderate	56	293825.71	6247014.65	180	1	1	3	10	1	1
14	4025	1	101	Moderate	56	293794.17	6247023.87	135	2	1	7	10	1	1



Plot	PCT	Area	Patch	Condition Class	Zone	Easting	Northing	Bearing	Struct Tree	Struct Shrub	Struct Grass	Struct Forbs	Struct Ferns	Struct Other
1	3320	1	101	Woodland	56	293240.87	6246978.97	80	30.0	0.0	17.4	1.6	0.0	0.1
2	3975	1	101	Artificial	56	293125.27	6247022.29	90	0.0	0.0	42.4	5.6	0.0	0.0
3	4025	1	101	Degraded	56	293263.17	6246832.92	315	40.0	1.5	21.5	1.7	0.0	0.1
4	4023	1	101	Native Ground	56	293722.3	6246916.92	45	40.0	1.0	64.2	2.6	0.0	0.0
5	4023	1	101	Degraded	56	293636.06	6247053.18	0	60.1	10.0	10.6	2.9	0.1	0.0
6	4025	1	101	Grassland	56	293476.89	6247045.9	270	0.0	0.0	17.1	0.1	0.0	0.0
7	3975	1	101	Natural	56	293370.13	6247023.12	200	0.0	0.0	63.0	12.2	5.4	0.0
8	4025	1	101	Grassland	56	293349.6	6247117.51	90	0.0	0.0	21.9	0.7	0.0	0.0
9	3320	1	101	Grassland	56	293144.32	6246951.8	90	0.0	0.0	38.6	0.1	0.0	0.0
10	4025	1	101	Grassland	56	293267.34	6246703.97	310	0.0	0.0	14.4	0.0	0.0	0.0
11	4025	1	101	Degraded	56	293229.14	6246885.35	35	30.0	40.2	17.2	1.2	0.0	0.0
12	3975	1	101	Natural	56	293463.52	6247113.96	135	0.0	0.0	48.5	1.5	0.0	0.0
13	4025	1	101	Moderate	56	293825.71	6247014.65	180	40.0	30.0	30.0	14.2	0.1	0.2
14	4025	1	101	Moderate	56	293794.17	6247023.87	135	31.0	25.0	41.9	6.5	0.2	0.4



Plot	PCT	Area	Patch	Condition Class	Zone	Easting	Northing	Bearing	Fun Large Tree	Fun Hollow	Fun Litter Cover	Fun Len Fallen	Fun Stem 5to9	Fun Stem 10to19	Fun Stem 20-29	Fun Stem 30-49	Fun Stem 50-79	Fun Tree Regen	Fun High Threat Exotic
1	3320	1	101	Woodland	56	293240.87	6246978.97	80	3	2	5.7	11.3	0	0	1	1	1	0	16.6
2	3975	1	101	Artificial	56	293125.27	6247022.29	90	1	0	2.3	0.0	0	0	0	0	1	0	16.2
3	4025	1	101	Degraded	56	293263.17	6246832.92	315	3	1	9.8	21.1	0	1	1	1	1	0	32.7
4	4023	1	101	Native Ground	56	293722.3	6246916.92	45	0	0	0.0	0.8	1	1	0	0	0	1	22.0
5	4023	1	101	Degraded	56	293636.06	6247053.18	0	1	0	37.0	5.6	1	1	1	1	1	0	31.7
6	4025	1	101	Grassland	56	293476.89	6247045.9	270	0	0	2	0	0	0	0	0	0	1	8.6
7	3975	1	101	Natural	56	293370.13	6247023.12	200	0	0	1	0	0	0	0	0	0	0	6.6
8	4025	1	101	Grassland	56	293349.6	6247117.51	90	0	0	1	0	0	0	0	0	0	0	43.4
9	3320	1	101	Grassland	56	293144.32	6246951.8	90	0	0	1	0	0	0	0	0	0	0	9.2
10	4025	1	101	Grassland	56	293267.34	6246703.97	310	0	0	1	0	0	0	0	0	0	0	12.4
11	4025	1	101	Degraded	56	293229.14	6246885.35	35	4	1	12	3.9	0	1	1	1	1	1	36.8
12	3975	1	101	Natural	56	293463.52	6247113.96	135	0	0	1	0	0	0	0	0	0	0	16.7
13	4025	1	101	Moderate	56	293825.71	6247014.65	180	1	1	8	9	1	1	1	1	1	0	53.2
14	4025	1	101	Moderate	56	293794.17	6247023.87	135	1	1	13	34.5	0	0	1	1	1	1	38.2





Appendix D Ultrasonic Bat Data

Biodiversity Development Assessment Report

225 - 245 Martin Road, Bradfield Bulk Earthworks, Rehabilitation and Quarrying SSD-97711727

Goodman Property Services (Aust) Pty Ltd

SLR Project No.: 625.010786.00001

20 March 2026



Night Time Ecology

Bioacoustic Analysis

Maverick

SLR Consulting

January 12, 2026

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LIMITATIONS AND CONSIDERATIONS

To gain a comprehensive understanding of the ecosystems and species present in an area, surveys are best undertaken over several years and across different seasons. The results presented in this report are based on surveys conducted over several nights and provides only a “snap-shot” of information about the species present on the site.

Extraneous noise caused by insects and farm machinery can have detrimental impacts on the ability of bat call sequence detection. This noise can have consequences on the detection of sequences as well as the formal identification of species.

Glossary and Acronyms

BC Act *Biodiversity Conservation Act 2016*

EPBC Act *Environment Protection and Biodiversity Conservation Act 1999*

PCA Principal component analysis

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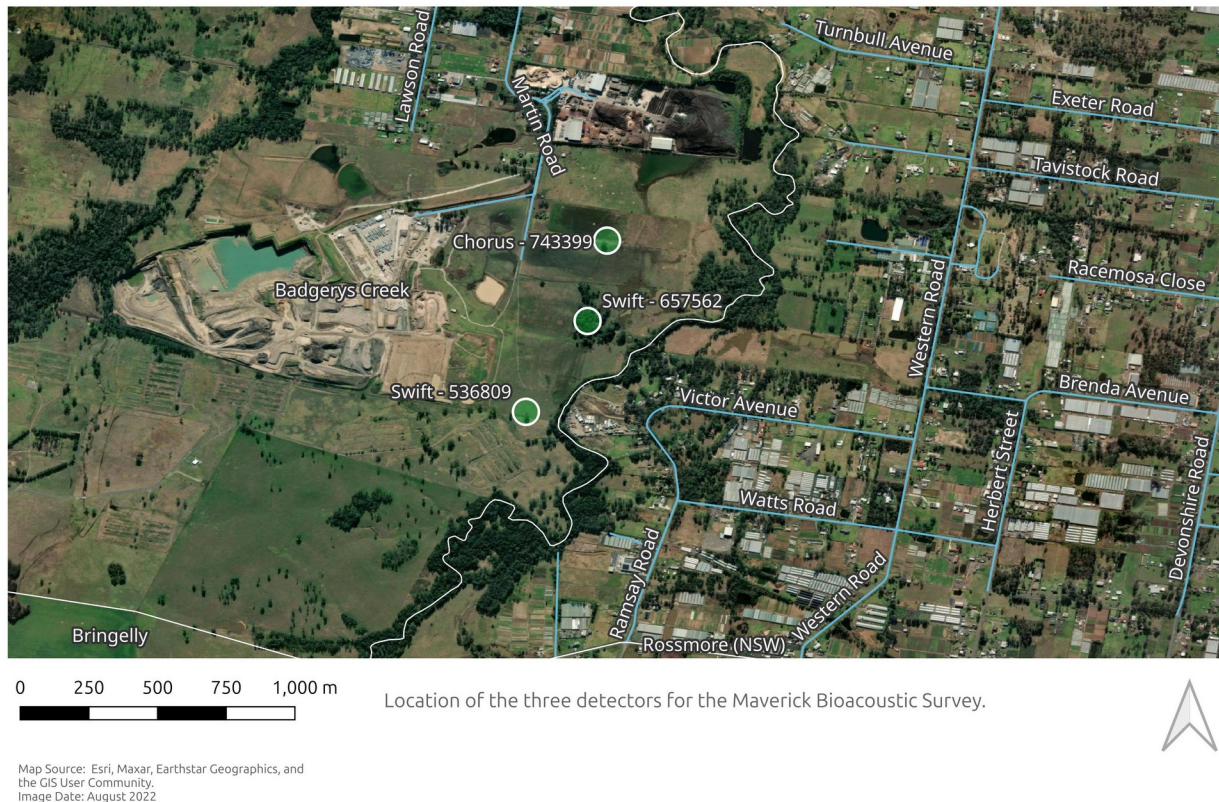
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1.0 Introduction

Night Time Ecology was commissioned by SLR Consulting to undertake bioacoustic analysis of ultrasonic microchiropteran recordings collected from three detectors over four nights for the Maverick project (the Project). The data was collected by SLR on two Titley Scientific Swift detectors and one Chorus with the resultant recorded calls supplied as full-spectrum waveform files.

Figure 1 Aerial Image of Maverick Bat Survey Location



2.0 Methodology

2.1 Acoustic Analysis Methodology

The full-spectrum files were automatically processed by Night Time Ecology's PteronSpectra Ultrasonic software. This produced a spreadsheet with standard call metrics for identification as well as producing the most likely species based on those metrics, derived from existing keys (e.g., Milne, 2002; Pennay *et al.*, 2004; Reinhold *et al.*, 2001). Only those species with a known or likely range overlap of the Project Area were selected for analysis via the Australasian Bat Society's BatMap (Australasian Bat Society, 2021).

In accordance with recommendations contained within the *Bat Calls of NSW* key (Pennay *et al.*, 2004), call sequences containing less than three consecutive pulses were excluded from analysis due to insufficient information to allow for accurate identification. Manual confirmation of species identification was achieved by comparing call spectrograms and derived metrics of labelled files with those of regionally relevant reference calls and/or with published call descriptions (e.g., Milne, 2002; Reinhold *et al.*, 2001). The likelihood of species' occurrence in the Project Area was confirmed by referring to relevant distributional information (e.g., Australasian Bat Society, 2021; Churchill, 2008; van Dyck *et al.*, 2013).

From the resultant data, two statistical analyses were undertaken to provide support of the findings. Initially, a principal component analysis (PCA) was performed to visualise the metrics of each recording in two dimensions. Secondly, hierarchical clustering was performed on the average metric data to produce a dendrogram. After combining the clustering and the PCA plot, visual inspection of all three plots highlighted possible clustering and outliers different to those labelled during the automated stage.

2.2 Reporting Standard

The format and contents of this report follow the Australasian Bat Society standards for the interpretation and reporting of bat call data (Reardon, 2003), available on-line at <http://www.ausbats.org.au/>.

Species nomenclature follows Armstrong *et al.* (2020). Status of species is current under the New South Wales *Biodiversity Conservation Act* 2016 (BC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act).

3.0 Results

Over the span of the survey period, 259 (2 %) of the 10,905 recordings contained valid calls meeting or exceeding the minimum requirements for identification laid out by Pennay *et al.* (2004) as shown in **Table 1**. Representative calls for all species recorded can be found in **Appendix 1**. A summary of the species found per detector can be found in **Table 2**.

Table 1 Valid and Invalid Recordings per Detector

Detector	Location	Dates Deployed (nights)	Valid	Invalid	Total
Swift 536809	-33.90205, 150.76139	15 th December - 18 th December (4)	46 (3 %)	1430	1476
Swift 657562	-33.89848, 150.76382	15 th December - 16 th December (2)	25 (1 %)	3522	3547
Chorus 743399	-33.89532, 150.76459	15 th December - 18 th December (4)	188 (3 %)	5694	5882
Total			259 (2 %)	10646	10905

Table 2 Species List per Site

Species	BC Act	536809	657562	743399	Total
Conclusive					
<i>Austronomus australis</i> (White-striped Free-tailed Bat)		0	0	7	7
<i>Chalinolobus gouldii</i> (Gould's Wattled Bat)		3	19	102	124
<i>Miniopterus orianae oceanensis</i> (Eastern Bent-winged Bat)	V	14	0	1	15
<i>Ozimops ridei</i> (Ride's Free-tailed Bat)		2	0	9	11
<i>Vespadelus pumilus</i> (Eastern Forest Bat)		23	0	37	60
Inconclusive					
<i>Chalinolobus gouldii</i> (Gould's Wattled Bat) or <i>Ozimops ridei</i> (Ride's Free-tailed Bat)		0	6	19	25
<i>Vespadelus pumilus</i> (Eastern Forest Bat) or <i>Vespadelus vulturnus</i> (Little Forest Bat)		4	0	13	17

Note. **Bold** species are listed under the BC Act. V = Vulnerable.

The results presented in **Figure 2** and **Figure 3** show all valid calls as their principal components based on the calculated average metrics for each recording. **Figure 2** is coloured by species identified in the analysis. **Figure 3** is coloured by the clusters identified through hierarchical clustering, where the number of clusters was chosen based on the optimal Average Silhouette Width.

Figure 2 Principal Component Analysis Plot Coloured by PteronSpectra Identification

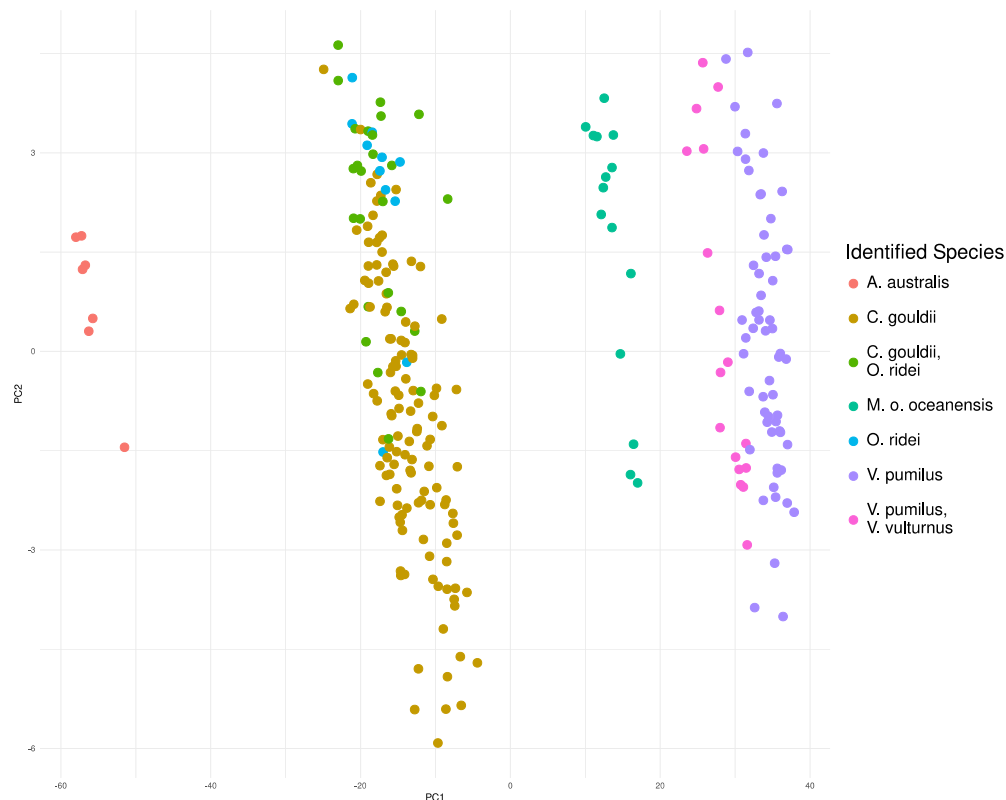
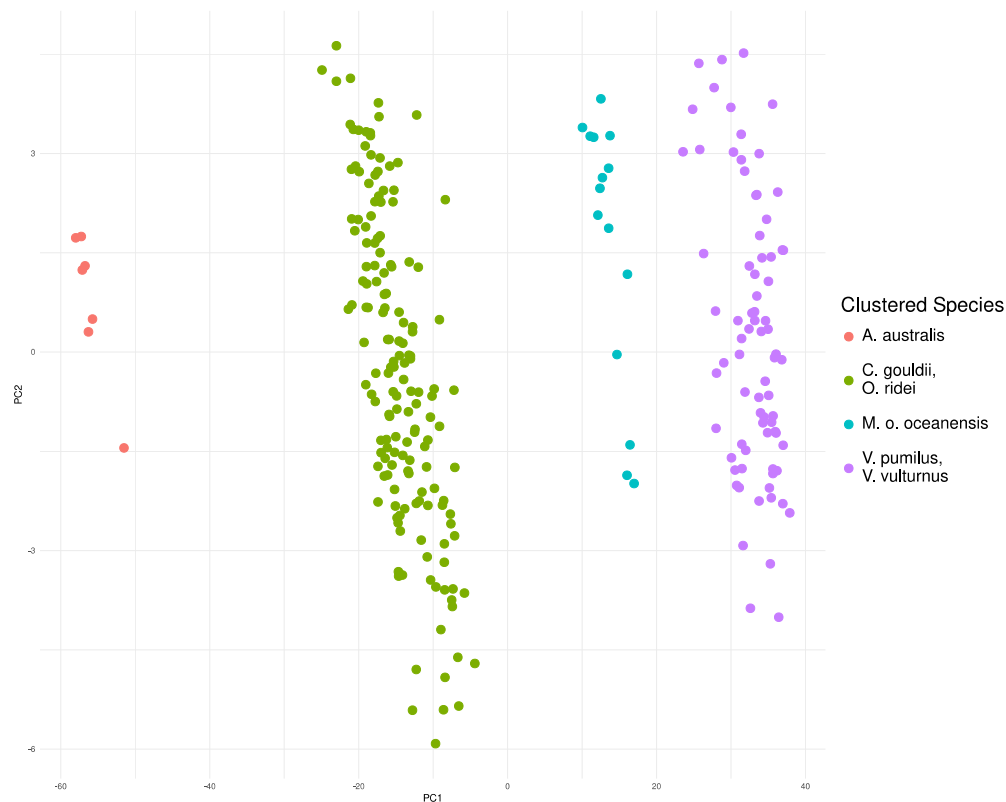


Figure 3 Principal Component Analysis Plot Coloured by Hierarchical Clustering



4.0 Discussion

The PCA plots shown in **Figure 2** and **Figure 3** highlight the challenge of differentiating species with similar call parameters from bio-acoustic surveys, illustrated by the overlapping clustering of many of the sympatric species identified. However, as a confirmatory tool, the resultant clustering patterns of the hierarchical cluster analysis (**Figure 3**) suggests a statistical alignment with the species identification from the available data (**Figure 2**). Visual confirmation of known calls against the representative examples from the analysis, verified the findings of this report.

5.0 Conclusion

Call sequences of *Austronomus australis*, *Chalinolobus gouldii*, *Miniopterus orianae oceanensis*, *Ozimops ridei*, and *Vespadelus pumilus* were identified over the four nights in the Maverick Project Area. Additionally, calls of *Vespadelus vulturnus* were also possibly detected. These call sequences, however, contain non-differentiating characteristics and due to the distribution falling within the project area it must be included in this report.

Miniopterus orianae oceanensis is listed as Vulnerable under the BC Act.

6.0 References

Armstrong, K.N., Reardon, T.B., and Jackson, S.M., 2020. *A current taxonomic list of Australian Chiroptera*. Australasian Bat Society. Version 2020-06-09. Available at: <https://www.ausbats.org.au/species-list.html>.

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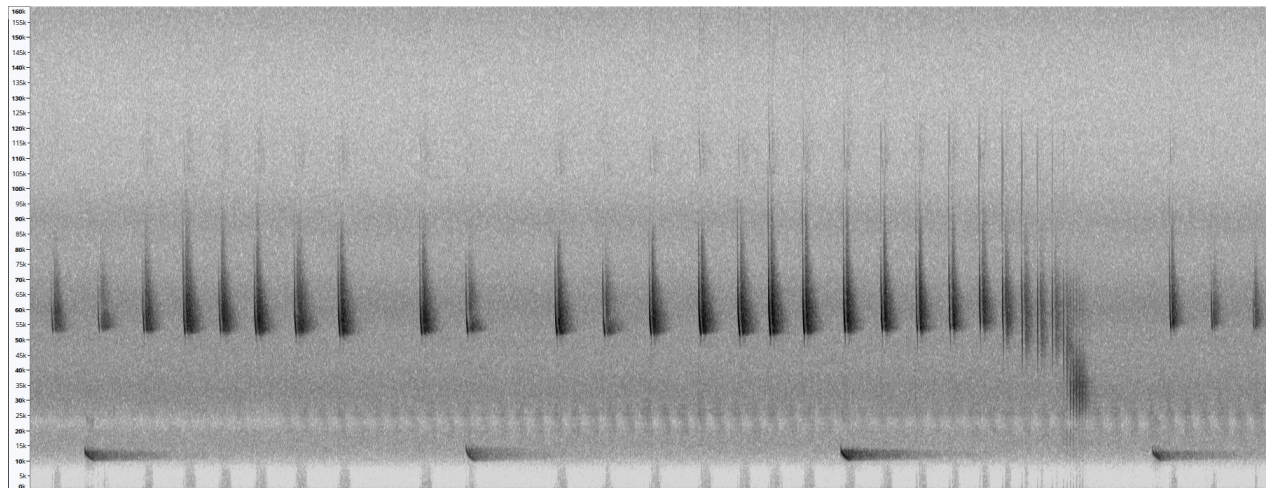
Pennay, M., Law, B., Reinhold, L., 2004. *Bat calls of New South Wales: Region based guide to the echolocation calls of Microchiropteran bats*. NSW Department of Environment and Conservation, Hurstville

Reardon, T., 2003. Standards in bat detector based surveys. *Australasian Bat Society Newsletter*, 20, pp.41-43.

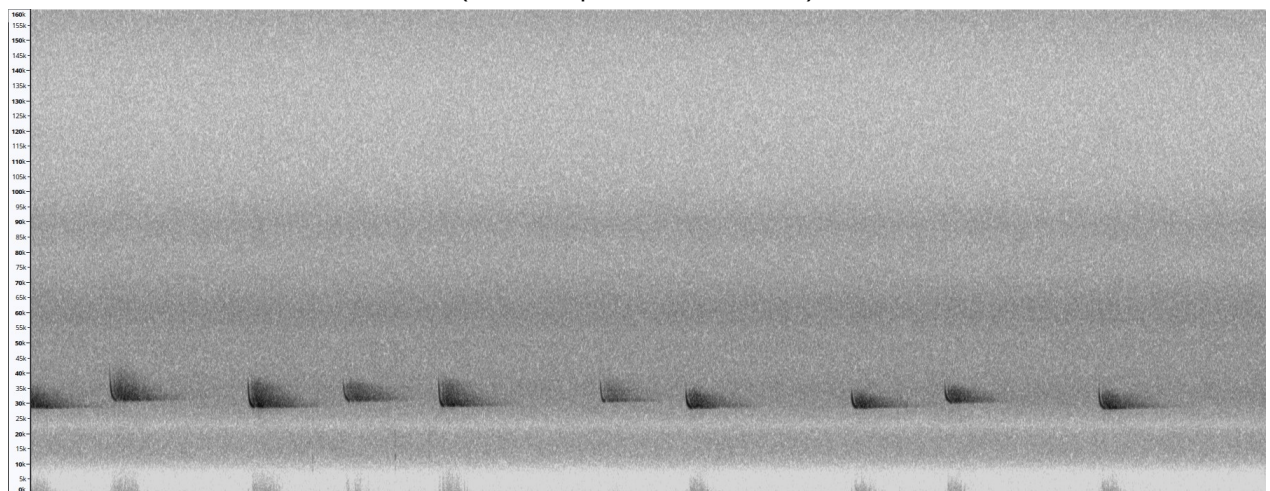
Reinhold, L., Law, B., Ford, G. and Pennay, M., 2001. *Key to the bat calls of south-east Queensland and north-east New South Wales*. Forest Ecosystem Research and Assessment Technical Paper, 7.

van Dyck, S., Gynther, I. and Baker, A., 2013. *Field companion to the mammals of Australia*. New Holland Publishers.

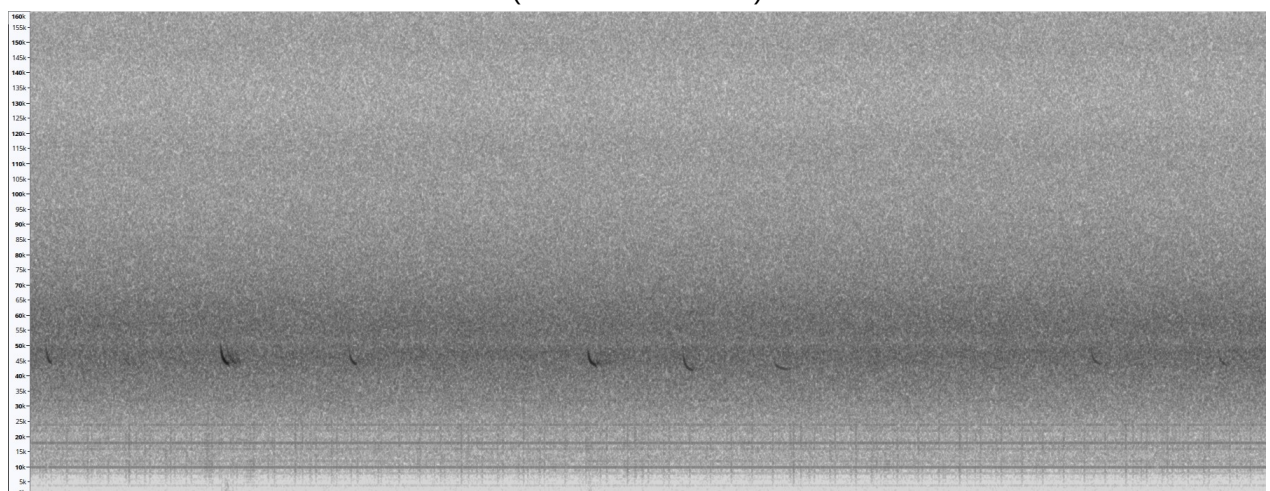
Appendix 1



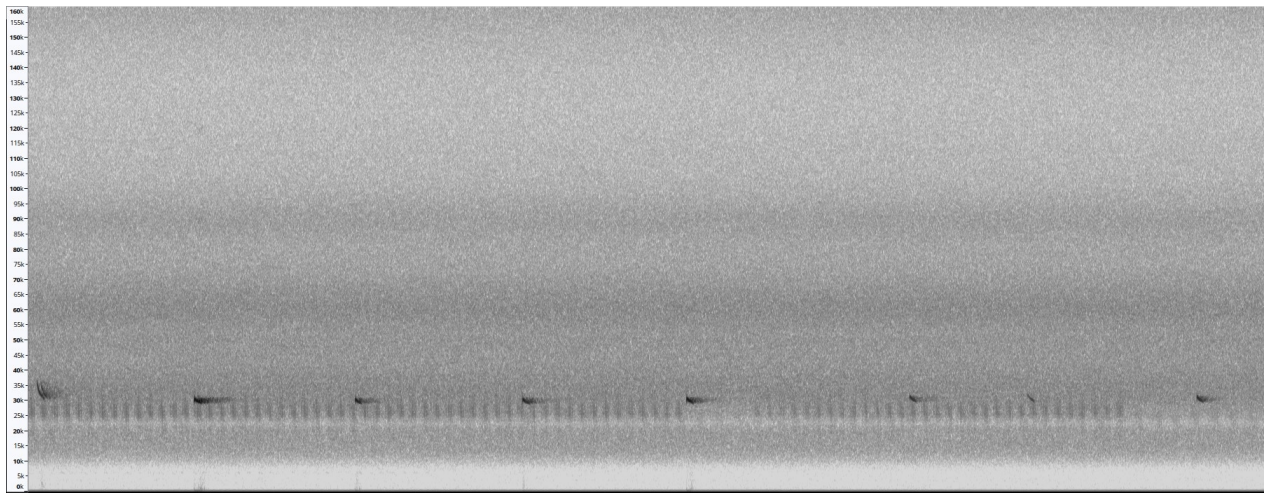
Austronomus australis
(White-striped Free-tailed Bat)



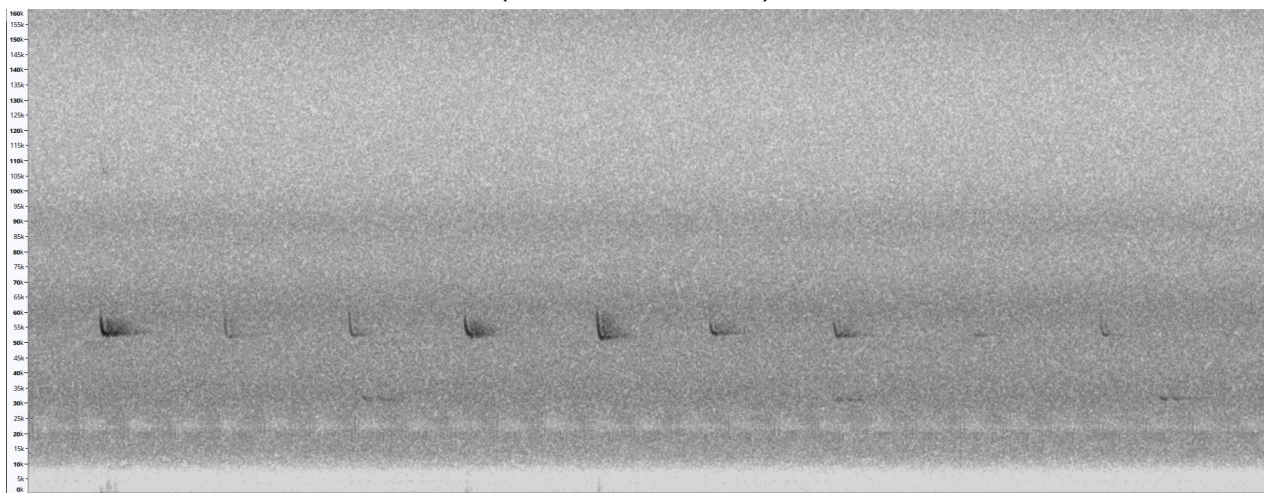
Chalinolobus gouldii
(Gould's Wattled Bat)



Miniopterus orianae oceanensis
(Eastern Bent-winged Bat)



Ozimops ridei
(Ride's Free-tailed Bat)



Vespadelus pumilus
(Eastern Forest Bat)

Revision history

Revision No.	Revision date	Details	Prepared by	Reviewed and Approved by
V1	Draft	Draft for Client Review	Isaac Floyd	
V1.1	Final	Final for Client	Isaac Floyd	Alix Murray

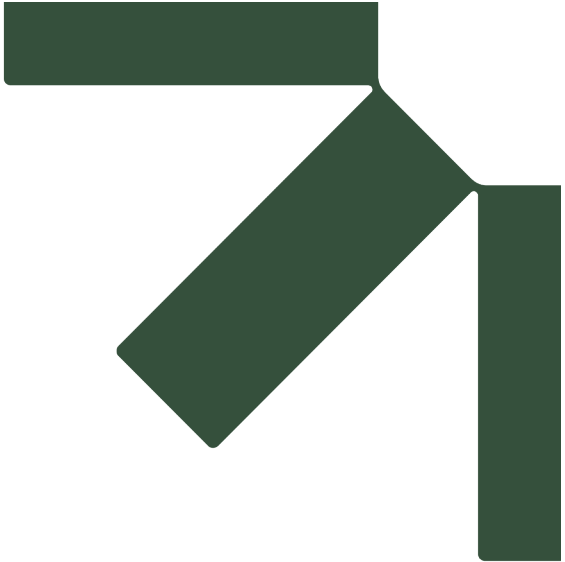
Distribution list

Copy #	Date	Type	Issued to	Name
V1	12 January 2026	Electronic	SLR Consulting	Alix Murray
V1.1	19 January 2026	Electronic	SLR Consulting	Alix Murray

Citation: Night Time Ecology, 2026, *Bioacoustic Analysis of Maverick Data*, Report to SLR Consulting.

Report compiled by Night Time Ecology

ABN: 98 900 740 332



Appendix E **BAM-C Credit Summary**

Biodiversity Development Assessment Report

225 - 245 Martin Road, Bradfield Bulk Earthworks, Rehabilitation and Quarrying SSD-97711727

Goodman Property Services (Aust) Pty Ltd

SLR Project No.: 625.010786.00001

20 March 2026

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00064745/BAAS19019/26/00064746	SSD 97711727	05/08/2025
Assessor Name	Report Created	BAM Data version *
Matthew Freeman	20/03/2026	Current classification (live - default) (82)
Assessor Number	BAM Case Status	Date Finalised
BAAS19019	Finalised	20/03/2026
Assessment Revision	BOS entry trigger	Assessment Type
0		Major Projects

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

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

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAIL	Ecosystem credits
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BAM Credit Summary Report

Cumberland Red Gum Riverflat Forest												
5	4025_Degraded	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	58.6	26.8	0.16	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		2
6	4025_Grassland	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	9.5	9.5	5.5	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		0
										Subtotal		2
Cumberland Shale Plains Woodland												
1	3320_Copy	Cumberland Plain Woodland in the Sydney Basin Bioregion	41.3	41.3	0.07	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	2

BAM Credit Summary Report

2	3320_Grassland	Cumberland Plain Woodland in the Sydney Basin Bioregion	8.2	8.2	0.65	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	0
											Subtotal	2
Southern Lower Floodplain Freshwater Wetland												
3	3975_Artificial	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	52.6	52.6	0.03	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		1

BAM Credit Summary Report

4	3975_Natural	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	71	71.0	0.52	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		18
											Subtotal	19
											Total	23

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAI	Species credits
----------------------	--	-----------------------------	-----------------------------------	-------------------------------------	-------------------------------------	-----------------------	-------------------------	---------------	-----------------



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00064745/BAAS19019/26/00064746	SSD 97711727	05/08/2025
Assessor Name	Assessor Number	BAM Data version *
Matthew Freeman	BAAS19019	Current classification (live - default) (82)
Proponent Names	Report Created	BAM Case Status
	20/03/2026	Finalised
Assessment Revision	BOS entry trigger	Assessment Type
0		Major Projects
Date Finalised	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
20/03/2026		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered Ecological Community	3320-Cumberland Shale Plains Woodland
Species		
Nil		



BAM Biodiversity Credit Report (Like for like)

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

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

BAM Biodiversity Credit Report (Like for like)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3320-Cumberland Shale Plains Woodland	Cumberland Plain Woodland in the Sydney Basin Bioregion	0.7	2	0	2
3975-Southern Lower Floodplain Freshwater Wetland	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	0.6	0	19	19
4025-Cumberland Red Gum Riverflat Forest	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	5.7	2	0	2

3320-Cumberland Shale Plains Woodland	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Cumberland Plain Woodland in the Sydney Basin Bioregion This includes PCT's: 3319, 3320	-	3320_Canopy	Yes	2	Cumberland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Cumberland Plain Woodland in the Sydney Basin Bioregion This includes PCT's: 3319, 3320	-	3320_Grassland	No	0	Cumberland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

3975-Southern Lower Floodplain Freshwater Wetland	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 1738, 3958, 3959, 3961, 3962, 3964, 3965, 3967, 3971, 3973, 3975, 3976	-	3975_Artificial	No	1	Cumberland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 1738, 3958, 3959, 3961, 3962, 3964, 3965, 3967, 3971, 3973, 3975, 3976	-	3975_Natural	No	18	Cumberland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

3975-Southern Lower Floodplain Freshwater Wetland						
4025-Cumberland Red Gum Riverflat Forest	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 3145, 3181, 3185, 3188, 3192, 3258, 3328, 4024, 4025, 4039, 4041, 4058, 4138	-	4025_Degraded	Yes	2	Cumberland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

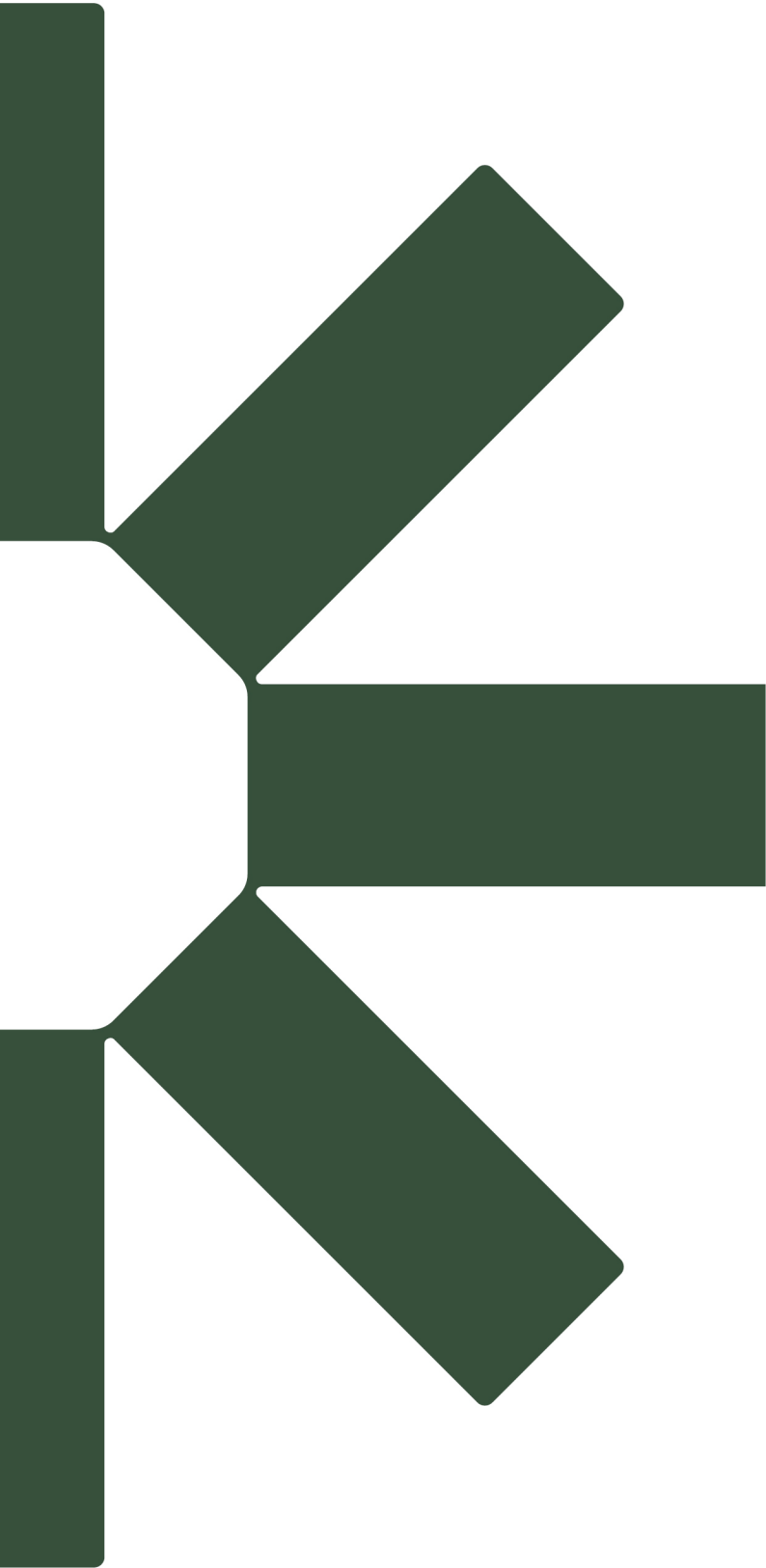
	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 3145, 3181, 3185, 3188, 3192, 3258, 3328, 4024, 4025, 4039, 4041, 4058, 4138	-	4025_Grassland	No	0	Cumberland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options



Making Sustainability Happen