



Mamre Road Data Centre Campus (SSD-92743706)

Biodiversity Development Assessment Report

Final Report

Prepared for Plan Project Management

2 February 2026

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Biosis acknowledges the Aboriginal and Torres Strait Islander peoples as Traditional Custodians of the land on which we live and work.

We pay our respects to the Traditional Custodians and Elders past and present and honour their connection to Country and ongoing contribution to society.

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Contents

Contents	ii
Definitions and abbreviations	vii
Summary	x
Certification and declarations	xiii
Stage 1 – Biodiversity assessment	1
1.1 Project description	1
1.2 Purpose of this assessment	2
1.3 The subject land, development site, development footprint and assessment area	2
1.4 Sources of information	3
1.5 Legislative requirements	4
1.5.1 Summary of SEARs compliance (SSD-92742706)	5
2 Landscape context	7
2.1 Subject land description	7
2.1.1 Soil landscape	7
2.1.2 NSW (Mitchell) Landscape	8
2.1.3 Native vegetation cover	9
2.1.4 IBRA Bioregions and subregions	9
2.1.5 Waterways	10
2.1.6 Wetlands	10
2.1.7 Hydrology	10
2.1.8 Geological features of significance	10
2.1.9 Areas of outstanding biodiversity value	10
2.1.10 Mapped Important Areas	10
2.1.11 Connectivity	11
2.1.12 Additional landscape features	11
3 Native vegetation	15
3.1 Native vegetation and habitat assessment	15
3.1.1 Native vegetation extent	15
3.1.2 Review of existing information	15
3.1.3 Field investigation of biodiversity values	15
3.1.4 Local data	16
3.2 Vegetation results	17
3.2.1 Non-native vegetation	17
3.2.2 Plant community types	18
3.2.3 Threatened ecological communities	23
3.3 Vegetation integrity assessment	24
3.3.1 Vegetation zones and patch size class	24
3.3.2 Vegetation integrity	24
3.3.3 Vegetation integrity score	25
4 Threatened species	31

4.1	Ecosystem credit species.....	31
4.2	Species credit species	32
4.2.1	Excluded candidate species	33
4.2.2	Assessed candidate species	36
4.2.3	Threatened species survey details.....	38
4.2.4	Incidental flora and fauna surveys.....	48
4.2.5	Appropriate local data.....	50
4.2.6	Expert reports.....	50
4.2.7	Threatened species summary and polygons.....	50
Stage 2 — Impact assessment (Biodiversity Values).....		52
5	Avoid and minimise impacts.....	53
6	Impacts that are unable to be avoided	56
6.1	Direct impacts	56
6.1.1	Loss of hollow bearing trees	57
6.2	Indirect impacts.....	57
6.3	Prescribed impacts	65
6.3.1	Non-native vegetation.....	68
6.3.2	Habitat connectivity.....	68
6.3.3	Vehicle strikes.....	69
6.4	Impacts considered uncertain	69
6.5	Impacts to Groundwater Dependent Ecosystems (GDE)	70
7	Mitigation and management of impacts.....	73
7.1	Adaptive management strategy.....	76
8	Serious and irreversible impacts.....	77
9	Impact summary.....	79
9.1	Identification of impacts requiring offset.....	79
9.1.1	Impacts to native vegetation (ecosystem credits).....	79
9.1.2	Impacts to threatened species and their habitat.....	80
9.2	Identification of impacts not requiring offset.....	80
9.3	Identification of areas not requiring impact assessment.....	80
10	Biodiversity credit report.....	82
11	Assessment against biodiversity legislation	87
11.1	<i>Environment Protection and Biodiversity Conservation Act 1999</i>	87
11.2	<i>Biodiversity Conservation Act 2016.....</i>	88
11.3	<i>Fisheries Management Act 1994.....</i>	88
11.4	<i>Water Management Act 2000</i>	89
11.5	<i>Environmental Planning and Assessment Act 1979.....</i>	90
11.5.1	State Environmental Planning Policies.....	90
11.5.2	The Cumberland Plain Conservation Plan (CPCP).....	92
11.5.3	State Environmental Planning Policy (Precincts – Western Parkland City) 2021	92
11.5.4	Western Sydney Aerotropolis 2020	92

11.6	Biosecurity Act 2015	92
11.7	Local Land Services Act 2013.....	93
12	Conclusion.....	94
	References.....	96
	Appendices	101
Appendix 1	Survey methods	102
Appendix 1.1	Nomenclature.....	102
Appendix 1.2	Permits and licences.....	102
Appendix 1.3	Limitations.....	102
Appendix 2	BAM Candidate species assessment.....	103
Appendix 3	Flora	127
Appendix 3.1	BAM plot field data.....	127
Appendix 3.2	BAM plot data sheets.....	142
Appendix 4	SAIL	162
Appendix 4.1	Cumberland Plain Woodland CEEC	162
Appendix 5	Significant Impact Criteria assessments	169
Appendix 5.1	Cumberland Plain Shale Woodlands (Critically Endangered Ecological Community).....	169
Appendix 5.2	Swift Parrot (Critically Endangered species)	173
Appendix 5.3	Australian Painted Snipe (Endangered species).....	177
Appendix 6	Cumberland Ecology fauna survey map.....	180
Tables		
Table 1	BDAR compliance with SEARs requirements	5
Table 2	Non-native vegetation	17
Table 3	PCT 3320 Cumberland Shale Plains Woodland.....	18
Table 4	PCT 3975 Southern Lower Floodplain Freshwater Wetland	22
Table 5	Summary of BC Act TECs within the subject land	23
Table 6	Summary of EPBC Act TECs within the subject land	23
Table 7	Native vegetation zones within the subject land	24
Table 8	Native vegetation BAM plots completed within the subject land	25
Table 9	Vegetation zone integrity scores for the subject land	25
Table 10	Ecosystem credit species (predicted species) with potential to occur	31
Table 11	Excluded candidate species credit species	33
Table 12	Candidate flora species credit species	36
Table 13	Candidate fauna species credit species	37
Table 14	Weather observations during targeted flora and fauna surveys (near Kemps Creek, NSW).....	39
Table 15	Targeted flora survey personnel and relevant experience.....	40
Table 16	Summary of targeted flora survey method and results	40

Table 17	Habitat features with potential to support threatened species credit species in the subject land	42
Table 18	Targeted diurnal birds (raptors) survey personnel and relevant experience	43
Table 19	Summary of targeted diurnal birds (raptors) survey method and results	43
Table 20	Targeted diurnal birds (raptors) survey personnel and relevant experience	44
Table 21	Summary of targeted diurnal birds (raptors) survey method and results	45
Table 22	Targeted nocturnal bird survey personnel and relevant experience	46
Table 23	Summary of nocturnal bird survey method and results	46
Table 24	Incidental mammal survey personnel and relevant experience	47
Table 25	Summary of incidental mammal survey method and results	47
Table 26	Threatened species polygons within the subject land	50
Table 27	Summary of direct impacts to vegetation in the subject land	57
Table 28	Summary of direct impacts species credit habitat in the subject land	57
Table 29	Assessment of indirect impacts	58
Table 30	Identification of prescribed impacts	66
Table 31	Measures to mitigate and manage impacts	73
Table 32	Offsets required (ecosystem credits)	79
Table 33	Offsets required (species credits)	80
Table 34	Assessment of the proposed development against the EPBC Act	87
Table 35	Priority weeds within the subject land	93

Appendix tables

Table A 1	Threatened flora species assessment	103
Table A 2	Threatened fauna species assessment	114
Table A 3	BAM plot floristics (P01 to P05)	127
Table A 4	BAM plot floristics (P08 to P11)	133
Table A 5	BAM plot summary (part 1)	139
Table A 6	BAM plot summary (part 2)	140
Table A 7	BAM plot summary (part 3)	141
Table A 8	Assessment of SAIL for the Cumberland Plain Woodland CEEC	162
Table A 9	SIC assessment for the Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest CEEC	170
Table A 10	SIC assessment for Swift Parrot (CE, EPBC Act)	174
Table A 11	SIC assessment for Australian Painted Snipe (EN, EPBC Act)	177

Figures

Figure 1	Subject land	6
Figure 2	Site map	12
Figure 3	Location map	13
Figure 4	Native vegetation extent	14
Figure 5	Vegetation within the subject land	27
Figure 6	Vegetation zones and plot locations	28

Figure 7	Patch size locations.....	29
Figure 8	TECs within the subject land	30
Figure 9	Targeted species mapping.....	49
Figure 10	Threatened species polygons.....	51
Figure 11	Final development footprint	54
Figure 12	Avoidance.....	55
Figure 13	Estimated zones of indirect impact for the proposal	71
Figure 14	Prescribed impacts	72
Figure 15	Serious and irreversible impacts.....	78
Figure 16	Impacts requiring offsets, not requiring offset, not requiring assessment	81

Definitions and abbreviations

Assessment Area	All land within 1500 m of the subject land
BAM	NSW Biodiversity Assessment Method 2020
BAM-C	BAM Calculator
BC Act	<i>Biodiversity Conservation Act 2016</i>
BCAR	Biodiversity Certification Assessment Report
BCT	Biodiversity Conservation Trust
BDAR	Biodiversity Development Assessment Report
BSSAR	Biodiversity Stewardship Site Assessment Report
Biosecurity Act	<i>Biosecurity Act 2015</i>
BOS	Biodiversity Offsets Scheme
BV Map	NSW Biodiversity Values Map and Threshold Tool (NSW DCCEEW 2025a)
CBD	Central Business District
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
CPCP	Cumberland Plain Conservation Plan
Cth DCCEEW	Australian Commonwealth Department of Climate Change, Energy, the Environment and Water
DBH	Diameter at Breast Height
DCDB	Digital cadastral database
DTDB	Digital topographic database
Development footprint	The area of land that is directly impacted by the Project's proposed development within the development site
Development site	The broader area in which the subject land is located, consistent with Lot 10 DP1280592. Synonymous with the 'study area'.
DGPS	Differential Global Positioning System
DoIW	Directory of Important Wetlands
DP	Deposited Plan
DPI	NSW Department of Primary Industries
DTDB	Digital topographic databases
Ecosystem credits	A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur with a PCT. Ecosystem credits measure the loss in biodiversity values at a development
Ecosystem credit species	Threatened species whose occurrence can generally be predicted by vegetation surrogates and/or landscape features, or that have a low probability of detection using targeted surveys. A targeted survey is not required to identify or confirm the presence of ecosystem credit species.

EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
FM Act	<i>Fisheries Management Act 1994</i>
GDE	Groundwater Dependent Ecosystem
GIS	Geographic Information System
GPS	Global Positioning System
ha	Hectares
IBRA	Interim Biogeographic Regionalisation of Australia
LEP	Local Environmental Plan
LGA	Local Government Area
Locality	Area located within 10 km radius from the subject land
LPI	NSW Land and Property Information
MNES	Matters of National Environmental Significance protected by a provision of Part 3 of the EPBC Act
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
PCT	Plant Community Type
the proposed development	The proposed development associated with the Project comprising approximately 26 four-storey data centre buildings including six technical office buildings and a campus office, incoming and internal electrical substations and associated infrastructure. The development site will be subject to site preparation, including earthworks, stormwater, sewer, roads, and associated infrastructure.
the Project	The data centre campus development at 706-752 Mamre Road, Kemps Creek, NSW
SAIL	Serious and Irreversible Impact
SALIS	NSW Soil and Land Information System
SEARs	Secretary's Environmental Assessment Requirements
SEPP	NSW State Environmental Planning Policy
SIS	Species Impact Statement
Species credits	A class of biodiversity credits required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates
Species credit species	Threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence or components of their habitat. A targeted survey or an expert report is required to confirm the presence of these species on the subject land. Alternatively, the proponent may elect to assume the species is present for development/clearing projects only.
SSD	State Significant Development
SSDA	State Significant Development Application

Subject land	The subject land is the area subject to this BDAR within the development site that is non-certified and categorised as 'Excluded Land' in the CPCP area.
TEC	Threatened Ecological Community
TBDC	Threatened Biodiversity Data Collection
TPZ	Tree Protection Zone
WM Act	<i>Water Management Act 2000</i>
WHS	Work Health and Safety

Summary

The Project

Mamre Road Data Centre Campus (the Project) is proposed to be developed at Lot 10 DP1280592, 706-752 Mamre Road in Kemps Creek, NSW (the development site) (Figure 1).

The development site is proposed for development under a State Significant Development Application (SSDA) as a data centre campus comprising:

- Approximately 26 shells across four-storeys data centre buildings (4x four shells and 2x five shells), including six technical office buildings, plus a campus office.
- Incoming and internal electrical substations and associated infrastructure.
- Site preparation, including earthworks, stormwater, sewer, roads, and associated infrastructure.

The Project's development footprint will involve development site preparation works including the demolition of an existing structure, the infill of man-made dams, and removal of vegetation to allow for the Project's associated infrastructure.

The development footprint is largely contained within 706-752 Mamre Road, Kemps Creek (Lot 10 DP 1280592). The development site also includes areas across the shared boundaries to the east and south, utilised to facilitate roadworks and bulk earthworks. These areas include:

- Gibb Group site to the East known as 1-22 Bakers Lane, Kemps Creek (Lot 40 in DP 709347).
- GPT Group site to the South known as 754 Mamre Road, Kemps Creek (Lot 180 in DP 1290397).

Additionally, power supply lead-in from Sydney-West Substation is proposed as part of the development, which traverses through multiple landholdings.

The Project is considered a State Significant Development (SSD), registered as SSD-92743706, and will be assessed under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). As the Project is an SSD, Planning Secretary's Environmental Assessment Requirements (SEARs) have been released for the project which require that an Environmental Impact Statement (EIS) be prepared for the Project, supported by various environmental studies. For biodiversity, the SEARs require that an assessment of the proposal's biodiversity impacts be undertaken in accordance with the NSW *Biodiversity Conservation Act 2016*, which requires the preparation of a Biodiversity Development Assessment Report (BDAR). The BDAR needs to be prepared by an Accredited Assessor in accordance with the *Biodiversity Assessment Method* (BAM) (DPIE 2020a).

Biodiversity certification

The Project is located within the area covered by the Cumberland Plain Conservation Plan (CPCP) and includes land that is categorised as 'Certified – Urban Capable Land' and 'Excluded Land'. Land categorised as 'Excluded Land' is not certified under the BC Act or Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and requires full assessment in this BDAR. This non-certified area is referred to hereafter as the 'subject land'. The remaining land categorised as 'Certified - Urban Capable Land' is biodiversity certified and is referred to hereafter as 'certified land'. Full application of the BAM is not required for the certified land in the development site.

However, assessment of the certified land in the development site is still required under the NSW *Fisheries Management Act 1994* (FM Act), the NSW *Water Management Act 2000* (WM Act) and the NSW *Biosecurity Act 2012* (Biosecurity Act), as well as other relevant planning and biodiversity legislation, and is considered in this BDAR. This BDAR refers to and utilises data from surveys conducted in the development site more broadly to inform assessments for the subject land.

Biodiversity values and assessment

The subject land has been previously assessed by Cumberland Ecology through a BDAR for the *Summit at Kemps Creek – 706-752 Mamre Road* project (SSD-30628110) (Cumberland Ecology 2025). Where relevant, Biosis has reviewed the findings of Cumberland Ecology against of our own survey work. Biosis completed field investigations in accordance with the BAM of the subject land in September and October 2025, whilst broadly considering the development site and certified land for context to the subject land.

This BDAR for the subject land has been prepared by Biosis Senior Botanist Jessica Chapman, as overseen by Biosis Accredited Assessor Jake Schwebel (BAAS25013). This BDAR describes the outcome of the Project's development assessment case (00060716/BAAS25013/25/00060717) conducted consistent with the BAM.

During the field investigations, Biosis recorded 1.35 hectares of native vegetation within the subject land, representing two Plant Community Types (PCTs) and three threatened ecological communities (TECs). The PCTs present are PCT 3320 Cumberland Shale Plains Woodland and PCT 3975 Southern Lower Floodplain Freshwater Wetland. The vegetation integrity (VI) scores of the vegetation to be impacted was calculated as a range between 11.6 and 58.8.

In the subject land PCT 3320 conforms to the BC Act listed *Cumberland Plain Woodland in the Sydney Basin Bioregion* (Cumberland Plain Woodland) Critically Endangered Ecological Community (CEEC), and in some areas also conforms to the EPBC Act listed *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* (Cumberland Plain Shale Woodlands) CEEC. In the subject land, PCT 3975 conforms to the BC Act listed *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (Freshwater Wetlands on Coastal Floodplains) Endangered Ecological Community (EEC).

Avoidance and minimisation

The site itself has been selected as it has been identified for development by being certified as urban capable under the CPCP, thereby avoiding unsuitable areas that have greater biodiversity values. As the development footprint for the Project will impact the entire development site, including mainly certified land and the smaller area of non-certified land (subject land), further considerations during design and planning have largely been focused on reducing indirect and prescribed impacts of the Project. Consideration has been given to avoiding and minimising indirect and prescribed impacts to biodiversity in the assessment area more broadly. Mitigation and management measures will be implemented pre-construction, during construction and post construction by the Project team to adequately address impacts associated with the Project, including indirect and prescribed impacts.

Residual biodiversity impacts and offsets

As such, in accordance with Section 10 of the BAM, offsets are required to be secured for the proposed development, as follows:

- 15 ecosystem credits for PCT 3320 in Moderate - regrowth condition.
- 5 ecosystem credits for PCT 3320 in Low condition.

- 12 ecosystem credits for PCT 3975 in Moderate condition.
- Southern Myotis *Myotis macropus* (previously recorded by Cumberland Ecology (2025) for habitat in the subject land including:
 - 12 species credits for PCT 3320 in Moderate - regrowth condition.
 - 3 species credits for PCT 3320 in Low condition.
 - 1 species credit for PCT 3220 in Derived Native Grassland (DNG) condition.
 - 12 species credits for PCT 3975 in Moderate condition.
- 12 species credits for *Maundia triglochoides* (assumed present) in the subject land for PCT 3975 in Moderate condition.
- 12 species credits for *Persicaria elatior* (assumed present) in the subject land for PCT 3975 in Moderate condition.

Cumberland Plain Woodland in the Sydney Basin Bioregion (CEEC, BC Act) is considered to meet the principles for Serious and Irreversible Impacts (SAII) and will be impacted by the Project's development footprint. An SAI assessment has been included in this BDAR.

The project is not considered likely to result in a significant impact to threatened species or communities listed under the EPBC Act, and as such a referral to the Commonwealth Minister of the Environment and Water is not required.

Certification and declarations

I certify that this report has been prepared based on the requirements of, and information provided under the Biodiversity Assessment Method (DPIE 2020a) and s6.15 of the *Biodiversity Conservation Act 2016*.

In preparing this assessment I have acted in accordance with the Accredited BAM Assessor Code of Conduct.

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

Signature:

J. Schwebel

Date:

02/02/2026

**BAM Assessor Accreditation
Number:**

BAAS21053

Stage 1 – Biodiversity assessment

Biosis was commissioned by Plan Project Management (PPM) to undertake a biodiversity assessment of the proposed Mamre Road Data Centre Campus (the Project) at Lot 10 DP1280592, 706-752 Mamre Road in Kemps Creek, NSW (the development site).

PPM, acting as the proponent on behalf of the developer, is securing approvals for site preparation works for the construction of the Project in the development site (Figure 1), involving the demolition of an existing structure, the infill of man-made dams, and removal of vegetation to allow for the construction of the Project's associated infrastructure as detailed further in Section 1.1 below.

As the Project is an SDD, SEARs have been issued which require that an EIS be prepared for the Project, supported by various environmental studies. For biodiversity, the SEARs require that an assessment of the proposal's biodiversity impacts be undertaken in accordance with the NSW BC Act, which required that preparation of a BDAR. The BDAR needs to be prepared by an Accredited Assessor in accordance with the BAM (DPIE 2020a) and be submitted to the relevant approval authority along with the EIS. The purpose of this biodiversity assessment was to apply the NSW BAM (DPIE 2020a) to the development site and provide PPM with the required BDAR.

1.1 Project description

The site is proposed for development under a State Significant Development Application (SSDA) as a data centre campus comprising:

- Approximately 26 shells across four-storeys data centre buildings (4x four shells and 2x five shells), including six technical office buildings, plus a campus office.
- Incoming and internal electrical substations and associated infrastructure
- Site preparation, including earthworks, stormwater, sewer, roads, and associated infrastructure.

The Project occurs within land assessed under the CPCP and includes land categorised as 'Certified – Urban Capable Land' and 'Excluded land' (Figure 1). Land categorised as 'Excluded Land' is not certified under the BC Act and EPBC Act and requires full assessment in this BDAR. This non-certified area is referred to hereafter as the 'subject land'. The remaining land categorised as 'Urban - Capable Land' is biodiversity certified and is referred to hereafter as 'certified land'. Full application of the BAM is not required for the certified land in the development site. It is important to note that some of the area in the north of the subject land as assessed in this BDAR, falls largely within the footprint of the Southern Link Road development, and is assessed separately to this BDAR.

However, assessment of the certified land in the development site is still required under the FM Act, WM Act and Biosecurity Act (as well as other relevant biodiversity/planning adjacent legislation) which are considered in this BDAR. This BDAR refers to and utilises data from surveys conducted in the development site more broadly to inform assessments for the subject land.

The development site has also been assessed previously by Cumberland Ecology through a BDAR for the *Summit at Kemps Creek – 706-752 Mamre Road* project (SSD-30628110) (Cumberland Ecology 2025). Where relevant, Biosis has reviewed the findings of Cumberland Ecology against of our own survey work as part of the current assessment.

1.2 Purpose of this assessment

The purpose of this BDAR is to document the findings of biodiversity assessments undertaken for the Project in accordance with Stage 1 (Biodiversity Assessment) and Stage 2 (Impact Assessment) of the BAM. Biosis' aim for this BDAR is to provide a detailed biodiversity assessment utilising all information collected from the development site to date. Therefore, this BDAR will:

- Address the BAM (DPIE 2020a) and the BOS.
- Identify how the proponent has avoided and minimised impacts to biodiversity.
- Identify any potential impact that could be characterised as serious and irreversible.
- Describe the offset obligations required to compensate for any unavoidable biodiversity impacts resulting from the proposed development.
- Consider and assess the Project in accordance with other relevant legislation such as the Commonwealth EPBC Act.

1.3 The subject land, development site, development footprint and assessment area

The terms subject land, development site, development footprint and assessment area are used throughout this BDAR and are defined below:

- The development site is the area of land that is subject to the proposed development and is defined as Lot 10 DP1280592. It covers an area of approximately 52.8 ha and is defined as follows.
 - The development site is bounded in the north by Bakers Lane, by Mamre Road to the west, and private property to the south and east. The development site is approximately 12.5 km southwest of Blacktown Central Business District (CBD).
 - The development site is in the Penrith City Local Government Area (LGA), the Deerubbin Local Aboriginal Land Council area, and the Greater Sydney Local Land Services (LLS) region.
 - The development site is zoned as General Industrial IN1 and Infrastructure SP2 under the State Environmental Planning Policy (Industry and Employment) 2021.
 - The development site occurs in the CPCP area and includes certified 'Urban Capable Land' land and non-certified 'Excluded Land'.
- The development footprint includes all direct impacts from the proposed development in the development site including vegetation removal, infill of existing dams, construction and laydown areas and is approximately 52.8 ha (as described in Section 1.1 above). For this Project the development footprint is the whole development site, including the subject land as a section of this.
- The subject land is restricted to the area of non-certified 'Excluded land' within the development site which includes the northern and western edges of the development site. The subject land includes the areas of the development footprint subject to direct, indirect and prescribed impacts which are not certified under the CPCP and require full assessment under this BDAR. The subject land covers an area of approximately 7.18 ha.
- The assessment area includes the subject land and the area of land within the 1500 m buffer zone surrounding the subject land, as required under the BAM.

An additional term, 'certified land' is also used in this report which refers to the land in the development site which is categorised as 'Urban - Capable Land' under the CPCP.

The above areas are shown on Figure 1 at the end of this chapter.

1.4 Sources of information

Sources of information used in the assessment included relevant databases, spatial data, literature and previous site reports.

In order to provide a context for the assessment area, records of flora and fauna from within 5 kilometres (the locality) were collated from the following databases and datasets were reviewed:

- Australian Commonwealth Department of Climate Change, Energy, the Environment and Water (Cth DCCEEW) Protected Matters Search Tool (PMST) for matters protected by the EPBC Act.
- NSW BioNet - the database for the Atlas of NSW Wildlife, NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW), for species, populations and ecological communities listed under the BC Act.
- NSW BAM Calculator (BAM-C).
- Biodiversity values map (NSW DCCEEW 2025a).
- Native vegetation regulatory map.
- BAM Important Areas maps (NSW DCCEEW 2024a).
- PlantNET (The Royal Botanic Gardens and Domain Trust).
- BirdLife Australia, the New Atlas of Australian Birds 1998-2015.

Other sources of biodiversity information relevant to the assessment area were sourced from:

- Relevant vegetation mapping for the subject land:
 - The NSW Plant Community Types (PCTs), as held within the BioNet Vegetation Classification database (NSW DCCEEW 2024b).
 - The NSW State Vegetation Type Map (SVTM) (C2.0M2.0) (NSW DCCEEW 2024c).
 - Remnant Vegetation of the western Cumberland subregion, 2013 Update. VIS_ID 4207 (DPE 2015).
 - The Native Vegetation of the Sydney Metropolitan Area – VIS_ID 4489 (OEI 2016).

The following reports were also reviewed and to provide supporting information:

- *ISPT Summit @ Kemps Creek Biodiversity Development Assessment Report* (Cumberland Ecology 2025).

Basemap data was obtained from NSW Land and property information (LPI) 1:25,000 digital topographic databases, with cadastral data obtained from LPI digital cadastral database.

The following spatial datasets were utilised during the development of this report:

- Catchment Boundaries of New South Wales dataset.
- Mitchell Landscapes Version 3.0.
- Interim Biogeographic Regionalisation of Australia (IBRA) Version 7.
- Directory of Important Wetlands (DoIW).
- The Cumberland Plain Conservation Plan (CPCP) (DPE 2022a).

Mapping has been produced using a Geographic Information System (GIS). The following maps and data have been provided:

- Digital mapping with aerial photography showing 1:1000 or finer.
- Site map as described in subsection 3.1.1 of the BAM (DPIE 2020a).
- Location map as described in subsection 3.1.2 of the BAM (DPIE 2020a).
- Landscape map with features including 1,500 metre buffer, as described in section 3.1.3 of the BAM (DPIE 2020a).

1.5 Legislative requirements

The project has been assessed against relevant biodiversity legislation and government policy, including:

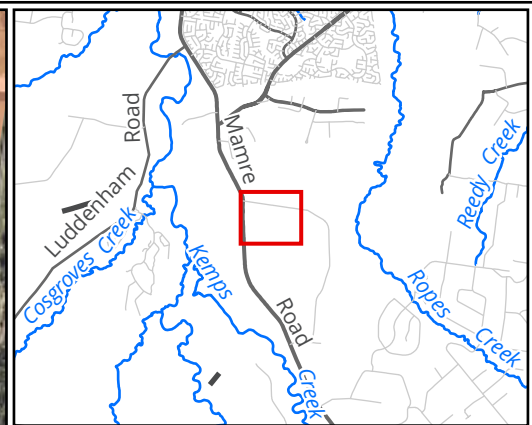
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *Biodiversity Conservation Act 2016* (BC Act).
- *Fisheries Management Act 1994* (FM Act).
- *Water Management Act 2000* (WM Act).
- *Biosecurity Act 2015* (Biosecurity Act).
- State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP).
- State Environmental Planning Policy (Industry and Employment) 2021 (Industry and Employment SEPP).
- State Environmental Planning Policy (Western Parkland City) 2021 (Western Parkland City SEPP).
- *Mamre Road Precinct Development Control Plan 2021* (MRP DCP).
- *Mamre Road Precinct Structure Plan*.
- *Cumberland Plain Conservation Plan* (CPCP).

1.5.1 Summary of SEARs compliance (SSD-92742706)

A key objective of this BDAR is to address the requirements of the BAM, as identified in the Project's specific SEARs, issued by the relevant regulatory authority. Table 1 outlines the compliance of this biodiversity assessment and BDAR with the designated SEARs requirements for Biodiversity.

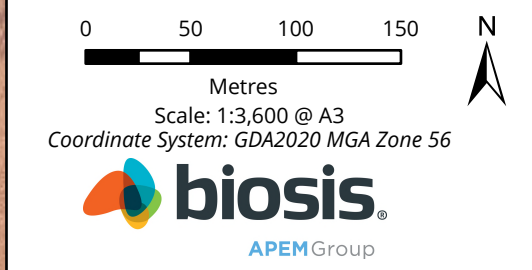
Table 1 BDAR compliance with SEARs requirements

Request Item	Summary Response
Biodiversity <i>An assessment of the proposal's biodiversity impacts in accordance with the Biodiversity Conservation Act 2016, including the preparation of a Biodiversity Development Assessment Report (BDAR) where required under the Act, except where a waiver for preparation of a BDAR has been granted. This includes any works within land identified as 'excluded' or 'avoided' under the CPCP."</i>	This BDAR satisfies this requirement. The BDAR has been prepared by Biosis on behalf of PPM to assess all biodiversity values of the subject land (i.e., those areas that are identified as 'Excluded Land' under the CPCP) and addresses all direct, indirect and prescribed impacts to the subject land due to the Project. This BDAR addresses the BC Act, EPBC Act, FM Act, WM Act, Biosecurity Act, SEPPs and guidelines relevant to the subject land and, where necessary, the broader development footprint.



- Legend**
- Subject land
 - Development site
 - Development footprint
 - Development footprint (not assessed in this BDAR)
- Land categories (CPCP)**
- Avoided land
 - Certified - urban capable land
 - Excluded land

Figure 1 Subject land



2 Landscape context

This chapter describes the landscape and site context of the subject land (Figure 1), describing the landscape features present within the subject land and the context of the broader development site (Figure 2) and within the 1500 metre buffer assessment area (Figure 3), as required by the BAM (DPIE 2020a).

2.1 Subject land description

The subject land is 7.18 hectares in size and sits within the 52.8-hectare development site. The subject land and development site are located south of Bakers Lane and east of Mamre Road and south of Erskine Park and northwest of Mount Vernon, NSW. Current land zones in the subject land are General Industrial IN1 and Infrastructure SP2 (Classified Road) under the State Environmental Planning Policy (Industry and Employment) 2021.

In the subject land, native vegetation is largely in fragmented patches, occurring as scattered trees over native grassland, with minimal shrubs in the midstorey. The subject land appears to have been subject to historical clearing and currently features large areas of non-native grassland and exotic shrubs and tree species that have been planted around the site of a dilapidated human-made housing structure. This building was demolished during remediation works in September 2025. The subject land includes three dams, one large and two small that have native fringing vegetation around the edges. The large dam in the east of the subject land connects to an unnamed non-perennial watercourse to the south that runs through the development site to the east.

The subject land lies within the:

- Sydney Basin Bioregion.
- Sydney Coast-Georges River Basin (Georges River catchment).
- Greater Sydney Local Land Services Management Area.

Within the broader assessment area, a broad range of natural and man-made features contextualise the subject land, including industrial and school buildings, residential suburbs, rural properties, patches of native vegetation and watercourses. Land directly west and south of the subject land has recently been developed, whereas land to the north and east features remnant patches of native vegetation, providing the subject land with moderate connectivity to the wider locality, particularly eastwards to the riparian corridor associated with Ropes Creek.

2.1.1 Soil landscape

The subject land is within the Second Ponds Creek (spz) transferral soil landscape and the Luddenham (luz) erosional soil landscape as mapped in the *Soil and Landscape Resources of the Hawkesbury-Nepean Catchment* (DECCW 2008).

Seconds Ponds Creek soil landscape

The Second Ponds Creek transferral soil landscape occurs in the western portion of the subject land and development site and is characterised as foot slopes and plains on Colluvium/Alluvium and Wianamatta Group Shale (shale and colluvium) in the Cumberland Plain. Local relief is between 5-30 metres at altitudes of

10-112 metres, slopes of 0-3 percent and no rocky outcrops present. Soils are brown and yellow sodosols, and brown and yellow chromosols and kurosols.

This soil landscape typically supports Shale Plains Woodland and Alluvial Woodland communities, the former dominated by Forest Red Gum *Eucalyptus tereticornis* and Grey Box *Eucalyptus moluccana* trees, the latter dominated by Cabbage Gum *Eucalyptus amplifolia*, Rough-barked Apple *Angophora floribunda* and Forest Red Gum. Other species observed include Narrow-leaved Ironbark *Eucalyptus crebra*, Thin-leaved Stringybark *Eucalyptus eugenioides*, Spotted Gum *Corymbia maculata*, Parramatta Wattle *Acacia parramattensis*, Green Wattle *Acacia decurrens*, Native Cherry *Exocarpus cupressiformis*, Swamp Oak *Casuarina glauca* and Flax-leaved Paperbark *Melaleuca linariifolia* (DECCW 2008).

Luddenham soil landscape

The Luddenham erosional soil landscape occurs in the eastern portion of the subject land and development site and is characterised as hills and low rises on Wianamatta Group Bringelly Shale (shale, sandstone-lithic and siltstone/mudstone) in the Cumberland Plain and Blue Mountains Plateau. Local relief is between 30 and 100 metres at altitudes of 10-404 metres, slopes of 5-20 percent, with no rocky outcrops present. Soils are red kurosols and chromosols on crests and slopes, red kandosols on sandstone members, brown sodosols on foot slopes and lower slopes and brown dermosols on siltstone/mudstone members.

This soil landscape typically consists of extensively cleared Grey Box Woodland dominated by Grey Box and Forest Red Gum, with co-dominant species Narrow-leaved Ironbark also occurring. This landscape also has a mixture of Shale Hills Woodland and Shale Plains Woodland with species including Grey box, Forest Red Gum, Spotted Gum, Narrow-leaved Ironbark, Cabbage Gum and Broad-leaved Ironbark *Eucalyptus fibrosa*. On creek lines Swamp Oak and *Melaleuca decora* also occur. Shrubs include Blackthorn *Bursaria spinosa*, Coffee Bush *Breynia oblongifolia*, Forest Oak *Allocasuarina torulosa*, Hickory Wattle *Acacia implexa*, *Dillwynia sieberi* and Purple Coral Pea *Hardenbergia violacea* (DECCW 2008).

Woodland vegetation on these soil landscapes have been extensively cleared historically, as evident in the subject land.

2.1.2 NSW (Mitchell) Landscape

The subject land occurs within the Cumberland Plain (SB Cumberland) and Sydney Basin Diatremes (SB Volcanics) Mitchell Landscapes (DECC NSW 2002), with the former covering the majority of the subject land. The occurrence of Sydney Basin Diatremes is restricted to an area surrounding a dam/wetland along an unnamed Strahler Order 1 system within the subject land. Cumberland Plain is the Mitchell Landscape that has been entered into the BAM-C for this assessment.

The Cumberland Plain landscape is characterised as low rolling hills and valleys in a rain shadow area between the Blue Mountains and the coast. These occurs on horizontal Triassic shales and lithic sandstones forming a down-warped block on the coastal side of the Lapstone monocline. Intruded by a small number of volcanic vents and partly covered by Tertiary river-gravels and sands (Hawkesbury-Nepean Terrace Gravels landscape). Quaternary alluvium along the mains streams. General elevation of this landscape is 30 to 120 metres, with local relief of 50 metres and sometimes affected by salt in tributary valley floors. Pedal uniform red-brown clays occur on volcanic hills. Red and brown texture-contrast soils occur on crests grading to yellow harsh texture-contrast soils in valleys. Woodlands and open forest occur in these landscapes, including the PCTs recorded in the subject land (DECC NSW 2002).

The Sydney Basin Diatremes landscape is widely distributed across the Sydney Basin and is distinguished by containing locally differing landform, soil and vegetation. Diatremes are circular volcanic vents filled with layered, brecciated country rock cemented by a fine-grained basaltic matrix. Some contain a core of basalt. In areas of sandstone, the volcanic breccia weathers and erodes more rapidly than the sandstone and the landform is a deep circular with the appearance of a crater. Soils in the crater are dominated by sandstone detritus from the surrounding slopes, but the subsoils are a fertile well-structured clay that is derived from the breccia, and these protected sites carry more mesic variants of the local vegetation. In areas of shale, the breccia is more resistant than the shale and the diatremes form a low rounded hill with red-brown gradational profiles of clay loam and structured clay with moderate to high fertility. General elevation varies considerably across the Sydney Basin, but the local relief of positive landforms can be up to 25 metres and negative landforms ('craters') up to 180 metres (DECC NSW 2002).

2.1.3 Native vegetation cover

Vegetation within the assessment area (within the 1500 metre buffer area around the subject land) was assessed using aerial photographic interpretation, field survey results and existing vegetation mapping. Large areas surrounding the subject land to the east, west and south have been extensively cleared in recent years to accommodate various developments, and therefore mapped vegetation extent outside of the subject land and development site where Biosis did not assess on foot may be in a reduced state to that shown on supplied figures.

The total area of the 1500 metre buffer around the subject land is 1,150 hectares, with the area of native vegetation mapped within this assessment area being 179.50 hectares. This is a native vegetation cover of 16% (10–30% class as defined in Section 3.2.3 of the BAM (DPIE 2020a)) and this value was entered into the BAM-C.

One cleared area of bare ground within the assessment area equates to 0.01 hectares (Figure 2). Prior to September 2025 a dilapidated residential building existed in this area, but it has since been demolished as confirmed in field investigations in October 2025 by Biosis. The demolition of this building was part of remediation works undertaken in the development site.

A list of confirmed PCTs in the subject land and their associated Threatened Ecological Communities (TECs), as identified during the field investigation is included in Section 3.2.2.

2.1.4 IBRA Bioregions and subregions

The subject land occurs within the Sydney Basin IBRA bioregion and the Cumberland IBRA subregion. The Sydney Basin Bioregion lies on the central east coast of NSW and covers an area of approximately 3,624,008 hectares. It occupies about 4.53% of NSW and is one of two bioregions contained wholly within the state. The bioregion extends from just north of Batemans Bay to Nelson Bay on the central coast, and almost as far west as Mudgee. The bioregion is bordered to the north by the North Coast and Brigalow Belt South bioregions, to the south by the South East Corner Bioregion and to the west by the South Eastern Highlands and South Western Slopes bioregions. The Sydney Basin Bioregion is one of the most species diverse in Australia. This is a result of the variety of rock types, topography and climates in the bioregion (OEH 2016).

The Cumberland IBRA subregion is within the Sydney Basin IBRA bioregion covering approximately 275,693-hectare area containing the Cumberland Plain, a broad shale basin in Western Sydney.

2.1.5 Waterways

The subject land is located within the Greater Sydney LLS Region and the Hawkesbury catchment. The closest river-mouth is the Nepean River located approximately 15 kilometres to the west of the subject land. The closest major waterbody is the Prospect Reservoir, located approximately 8.5 kilometres to the northeast of the subject land (Figure 3). The subject land features an unnamed Strahler order one non-perennial undefined natural watercourse originating outside of the subject land and broader development site, to the south-east, in an adjacent property (Figure 2). This watercourse supports a large dam in the northeast corner of the subject land and tracks northwards out of the subject land to join with South Creek, an important arterial watercourse in Western Sydney, approximately 3 kilometres to the north-west.

First, second, third and sixth order streams are present in the broader assessment area around the subject land (Figure 3). There are no Key Fish Habitats (KFHs) as mapped by the NSW Department of Primary Industries (DPI) within the subject land (DPI 2025). There are no KFH directly surrounding the subject land, the closest mapped watercourse supporting Key Fish Habitat is Ropes Creek, approximately 1.1 kilometres east of the subject land. No tributaries of Ropes Creek occur within the subject land.

2.1.6 Wetlands

The subject land includes one large dam and two small dams with fringing native aquatic vegetation. This has been mapped PCT 3975 Southern Lower Floodplain Freshwater Wetland in moderate condition, consistent with the BC Act listed Endangered Ecological Community (EEC) *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*.

No areas of the subject land, development site or assessment area are mapped as a wetland in the Wetlands of NSW dataset (OEH 2010), as shown on Figure 2 and Figure 3. No areas of the subject land or development site, are mapped as a wetland in the DoIW of Australia (Cth DCCEEW 2019).

2.1.7 Hydrology

The site is not mapped as having Groundwater Vulnerability (LEP) (DPIE 2014).

2.1.8 Geological features of significance

There are no recorded karst, caves, crevices, cliffs or other areas of geological significance within the subject land, development site or within close proximity in the assessment area.

2.1.9 Areas of outstanding biodiversity value

There are no Areas of Outstanding Biodiversity Value (AOBV) mapped within the subject land or development site (NSW DCCEEW 2024d). The closest AOBV is the Little Penguin population in Sydney's North Harbour, which is located approximately 46 kilometres to the east of the subject land.

2.1.10 Mapped Important Areas

There are no Mapped Important Areas of habitat (NSW DCCEEW 2025b) present within the subject land. The closest such areas are Mapped Important Areas for Swift Parrot *Lathamus discolor* (Critically Endangered, EPBC Act and Endangered, BC Act) are approximately 8.5 km west of the subject land, surrounding Mulgoa, and another area approximately 9.5 km east of the subject land in the Prospect Nature Reserve.

2.1.11 Connectivity

Several small to medium sized patches of scattered trees occur over native or non-native ground layer in the subject land. Areas of wetland habitat also occur surrounding dams in the subject land. From a subject land level, these habitats are largely isolated from surrounding native vegetation and other habitat features in the subject land and broader certified land in the development footprint. In most cases, patches of vegetation are surrounded by non-native grassland, providing little biodiversity value. In some cases, areas of derived native grassland connect some patches of vegetation, however these areas are limited in the subject land.

From a broader assessment area scale (1500 metre buffer around the subject land), some connectivity for highly mobile fauna is present between the subject land and surrounding biodiversity values. Along the northern boundary of the subject land, an area of exotic woody vegetation provides some connectivity to similar vegetation outside of the subject land on the northern edge of Bakers Lane. Similarly, areas of PCT 3320 and PCT 3975 in the east of the subject land are in close proximity to patches of remnant vegetation of similar condition to the north and east of the subject land. These areas provide minor connectivity for highly mobile fauna including some avian fauna.

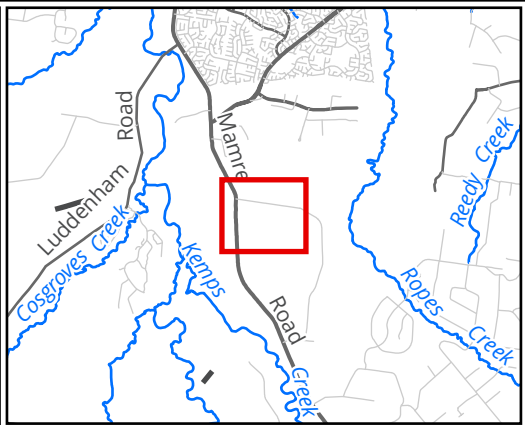
Due to the presence of the Bakers Lane between the subject land and other remnant vegetation and non-native woody habitats in the assessment area, it is unlikely that less mobile fauna could move easily between the subject land and broader habitat. This limits the likelihood of gastropod and/or frog movements and habitat connectivity to the north where Bakers Lane is present and similarly in the west of the subject land where Mamre Road and cleared areas are present in the broader assessment area.

Some connectivity for common frog species occurs via the unnamed non-perennial natural watercourse from the southern edge of the large dam in the subject land. This dam has remnant PCT 3975 representing moderate condition wetland habitat and is connected via this unnamed Strahler order one system to other water bodies mapped in the broader development site and assessment area.

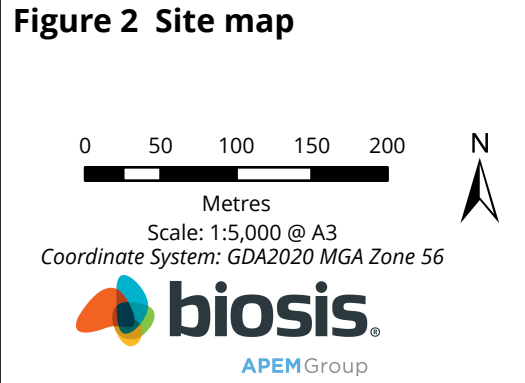
All connectivity features of the subject land and broader development site (certified land) and the assessment area of 1500 metre buffer are mapped in Figure 4.

2.1.12 Additional landscape features

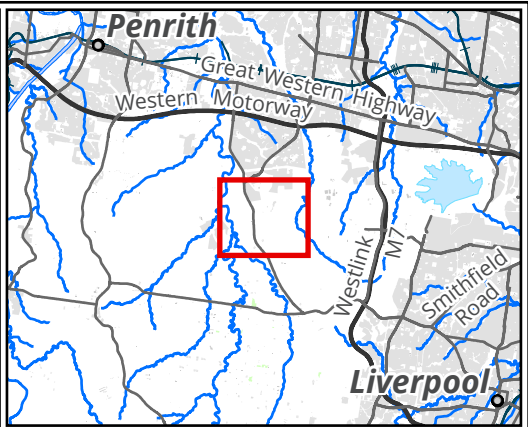
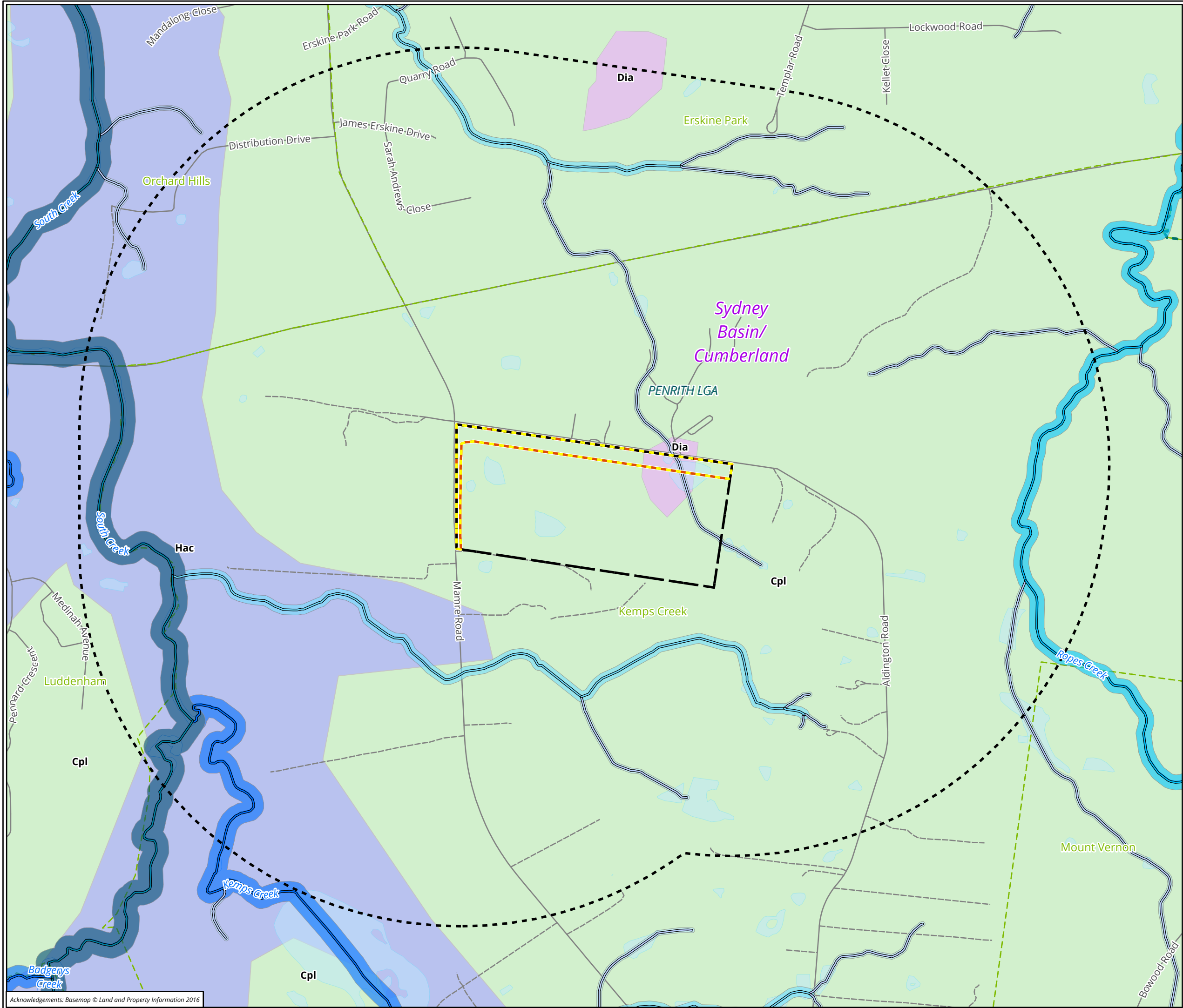
No additional landscape features were identified within the subject land.



- Legend**
- Subject land
 - Development site
 - Development footprint
 - IBRA Region/Sub-region
- Strahler stream order**
- 1
 - 2
- Strahler stream order buffers**
- 1
 - 2
- Mitchell landscapes**
- Cpl,Cumberland Plain
 - Dia,Sydney Basin Diatremes
 - Hac,Hawkesbury - Nepean Channels and Floodplains



Matter: 43542, Date: 10 October 2025
Prepared for: JC, Prepared by: JB, Last edited by: jbeckius
Location: P:\43500s\43542\Mapping\43542_MamreRd_KempsCrk_BDAR.aprx
Layout: 43542_F2_Sitemap



Legend

- Subject land
- Development site
- Development footprint
- Assessment area
- IBRA Region/Sub-region

Strahler stream order

- 1
- 2
- 3
- 4
- 6

Strahler stream order buffers

- 1
- 2
- 3
- 4
- 6

Mitchell landscapes

- Cpl, Cumberland Plain
- Dia, Sydney Basin Diatremes
- Hac, Hawkesbury - Nepean Channels and Floodplains

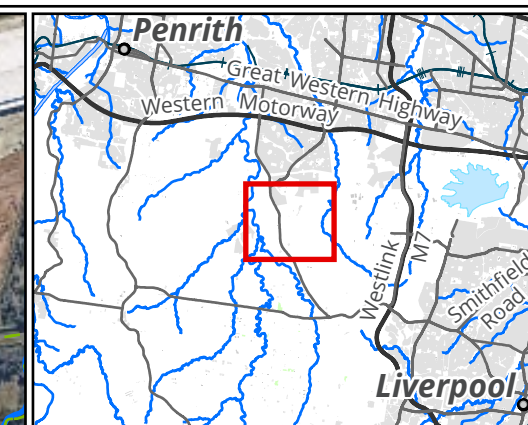
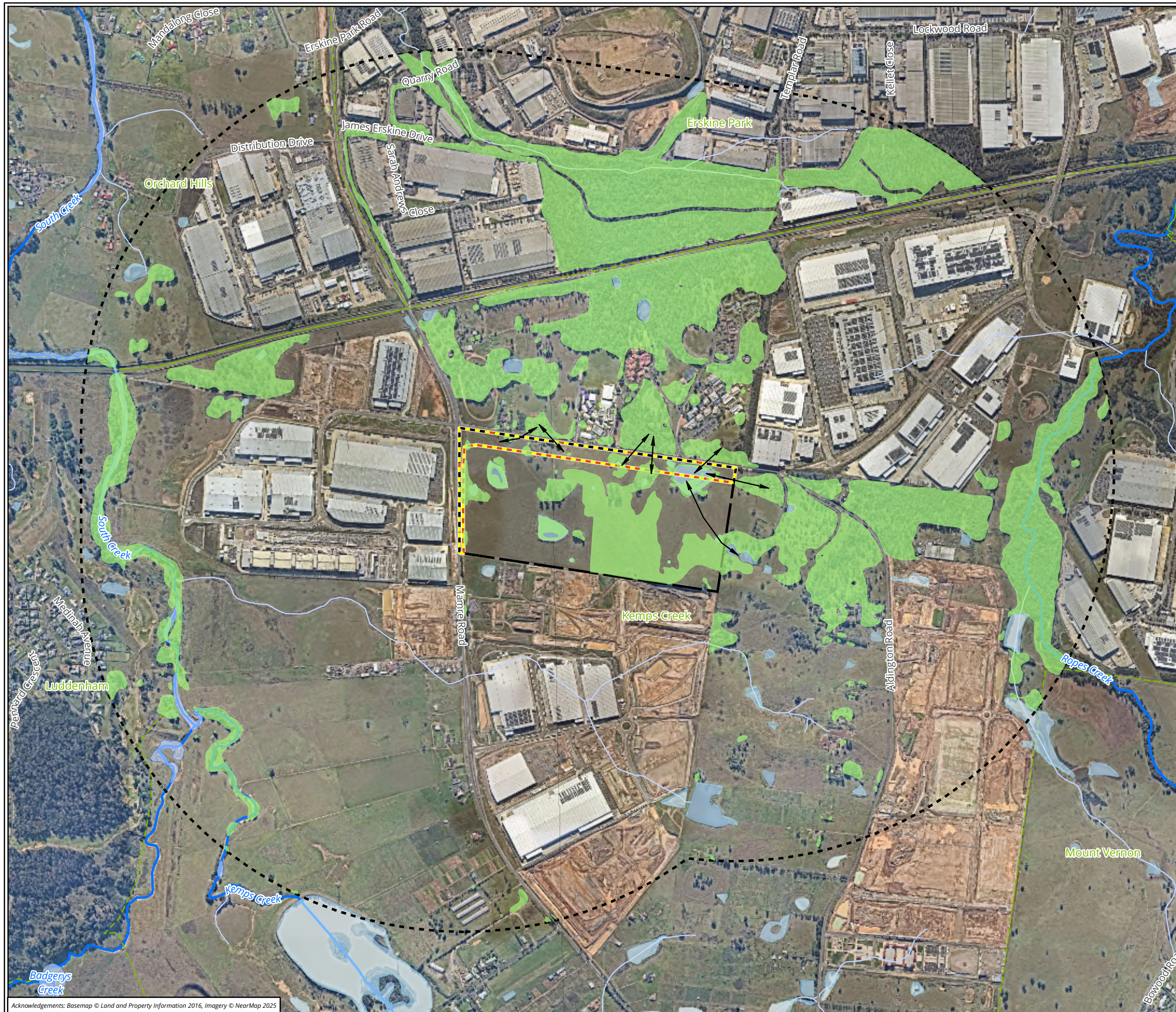
Figure 3 Location map

0 500
Metres

Scale: 1:14,000 @ A3
Coordinate System: GDA2020 MGA Zone 56

biosis
APEM Group

Matter: 43542, Date: 10 October 2025
Prepared for: JC, Prepared by: JB, Last edited by: jbeckius
Location: P:\43500s\43542\Mapping\43542_MamreRd_KempsCrk_BDAR.aprx
Layout: 43542_F3_Location



Legend

- Subject land
- Development site
- Development footprint
- Assessment area
- Native vegetation
- Habitat connectivity

Figure 4 Native vegetation extent

0 500
Metres

Scale: 1:14,000 @ A3
Coordinate System: GDA2020 MGA Zone 56



Matter: 43542, Date: 13 October 2025
Prepared for: JC, Prepared by JB, Last edited by: jbeckius
Location: P:\43500s\43542\Mapping\43542_MamreRd_KempsCrk_BDAR.aprx
Layout: 43542_F4_NativeVeg

3 Native vegetation

The subject land is largely dominated by non-native vegetation covering approximately 5.36 hectares (75% of the subject land), with small to medium sized patches of native vegetation comprising scattered trees, equal to 1.35 hectares. One small 0.01-hectare area of cleared land is present. Of the 1.35 hectares of native vegetation, the subject land supports two PCTs in varying conditions, outlined further in 3.2.2 below.

3.1 Native vegetation and habitat assessment

3.1.1 Native vegetation extent

The extent of native vegetation, TECs, and vegetation integrity within the subject land was determined using the results of site investigations undertaken by Biosis in 2025 and a review of previous studies undertaken at the development site (Cumberland Ecology 2022) consistent with Section 4 of the BAM (DPIE 2020a).

Figure 4 provides a map of the native vegetation extent recorded within the subject land as assessed during field investigations undertaken by Biosis in September and October 2025. The figure includes all areas of native vegetation (native ground cover and areas with canopy) within the subject land. Areas not shown as native vegetation cover within Figure 4, are considered cleared areas or non-native vegetation, and are addressed further below.

3.1.2 Review of existing information

Existing information regarding native vegetation was reviewed to inform field investigations including:

- The NSW PCTs, as held within the BioNet Vegetation Classification database (NSW DCCEEW 2024b).
- The NSW SVTM (C2.0M2.0) (NSW DCCEEW 2024c).
- Existing site reports including the vegetation mapping included in the *ISPT Summit @ Kemps Creek Biodiversity Development Assessment Report* (Cumberland Ecology 2022).

Based on the results of the background review and the requirements of the BAM with respect to this BDAR, appropriate surveys were designed for the subject land.

3.1.3 Field investigation of biodiversity values

A systematic biodiversity assessment was conducted by Biosis in September and October 2025 under the terms of Biosis' Scientific Licence issued by NSW DCCEEW under the BC Act (SL100758, expiry date 30 June 2026). Fauna survey was conducted under the Secretary's Animal Care & Ethics Committee Approval (TRIM 17.892, expiry date 31 January 2028).

Assessment in accordance with the BAM was undertaken by Senior Botanist Jessica Chapman and overseen by Accredited Assessor Callan Wharfe (BAAS18138) and Jake Schwebel (BAAS21053).

The development site was surveyed generally to contextualise the subject land. The subject land was surveyed in accordance with the BAM (DPIE 2020a), which involved:

- The identification and mapping of PCTs according to the structural definitions held in the BioNet Vegetation Classification database (NSW DCCEEW 2024b), with reference to information provided in NSW SVTM (C2.0M2.0) (NSW DCCEEW 2024c).
- Undertaking floristic plots within each vegetation zone in accordance with Section 4 of the BAM (DPIE 2020a), considering varying condition states and avoidance of ecotones, areas of disturbance, and edges.
- The identification of native and exotic plant species, according to the Flora of NSW (Harden 2002, 1993, 2000, 2002) with reference to recent taxonomic changes.
- Targeted searches for plant species of conservation significance according to *Surveying Threatened Plants and Their Habitats* (DPIE 2020b).
- Incidental observations using the “random meander” method (Cropper 1993).
- Identification of previous and current factors threatening the ecological function and survival of native vegetation within and adjacent to the development site.
- An assessment of the natural resilience of the vegetation of the site.
 - Identifying and mapping fauna habitats (e.g., hollow-bearing trees, rock outcropping etc.), assessing their condition and value to threatened fauna species, and considering threatened species’ habitat constraints.
- Observations of animal activity and searches for indirect evidence of fauna (such as scats, nests, burrows, hollows, tracks, scratches and diggings).
- Targeted surveys for threatened fauna species.

The conservation significance of plant species and plant communities was determined according to:

- BC Act for significance within NSW.
- EPBC Act for significance within Australia.

Detailed field mapping and collection of GPS point locations were conducted using hand-held (uncorrected) tablet units (Samsung Galaxy Tab X) running the ArcGIS Field Maps application, using the inbuilt GPS, and aerial photo interpretation. Spatial locations are therefore considered to have an accuracy of generally ± 5 metres.

Areas of native vegetation for which a PCT could validly be assigned were identified and delineated in the field, and their condition determined and assigned. Identification of PCTs within the subject land was confirmed with reference to the community profile descriptors (and diagnostic species tests) held within the NSW BioNet Vegetation Classification database (NSW DCCEEW 2024b). Locations of floristic plots undertaken are shown on Figure 6.

Further details of targeted survey for threatened flora and fauna species as undertaken by Biosis in 2025 are provided in Section 4.2.2 below.

3.1.4 Local data

Under Section 1.4.2 of the BAM (DPIE 2020a), an assessor may use local appropriate data from relevant published sources or appropriate local reference site to develop a benchmark for a PCT. The assessor may also use more appropriate local data (instead of data from the Threatened Biodiversity Data Collection

[TBDC]) when assessing the habitat suitability for threatened species, as detailed in Section 5 of the BAM. No additional local data has been used in this BDAR for either benchmarking of PCTs or the threatened species assessment.

3.2 Vegetation results

3.2.1 Non-native vegetation

Areas of the subject land that included exotic grasses, shrubs or trees that are not native meet the definition of non-native vegetation and were included in vegetation mapping within the vegetation mapping of the subject land (Figure 5). These areas are unable to be assigned to a PCT. Areas of cleared land are also present in the subject land and were mapped as such, including a small area existing where a building was demolished in late 2025.

Areas not shown as native vegetation cover within Figure 5, as detailed above, that do not provide habitat for threatened species, are not included for further assessment in accordance with Section 5.1.1.5 of the BAM (DPIE 2020a).

The areas of non-native vegetation within the subject land were considered for their potential to be suitable habitat for threatened species. It was determined that these areas are unlikely to provide ecological value to threatened species, and instead only provide minor connective habitat for common, highly mobile fauna species, as outlined in Section 6.3.1. A description of the non-native vegetation areas within the subject land is provided in Table 2 below.

Table 2 Non-native vegetation

Non-native vegetation	
Extent within the subject land	5.36 ha
Description	This vegetation type was entirely represented by areas of exotic grasses and some exotic woody shrubs and trees, historically planted around a previously existing dilapidated residential building (since demolished). Dominant exotic grass species present included <i>Paspalum dilatatum</i>, and <i>Briza subaristata</i>. Other common exotic species included Shivery Grass <i>Briza minor</i>, Narrow-leaved Carpet Grass <i>Axonopus fissifolius</i>, Rhodes Grass <i>Chloris gayana</i>, African Lovegrass <i>Eragrostis curvula</i>. Sporadic occurrences of native grass species were sometimes present; however, they were not in high enough abundance for these areas to be referred to as 'derived' grasslands. Native species present included Kangaroo Grass <i>Themeda triandra</i> and Purple Wiregrass <i>Aristida ramosa</i>. Some exotic herbaceous and woody weeds were also present in these areas, including Fireweed <i>Senecio madagascariensis</i>, Scarlet Pimpernel <i>Lysimachia arvensis</i>, French Flax <i>Linum trigynum</i> and Lamb's Tongue <i>Plantago lanceolata</i>.
Survey effort	Three BAM plots (43542_P03, 43542_P09 and 43542_P11) were collected over the course of the field assessment (Figure 6).

Non-native vegetation

Photos



Photo 1 Non-native vegetation in the subject land (BAM plot P03)

3.2.2 Plant community types

Plant community types in the subject land

The following PCTs were recorded within the subject land:

- PCT 3320 Cumberland Shale Plains Woodland (Table 3).
- PCT 3975 Southern Lower Floodplain Freshwater Wetland (Table 4).

The tables below provide detailed descriptions of the two PCTs recorded within the subject land. PCTs recorded within the subject land are shown in Figure 5.

Table 3 PCT 3320 Cumberland Shale Plains Woodland

PCT 3320 Cumberland Shale Plains Woodland	
Common name	Cumberland Shale Plains Woodland
Vegetation formation	Grassy Woodlands
Vegetation class	Coastal Valley Grassy Woodlands
Condition	This community within the subject land was recorded in moderate – regrowth, low and Derived Native Grassland (DNG) condition states within the subject land. The moderate – regrowth and low condition areas were largely similar being separated primarily by the abundance of native ground storey species, whilst the DNG contained a high of cover of native understorey but lacked a midstorey or canopy layer. Moderate – regrowth condition patches contain either area of scattered canopy or consisted of one to two mature trees with a high volume of regenerating canopy species, over a thinned midstory and ground layer containing a moderate level of native species abundance and diversity. Patches in this condition state also contained a moderate level of exotic weed invasion.

PCT 3320 Cumberland Shale Plains Woodland	
	Low condition patches were represented by occurrences of scattered canopy trees over midstorey and ground layer largely devoid of native species. Exotic species were dominant within this community. DNG condition patches lacked a canopy or midstorey and were dominated primarily by a mix of native and exotic grasses as well a moderate diversity of native forbs, climbers and graminoids.
Extent within subject land	Approximately 0.94 ha of Cumberland Shale Plains Woodland was recorded within the subject land which included: • 0.63 ha in moderate - regrowth condition. • 0.30 ha in low condition. • 0.01 ha in DNG condition
Description	The community was characterised by a canopy dominated by Forest Red Gum <i>Eucalyptus tereticornis</i> and Grey Box <i>Eucalyptus moluccana</i>. The midstorey was devoid of native vegetation. Exotic species present included Sticky Nightshade <i>Solanum sisymbriifolium</i>, with scattered occurrences of African Olive <i>Olea europaea</i> subsp. <i>europaea</i>, African Boxthorn <i>Lycium ferocissimum</i> and Kei Apple <i>Dovyalis afra</i>. The ground layer contained a mix of native and exotic grasses and forbs. Where present, native species included Kangaroo Grass, Purple Wiregrass, Tall Chloris <i>Chloris ventricosa</i>, Weeping Grass <i>Microlaena stipoides</i>, Red Grass <i>Bothriochloa macra</i>, Blueberry Lily <i>Dianella longifolia</i>, Common Woodruff <i>Asperula conferta</i>, Slender Tick-trefoil <i>Grona varians</i>, Kidney Weed <i>Dichondra repens</i>, <i>Oxalis perennans</i>, Sprawling Bluebell <i>Wahlenbergia gracilis</i>, Tufted Bluebell <i>Wahlenbergia communis</i>, Climbing Saltbush <i>Einadia nutans</i>, <i>Brunoniella australis</i> and <i>Phyllanthus virgatus</i>. Exotic species present in the ground layer included a high abundance of Paspalum and <i>Briza subaristata</i>. Other common exotic species included Shivery Grass, Narrow-leaved Carpet Grass, Rhodes Grass, African Lovegrass, Fireweed, Scarlet Pimpernel, French Flax and Lamb's Tongue.
Survey effort	Four BAM plots (one low: 43542_P08); one DNG: 43542_P11) and two moderate - regrowth: 43542_P01 and 43542_P04) were collected over the course of the field assessment (Figure 6).
Justification of PCT	PCT 3320 within the subject land meets the PCT description (NSW DCCEEW 2024b) via the following: • Soil - occurs on the Luddenham soil landscape. • Rainfall - average annual rainfall of 810.6 mm. • Structure - open forest with occasional mid-storey and understorey varying between dense shrubs or low sparse shrub cover with an abundant cover of grasses. • Dominant species - canopy dominated by Forest Red Gum and Grey Box over groundcover containing a mix of grasses, sedges and forbs. • Landscape position - Occurs on flat areas and low hills below 90 metres elevation. • IBRA region and subregion - Sydney Basin region and Cumberland subregion. This PCT 3320 aligned more completely with the vegetation and landscape features observed in the subject land compared to the alternative PCT 3319 <i>Cumberland Shale Hills Woodland</i>. This PCT 3319 occurs on more distinct rises, which were largely absent from the subject land.
TEC Status	NSW BC Act: All condition states within the subject land were determined to meet the criteria for <i>Cumberland Plain Woodland in the Sydney Basin Bioregion</i> (CEEC) as identified Figure 8. Justification: All condition types were considered consistent with this community as they are in the correct IBRA region, present on the correct soil type and in the correct landscape position and contain characteristic species as listed in paragraph 3 of the scientific determination (NSW Scientific Committee 2009).

PCT 3320 Cumberland Shale Plains Woodland	
	Commonwealth EPBC Act: Only one patch of this PCT in moderate - regrowth condition is associated with <i>Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest</i> (CEEC) as identified on Figure 8. Justification: One patch of this PCT is considered consistent with <i>Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest</i> (CEEC) as the patch size is greater than 0.5 ha, contains one tree per hectare that is greater than 80 cm DBH, contains hollows, and contains more than 30% perennial native understorey vegetation (Threatened Species Scientific Committee 2009). All other areas were not considered consistent with the TEC as they were less than 0.5 ha patch size or contained less than 30% perennial native understorey vegetation.
Estimate of percent cleared value of PCT (BioNet)	93% (NSW DCCEEW 2024b).
PCT 3320 photos	
	Photo 2 PCT 3320 in moderate - regrowth condition within the subject land

PCT 3320 Cumberland Shale Plains Woodland



Photo 3 PCT 3320 in low condition within the subject land



Photo 4 PCT 3320 in DNG condition (foreground) within the subject land

Table 4 PCT 3975 Southern Lower Floodplain Freshwater Wetland

PCT 3975 Southern Lower Floodplain Freshwater Wetland	
Common name	Southern Lower Floodplain Wetland
Vegetation formation	Freshwater Wetlands
Vegetation class	Coastal Freshwater Lagoons
Extent within subject land	Approximately 0.4 ha of Southern Lower Floodplain Freshwater Wetland was recorded in moderate condition within the subject land.
Condition	The community was recorded in moderate condition within the subject land due to a moderate level of native diversity and a moderate level of exotic incursion.
Description	The wetland community was present within dams and waterways in the western half of the subject land. The community primarily consisted of aquatic vegetation with a high abundance of exotic grasses present along the dam edges. Native species included Brahmi <i>Bacopa monnieri</i> , <i>Juncus usitatus</i> , <i>Marsilea mutica</i> , Tall Spike Rush <i>Eleocharis sphacelata</i> , Slender Knotweed <i>Persicaria decipiens</i> , Bullrush <i>Typha orientalis</i> , Swamp Lilly <i>Ottelia ovalifolia</i> , Frogmouth <i>Philydrum lanuginosum</i> , Hyssop Loosestrife <i>Lythrum hyssopifolia</i> and Water Primrose <i>Ludwigia peploides</i> . Exotic species included Sharp Rush <i>Juncus acutus</i> , African Love Grass, <i>Paspalum</i> , Rhodes Grass and Kikuyu <i>Cenchrus clandestinus</i> along the edges of the waterways.
Survey effort	One BAM plot (moderate condition: 43542_P02) was collected over the course of the field assessment (Figure 6).
Justification of PCT	Southern Lower Floodplain Wetland within the subject land meets the PCT description (NSW DCCEE 2024b) via the following: • Soil - occurs on the Luddenham soil landscape. • Rainfall - average annual rainfall of 810.6 mm. • Structure – A tall sedgeland on coastal floodplains • Dominant species – Tall Spike Rush, Bullrush, <i>Juncus usitatus</i>. • Landscape position – Occurs on low lying areas within waterways. • IBRA region and subregion – Sydney Basin region and Cumberland subregion.
TEC Status	NSW BC Act: All areas of this community present on mapped waterways are considered consistent with the BC Act listed TEC <i>Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i> (EEC) as shown on Figure 8. Justification: All condition types were considered consistent with this community as they are in the correct IBRA region, present on the correct soil type and landscape position and contain characteristic species listed in the scientific determination (NSW Scientific Committee 2004). Commonwealth EPBC Act: This community is not associated with any EPBC listed TECs.
Estimate of percent cleared value of PCT (BioNet)	92.99% (NSW DCCEE 2024b).

PCT 3975 Southern Lower Floodplain Freshwater Wetland

PCT 3975 photo



Photo 5 PCT 3375 in moderate condition within the subject land

Plant community types in the development site

The above listed PCTs in the subject land were also recorded in the broader development site. In addition, PCT 4023 in low condition was recorded within the development site outside of the subject land. As PCT 4023 is in the certified land under the CPCP land, it is not the subject to this BDAR and this PCT is not discussed further.

3.2.3 Threatened ecological communities

Vegetation within the subject land represents two TECs listed under the NSW BC Act, and one TEC listed under the Commonwealth EPBC Act, as outlined in Table 5 and Table 6 below and illustrated on Figure 8.

Table 5 Summary of BC Act TECs within the subject land

BC Act TEC	Listing status	Area in subject land
Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered	0.94 ha
Sydney Freshwater Wetlands in the Sydney Basin Bioregion	Endangered	0.63 ha

Table 6 Summary of EPBC Act TECs within the subject land

EPBC Act TEC	Listing status	Area in subject land
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	Critically Endangered	0.40 ha

3.3 Vegetation integrity assessment

3.3.1 Vegetation zones and patch size class

PCTs within the subject land were assessed and stratified, based on broad condition state, into vegetation zones in accordance with Section 4.3 of the BAM, and as described in the PCT description tables (Table 3 and Table 4) above. This resulted in four vegetation zones identified within the subject land. Table 7 describes each of the zones and provides details on the BAM floristic plots undertaken in each zone in the subject land. In addition to these four native vegetation zones, areas of non-native vegetation were also identified (as detailed in Section 3.2.1).

Patch size classes for each vegetation zone present within the subject land were assessed as per Section 4.3.2 of the BAM (DPIE 2020a) using a select process in ArcGIS. All native vegetation with a gap of less than 100 metres from the next area of native vegetation (or ≤ 30 metres for non-woody ecosystems), is considered a single patch, with a patch able to extend onto adjoining land.

Native vegetation within the subject land was mapped sequentially and it was found to form a patch of vegetation greater than 100 hectares (Figure 7). The connected vegetation in each patch either comprises areas of scattered canopy with low to moderate quality understorey with areas of weed ingress, or areas of DNG with some weed ingress. Patches of naturally treeless PCT 3975 are also present around existing dams in the subject land.

Patch size classes for each vegetation zone in the subject land are outlined in Table 7 below.

Table 7 Native vegetation zones within the subject land

Vegetation zone	Plant Community Type	Condition	BAM plots completed in subject land	Area (ha)	Max. patch size development footprint (subject land)
3320_Moderate	PCT 3320	Moderate - regrowth	1	0.63 ha	>100 ha
3320_Low	PCT 3320	Low	3	0.30 ha	>100 ha
3320_DNG	PCT 3320	DNG	1	0.01 ha	>100 ha
3975_Moderate	PCT 3975	Moderate	1	0.40 ha	>100 ha

3.3.2 Vegetation integrity

Vegetation integrity, or condition, was assessed using data obtained from undertaking BAM plots within the vegetation zones, as per Section 4.3.4 of the BAM (DPIE 2020a). Plot data was collected via:

- A 20 metre x 50 metre quadrat and 50 metre transect for assessment of site attributes and function.
- A 20 metre x 20 metre quadrat, nested within the larger quadrat for full floristic survey to determine composition and structure of the PCT.

The minimum number of BAM plots per vegetation zone was determined using Table 3 of the BAM (DPIE 2020a). In total, six BAM plots have been completed within the vegetation zones present in the subject land, details for which are provided in Table 8.

Table 8 Native vegetation BAM plots completed within the subject land

BAM plot reference	Vegetation zone
43542_P01	3320_Moderate
43542_P04	3320_Low
43542_P05	3320_Low
43542_P08	3320_Low
43542_P11	3320_DNG
43542_P02	3975_Moderate

It is important to note that BAM plot 43542_P11 was undertaken slightly beyond the subject land as areas of PCT 3320 in DNG condition within the subject land were limited. This plot (43542_P11) was therefore established marginally outside the subject land to capture a more continuous and representative section of this vegetation type. The selected location provided a larger, more intact and suitable representative example of the same vegetation type and condition.

A further three BAM plots were collected within the subject land to assess the non-native vegetation (43542_P03, P09 and P10). Finally, two additional BAM plots (43542_P06 and P07) were also collected in the development footprint to confirm vegetation mapping across the broader development site outside of the subject land. BAM plots 43542_P06 and P07 are not detailed in this BDAR due to their occurrence in certified land in the development site and not subject to this BDAR.

Assessment of vegetation integrity was undertaken using standard benchmark data as outlined in the BAM and held in the BioNet Vegetation Classification database (NSW DCCEEW 2024b). As BAM plots P03, P09 and P10 did not conform to any PCTs, no further assessment of these plots is required. BAM plots P06 and P07 were collected to validate vegetation within the certified areas of the development site and similarly do not need further assessment.

A list of flora species was compiled for each BAM plot completed and is included in Appendix 3. Records of all flora species will be submitted to NSW DCCEEW for incorporation into the Atlas of NSW Wildlife.

3.3.3 Vegetation integrity score

Plot data was entered into the BAM-C to determine vegetation integrity scores. Plot data are presented in Appendix 3, with vegetation integrity scores for each vegetation zone provided in Table 9.

Table 9 Vegetation zone integrity scores for the subject land

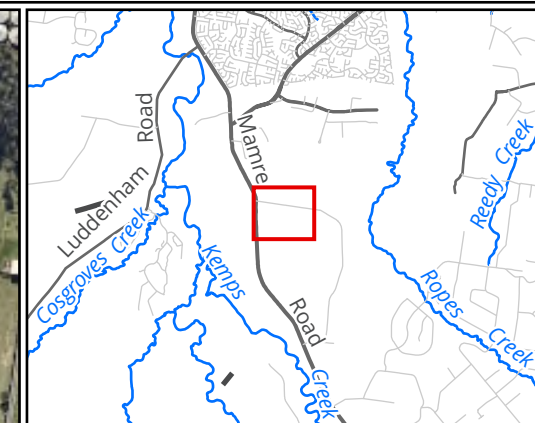
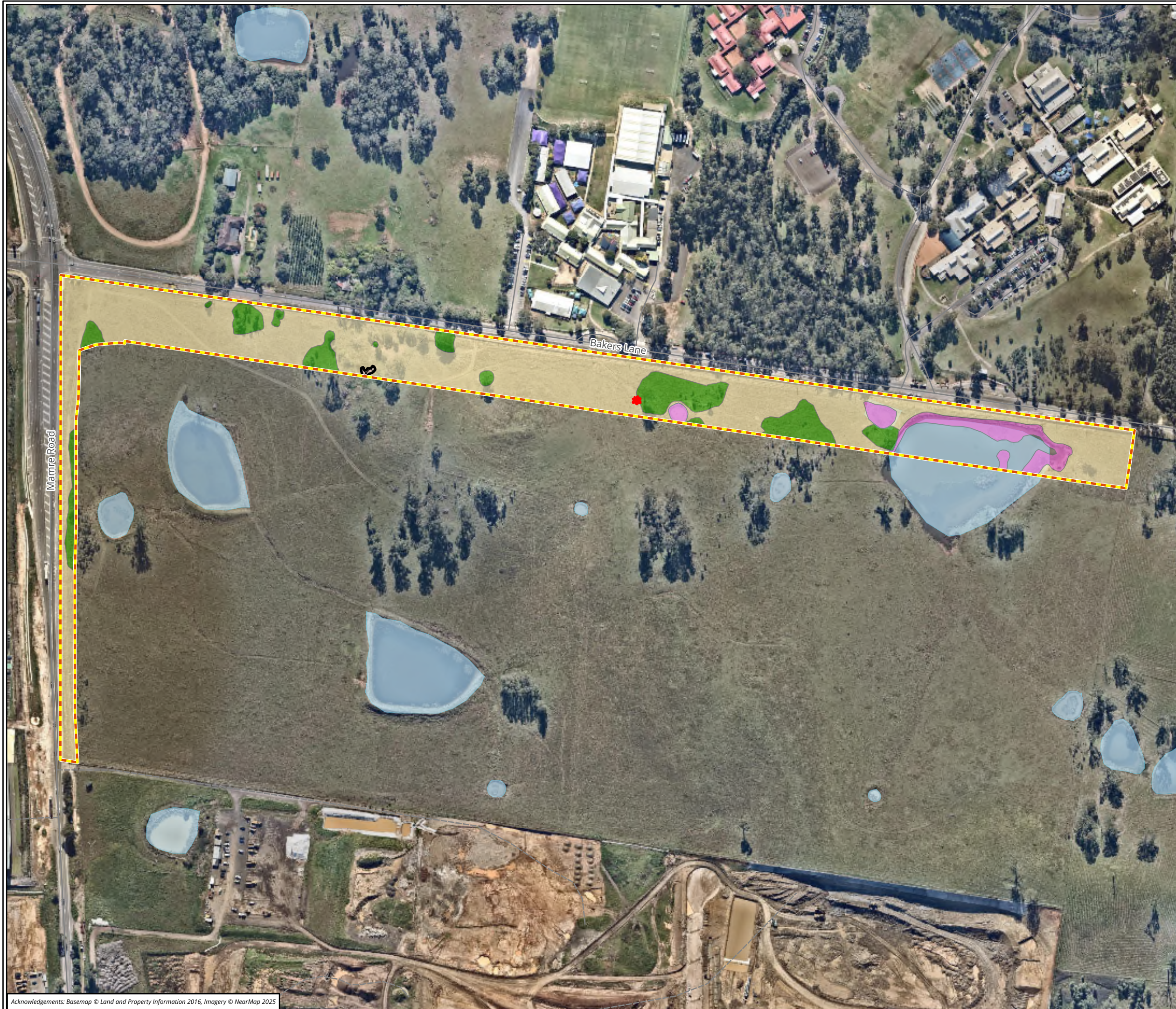
Vegetation zone	Composition score	Structure score	Function score	VI score*	Hollow-bearing trees present?
3320_Moderate	56.4	24.9	36	37	Y
3320_Low	22.9	18.8	39.4	25.7	Y
3320_DNG	21.5	33.6	2.2	11.6	N
3975_Moderate	61.2	56.4	0	58.8	N

*Benchmark (pristine) condition vegetation would receive a VI score of 100.

As outlined in Section 9.2.1 of the BAM (DPIE 2020a), an offset is required for impacts on native vegetation where the vegetation integrity score is:

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

As such, ecosystem credit offsets are not required for vegetation zone 3320_DNG in the subject land as it is not associated with threatened species habitat and it has a VI score of 11.6 (below the threshold value for offsetting), even as a CEEC.



Legend

- Subject land
- Development footprint
- Cleared
- Hollow-bearing tree

Plant community types

- 3320 - Cumberland Shale Plains Woodland
- 3975 - Southern Lower Floodplain Freshwater Wetland
- Non-native vegetation

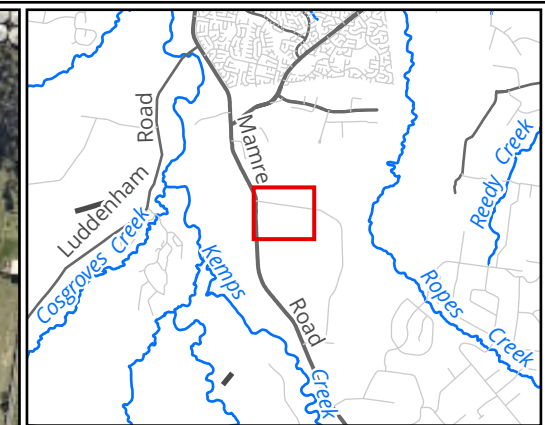
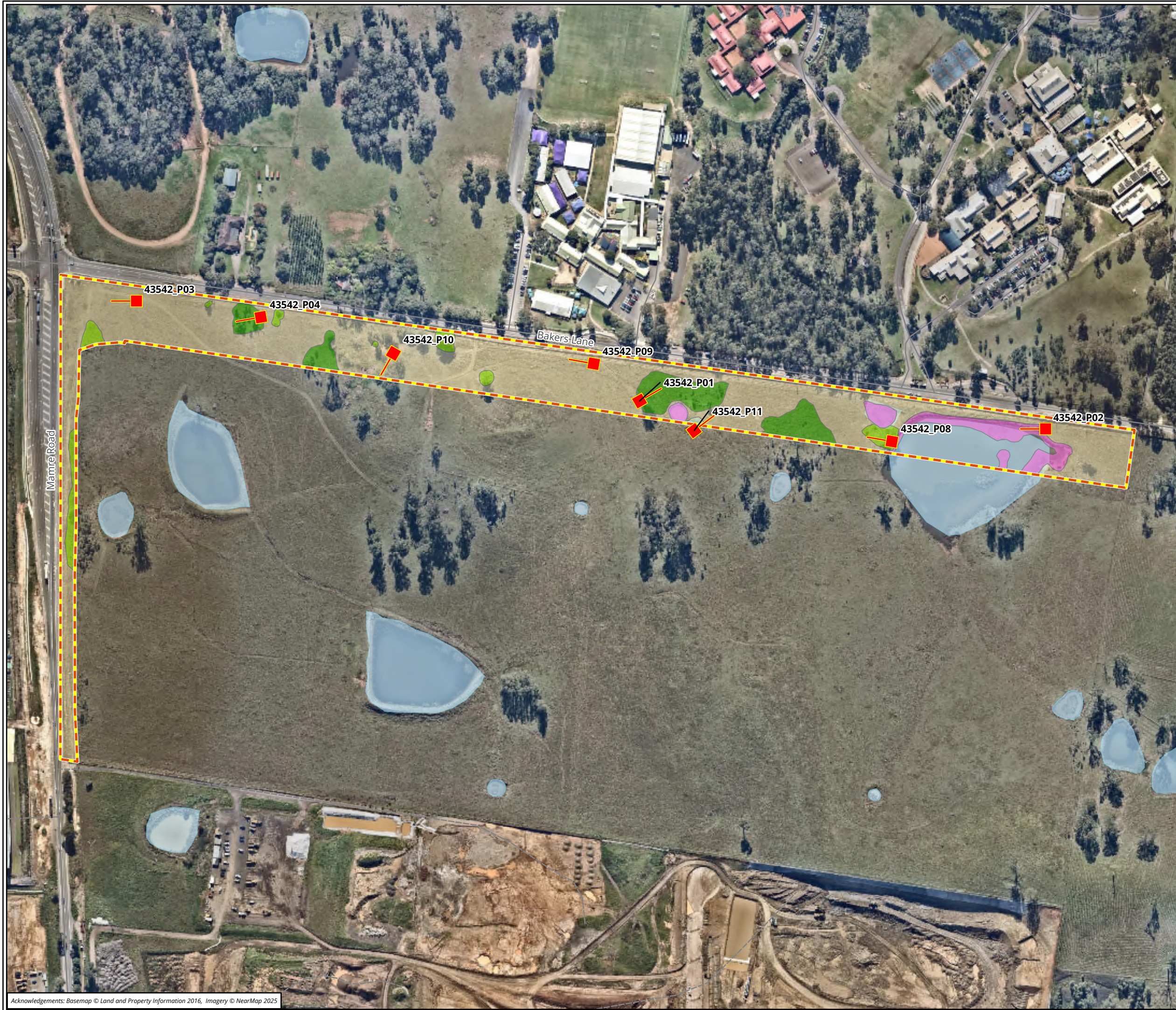
Figure 5 Vegetation within the subject land



Scale: 1:3,600 @ A3
Coordinate System: GDA2020 MGA Zone 56



Matter: 43542, Date: 13 October 2025,
Prepared for: JC, Prepared by: JB, Last edited by: jbeckius
Location: P:\43500s\43542\Mapping\43542_MamreRd_KempsCrk_BDAR.aprx
Layout: 43542_F5_BiosisVeg



Legend

- Subject land
- Development footprint
- BAM plot

Vegetation zone

- VZ01 - PCT 3320 - DNG
- VZ02 - PCT 3320 - Low
- VZ03 - PCT 3320 - Moderate regrowth
- VZ04 - PCT 3975 - Moderate
- Non-native vegetation

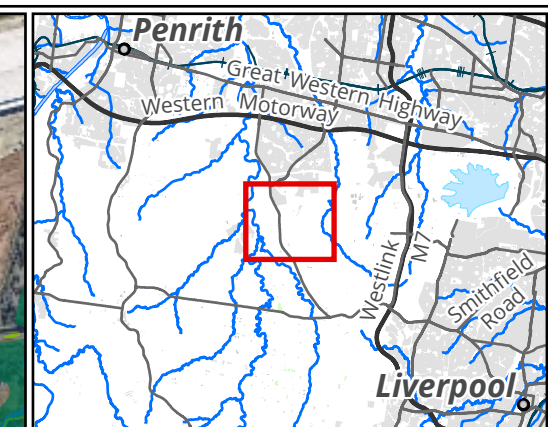
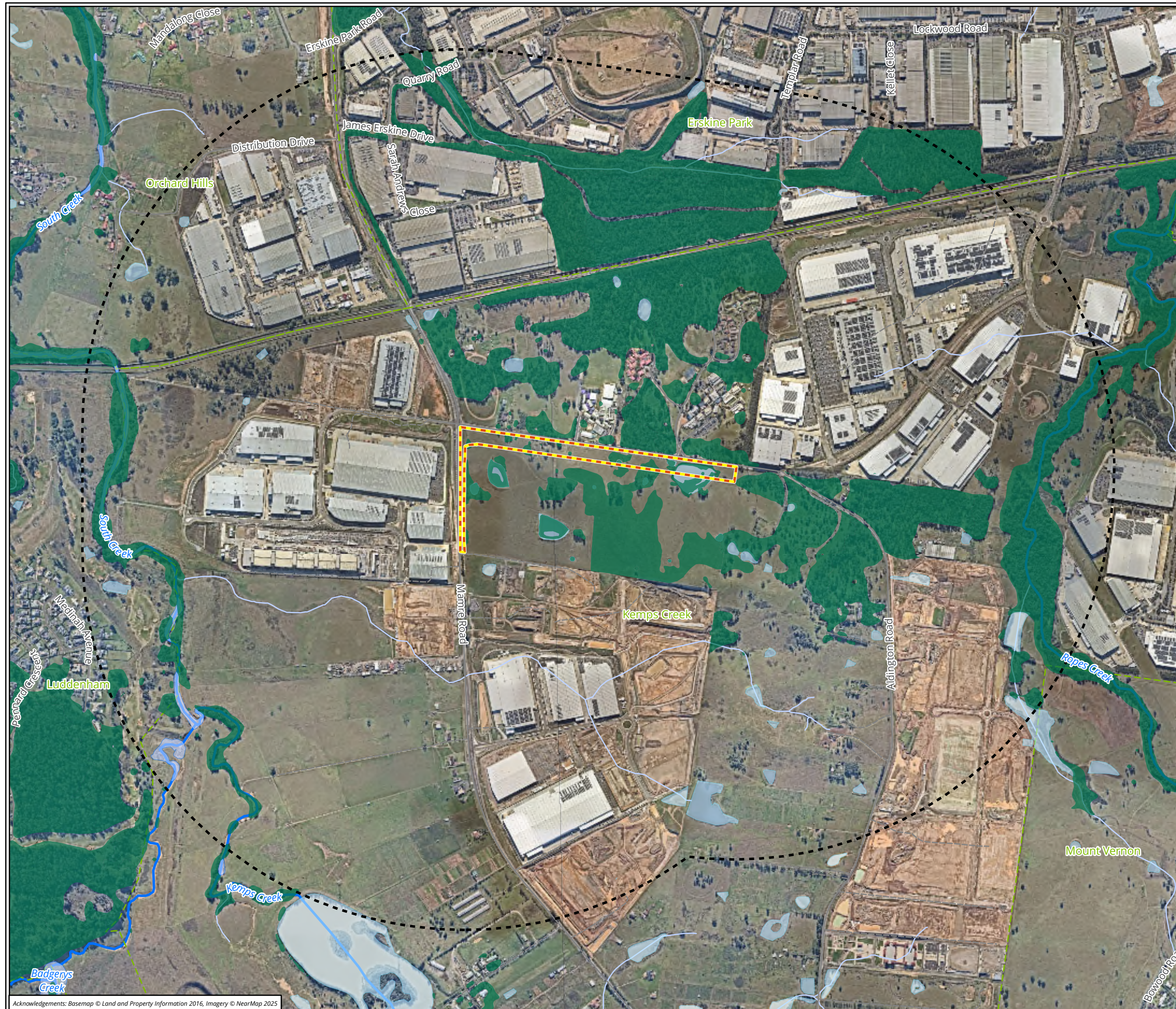
Figure 6 Vegetation zones and plot locations

0 50 100 150
Metres

Scale: 1:3,600 @ A3
Coordinate System: GDA2020 MGA Zone 56

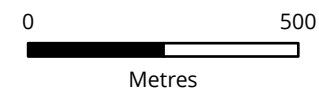
biosis
APEM Group

Matter: 43542, Date: 15 October 2025,
Prepared for: JC, Prepared by: JB, Last edited by: jbeckius
Location: P:\43500s\43542\Mapping\43542_MamreRd_KempsCrk_BDAR.aprx
Layout: 43542_F6_VegZones



- Legend**
- Subject land
 - Development footprint
 - Assessment area
 - Patch size $\geq 100\text{ha}$ (VZ01- VZ04)

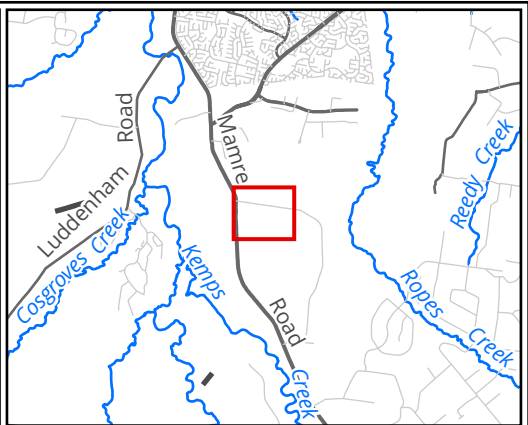
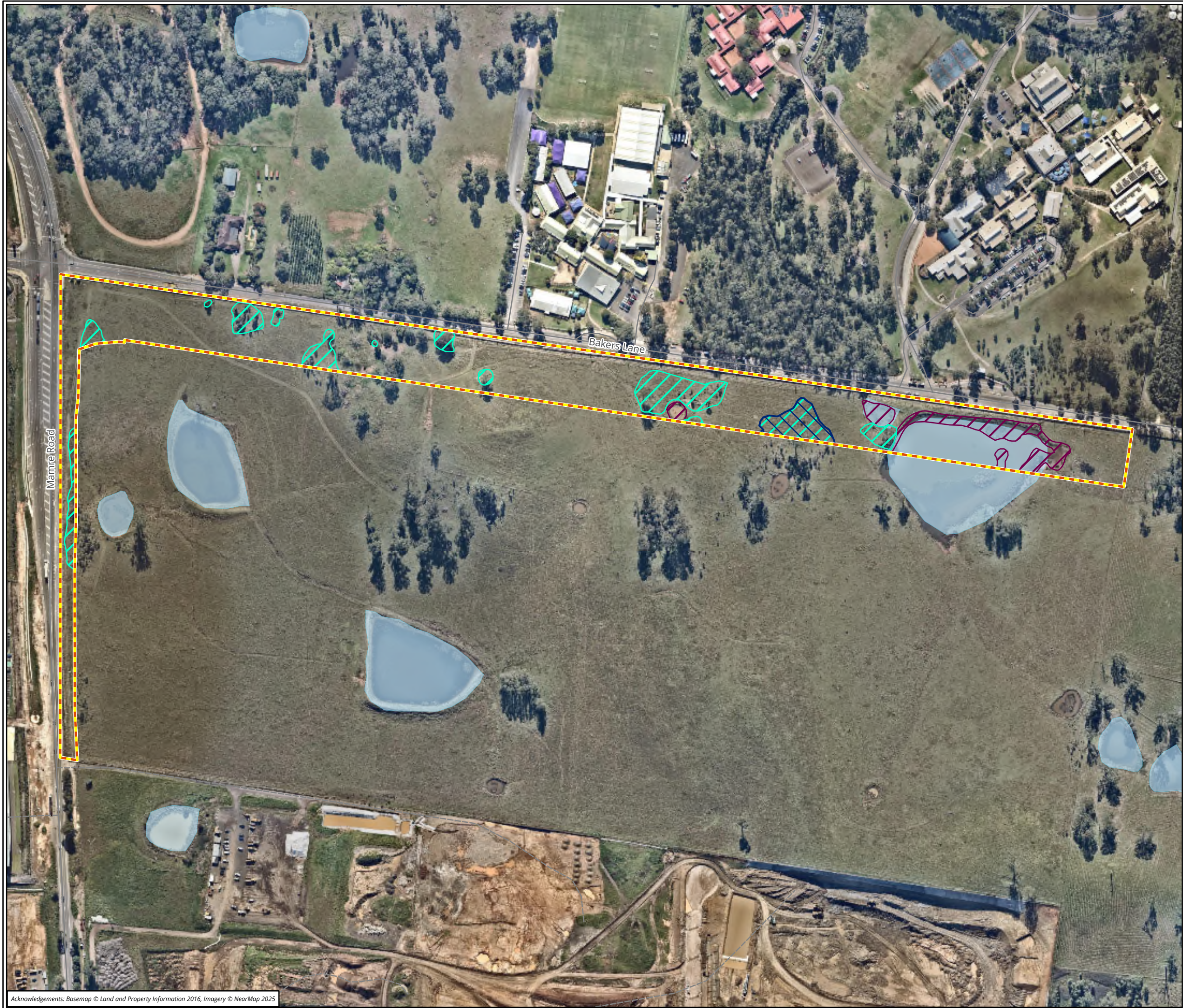
Figure 7 Patch size locations



Scale: 1:14,000 @ A3
Coordinate System: GDA2020 MGA Zone 56



Matter: 43542, Date: 13 October 2025
Prepared for: JC, Prepared by JB, Last edited by: jbeckius
Location: P:\43500s\43542\Mapping\43542_MamreRd_KempsCrk_BDAR.aprx
Layout: 43542_F7_PatchSize



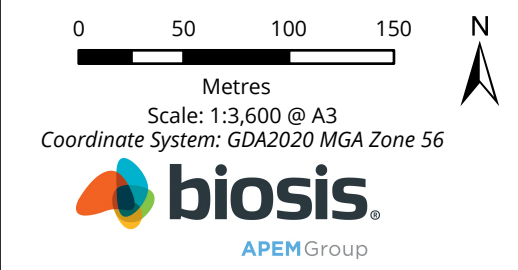
Legend

- Subject land
- Development footprint

Threatened ecological communities

- Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)
- Cumberland Plain Woodland in the Sydney Basin Bioregion (CEEC, BC Act)
- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CEEC, EPBC Act)

Figure 8 Threatened ecological communities



4 Threatened species

4.1 Ecosystem credit species

A list of predicted species (ecosystem credit species) expected to occur within the subject land was generated as per Section 5 of the BAM (DPIE 2020a). Impacts to these species require assessment, however targeted survey is not required as these species are assumed to occur, based on the occurrence of the PCTs, habitat constraints, native vegetation cover in the landscape and calculated patch sizes. These species are identified as ecosystem credit species in the TBDC. Table 10 lists the ecosystem credit species that could not be discounted, based on geographical restrictions or a lack of suitable habitat, from using the subject land on occasion.

These species were considered when prescribing management and mitigation measures for the project, and two species have been specifically considered as part of the assessment under the Commonwealth EPBC Act; Swift Parrot *Lathamus discolor* (Appendix 5.2) and Australian Painted Snipe *Rostratula australis* (Appendix 5.3).

An additional species, Greater Broad-nosed Bat *Scoteanax rueppellii*, has been added to the BAM-C and Table 10 below and is considered to be an ecosystem credit species for the Project due to being previously recorded in the subject land by Cumberland Ecology (2022).

Table 10 Ecosystem credit species (predicted species) with potential to occur

Common name	Scientific name
<i>Anthochaera phrygia</i>	Regent Honeyeater
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow
<i>Botaurus poiciloptilus</i>	Australasian Bittern
<i>Calidris ferruginea</i>	Curlew Sandpiper
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo
<i>Chthonicola sagittata</i>	Speckled Warbler
<i>Circus assimilis</i>	Spotted Harrier
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)
<i>Daphoenositta chrysoptera</i>	Varied Sittella
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork
<i>Epthianura albifrons</i>	White-fronted Chat
<i>Falco subniger</i>	Black Falcon
<i>Glossopsitta pusilla</i>	Little Lorikeet
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle
<i>Hieraetus morphnoides</i>	Little Eagle
<i>Hirundapus caudacutus</i>	White-throated Needletail
<i>Irediparra gallinacea</i>	Comb-crested Jacana
<i>Ixobrychus flavicollis</i>	Black Bittern

Common name	Scientific name
<i>Lathamus discolor</i>	Swift Parrot
<i>Limosa limosa</i>	Black-tailed Godwit
<i>Lophoictinia isura</i>	Square-tailed Kite
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat
<i>Miniopterus australis</i>	Little Bent-winged Bat
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat
<i>Neophema pulchella</i>	Turquoise Parrot
<i>Oxyura australis</i>	Blue-billed Duck
<i>Pandion cristatus</i>	Eastern Osprey
<i>Petroica boodang</i>	Scarlet Robin
<i>Petroica phoenicea</i>	Flame Robin
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox
<i>Rostratula australis</i>	Australian Painted Snipe
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat
<i>Stagonopleura guttata</i>	Diamond Firetail
<i>Stictonetta naevosa</i>	Freckled Duck
<i>Varanus rosenbergi</i>	Rosenberg's Goanna

4.2 Species credit species

Candidate species (species credit species) are threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence, or components of their habitat. These candidate species are identified as species credit species in the TBDC. A targeted survey or an expert report is required to confirm the presence of these species on the subject land, or alternatively the species can be assumed to be present (DPIE 2020a).

Appendix 2 provides the lists of species credit species predicted to occur within the subject land based on the IBRA subregion within which the Project occurs, the native vegetation cover present within the 1500 metre buffer area (assessment area), the PCTs present within subject land, and patch sizes listed in Table 7.

The potential for a species to occur within the subject land was assessed in accordance with Section 5.2 of the BAM (DPIE 2020a) and species with geographical restrictions, or habitat constraints not present, were not required to be assessed. Fourteen species credit species have been excluded from occurring within the subject land based on a lack of suitable habitat, substantial degradation of the subject land, a lack of required microhabitat features and having never been recorded within 10 kilometres of the subject land. The species excluded from the candidate species list are detailed further below in Section 4.2.1.

A detailed assessment of potential for occurrence, and potential for impact, for all species credit species predicted to occur within the subject land is provided in Appendix 2. Species credit species considered to

potentially occur within the subject land and thus considered 'candidate species credit species' have been either assumed present or are the subject of the target of threatened species surveys.

All candidate species credit species considered as part of this assessment, and their associated method of assessment, are listed in Table 12 (flora species) and Table 13 (fauna species), as outlined in Section 4.2.2.

4.2.1 Excluded candidate species

A summary of the excluded species is provided in Table 11. Further rationale for the excluded species is provided in the sections below and Appendix 2.

Table 11 Excluded candidate species credit species

Species name	Common name	Exclusion rationale
Flora		
<i>Deyeuxia appressa</i>	<i>Deyeuxia appressa</i>	Habitat degraded. Refer to the section below and Appendix 2 for further detail
<i>Pomaderris prunifolia</i>	<i>Pomaderris prunifolia</i> – endangered population	Geographic limitation (subject land does not occur within the defined range of the endangered population)
<i>Wahlenbergia multicaulis</i>	<i>Wahlenbergia multicaulis</i> – endangered population	Geographic limitation (subject land does not occur within the defined range of the endangered population)
Birds		
<i>Anthochaera phrygia</i>	Regen Honeyeater	Habitat constraints (no important area mapping)
<i>Burhinus grallarius</i>	Bush-stone Curlew	Habitat constraints (lack of fallen/standing dead timber including logs)
<i>Calidris ferruginea</i>	Curlew Sandpiper	Habitat constraints (no important area mapping)
<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo	Habitat degraded. Refer to the section below and Appendix 2 for further detail
<i>Lathamus discolor</i>	Swift Parrot	Habitat constraints (no important area mapping)
<i>Limosa limosa</i>	Black-tailed Godwit	Habitat constraints (no important area mapping)
Mammals		
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	Habitat degraded. Refer to the section below and Appendix 2 for further detail
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Habitat constraints (lack of suitable breeding caves/structures)
<i>Miniopterus australis</i>	Little Bent-winged Bat	Habitat constraints (lack of suitable breeding caves/structures)
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Habitat constraints (lack of suitable breeding caves/structures)
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Habitat constraints (lack of breeding camps within

Species name	Common name	Exclusion rationale
		the locality)
<i>Litoria aurea</i>	Green and Golden Bell Frog	Previous surveys completed in the study area. Species not detected (Cumberland Ecology 2025).
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	Previous surveys completed in the study area. Species not detected (Cumberland Ecology 2025).

Habitat or geographic constraint excluded species

The required microhabitats are not present in the subject land for several threatened species to be considered candidate species. Therefore, these species have been excluded in the BAM-C, as detailed below.

Important Habitat Mapping for Swift Parrot *Lathamus discolor* and Regent Honeyeater *Anthochaera phrygia* are absent from the subject land. As such, these species have been excluded as candidate species.

The subject land has no existing buildings, structures or karsts/caves that could represent roosting habitat for Large-eared Pied Bat *Chalinolobus dwyeri*. One building previously existing on site has since been demolished as part of site remediation, as confirmed in Biosis' October 2025 field investigations. This species does not have the required microhabitats to be a candidate species for the subject land and has therefore been excluded. Similarly, Little Bent-winged Bat *Miniopterus australis* and Large Bent-winged Bat *Miniopterus orianae oceanensis* are dependent on man-made and natural roosting features that are absent from the subject land. These three bat species have been excluded as candidate species for the subject land.

Due to the degraded nature of the site and historic clearing, there is very limited debris and logs in the ground layer. Bush-stone Curlew *Burhinus grallarius* is therefore excluded as a candidate for the subject land, due to the lack of microhabitat it requires.

Grey-headed Flying-fox *Pteropus poliocephalus* records exist in the subject land and assessment area, however no maternity roosts or camps were identified in the subject land during the field investigation, or previously by Cumberland Ecology (2025). The closest known Grey-headed Flying-fox camp is located along the Ropes Creek riparian corridor approximately 6 kilometres north of the study area near Kevin Dwyer Park (just south of the Great Western Highway). Due to the lack of the required habitat constraints, this species has been excluded as a candidate species for the subject land.

Although there are waterbodies and wetland vegetation located within the subject land, no high-quality suitable silty or muddy banks of estuarine and wetlands occur for foraging opportunities to support migratory waterbird species including Black-tailed Godwit *Limosa limosa* and Curlew Sandpiper *Calidris ferruginea*. There is also no Important Habitat mapped for either of these species within the subject land. These species are therefore excluded and not considered further.

Threatened flora species, *Pomaderris prunifolia* – endangered population, is constrained by the known LGAs it has been recorded in, limited to the Parramatta, Auburn, Strathfield and Bankstown LGAs. Similarly, *Wahlenbergia multicaulis* – endangered population is constrained by the Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield LGAs. These species have been excluded as candidate species for the subject land based on these geographic limitations.

Habitat degraded excluded species

Due to the isolated and degraded nature of the patches of native vegetation that have a canopy, the subject land has very limited connectivity for woodland dependent threatened mammals such as Eastern Pygmy-possum *Cercartetus nanus*. In most cases, vegetation in the subject land is over 100 metres from the next patch of vegetation in the development site or assessment area. Areas of connectivity in the subject land occur in areas of low-quality vegetation or non-native vegetation with little biodiversity value. This species was not subject to targeted surveys due to not being considered a candidate species.

Limited hollows suitable for South-eastern Glossy Black-Cockatoo *Calyptorhynchus lathami lathami* occur in the subject land, in the context of highly degraded, thinned woodland patches. Potential nesting hollows observed in the subject land during targeted surveys for threatened owls (which would also be a similar size for South-eastern Glossy Black-Cockatoo) were limited and in some cases currently utilised by other common avian species. Food resources for this species including *Allocasuarina* and *Casuarina* tree species are absent from the subject land. Minimal *Allocasuarina* feed occurs in the broader development site and assessment area. Therefore this species has been excluded as a candidate species for the subject land.

Threatened flora species *Deyeuxia appressa* was last recorded in the 10-kilometre search area around the subject land in the 1940s. The species' records are restricted to two records, one in 1930 at Herne Bay south of Bankstown and the other in 1941 from Killara near Hornsby. Suitable habitat for this species in the subject land has been substantially degraded and modified historically and is unlikely to provide habitat value for this species. This species has been excluded as a candidate species for the subject land.

Species previously surveyed

Green and Golden Bell Frog *Litoria aurea* has been previously surveyed by Cumberland Ecology (2025) within the study area. These surveys were undertaken at two dams within the subject land and a further nine dams across the broader development site. Based on the Cumberland Ecology's BDAR, Biosis understands that survey consisted of aural-visual survey at each dam/location with calls being played for 30 seconds followed by a two-minute listening period which was then repeated (i.e., one minute playback, four minutes listening at each dam). An active search was then conducted within suitable habitat for 10 minutes. This was replicated over 6 nights (21-22 February 2022 and 14-18 March 2022) and the species was not detected. The effort undertaken by Cumberland Ecology is shown in Figure 7 (Fauna survey locations) included in Appendix 6. This effort appears to satisfy the *NSW Survey Guide for Threatened Frogs* (DPIE 2020c) BAM survey guideline. Based on these prior targeted surveys, Biosis has excluded Green and Golden Bell Frog from this assessment.

Cumberland Plain Land Snail *Meridolum corneovirens* has also been previously surveyed by Cumberland Ecology (2025) within the subject land. The survey was undertaken across all PCTs and involved searches for a minimum of two-person minutes within 1 metre of the base of all native trees within the subject land. Searches included an initial inspection of the undisturbed grass, bark and/or litter followed by disturbance (via raking) to search for any live snails or shells (Cumberland Ecology 2025). As Cumberland Ecology did not detect Cumberland Plain Land Snail during their survey, it has been excluded from this assessment.

Limitations

Biosis has reviewed the survey effort undertaken by Cumberland Ecology which appears to satisfy relevant guidelines and be undertaken by appropriately licensed and skilled ecologists. However, Biosis has not undertaken dedicated targeted surveys for these species ourselves. If required, Biosis can complete additional survey to satisfy the TBDC/guideline requirements and provide updates to this BDAR as part of later submission phases.

4.2.2 Assessed candidate species

Threatened flora

Habitats for threatened flora species within the subject land are largely considered degraded due to the high degree of weed ingress, historic management and clearing. Open areas are typically dominated by exotic pasture grasses, some non-native shrubs and trees, and herbaceous exotics (non-native vegetation). Contextually, the vegetation in areas of PCT 3320 and PCT 3975 occur as isolated and edge effected patches within the subject land.

Table 12 provides a list of candidate flora species credit species considered in this assessment, each species' required survey period, and the relevant method of assessment. Further detail of the targeted surveys undertaken are provided below and shown on Figure 9.

Table 12 Candidate flora species credit species

Species name	Common name	Survey period	Method of assessment
<i>Acacia pubescens</i>	Downy Wattle	Year-round	- Targeted survey October 2025. - Also surveyed by Cumberland Ecology (2025) in January and February 2022.
<i>Commersonia prostrata</i>	Dwarf Kerrawang	Year-round	Targeted survey October 2025.
<i>Dillwynia tenuifolia</i>	<i>Dillwynia tenuifolia</i>	August – October	Targeted survey October 2025.
<i>Eucalyptus benthamii</i>	Camden White Gum	Year-round	Targeted survey October 2025.
<i>Eucalyptus glaucina</i>	Slaty Red Gum	Year-round	Targeted survey October 2025.
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Juniper-leaved Grevillea	Year-round	- Targeted survey October 2025. - Also surveyed by Cumberland Ecology (2025) in January and February 2022.
<i>Hibbertia puberula</i>	<i>Hibbertia puberula</i>	October – December	Targeted survey October 2025.
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> - endangered population	<i>Marsdenia viridiflora</i> R. Br. subsp. <i>viridiflora</i> population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	November – February	- Targeted survey October 2025 (outside of required survey period). - Also surveyed by Cumberland Ecology (2025) in January and February 2022.
<i>Maundia triglochinoides</i>	<i>Maundia triglochinoides</i>	November – March	Assumed present.
<i>Micromyrtus minutiflora</i>	<i>Micromyrtus minutiflora</i>	Year-round	Targeted survey October 2025.
<i>Persicaria elatior</i>	Tall Knotweed	December – May	Assumed present.
<i>Persoonia nutans</i>	Nodding Geebung	Year-round	Targeted survey October 2025.
<i>Pimelea curviflora</i> var. <i>curviflora</i>	<i>Pimelea curviflora</i> var. <i>curviflora</i>	October – March	Targeted survey October 2025.
<i>Pimelea spicata</i>	Spiked Rice-flower	Year-round	Targeted survey October 2025.

Species name	Common name	Survey period	Method of assessment
			Also surveyed by Cumberland Ecology (2025) in January and February 2022.
<i>Pomaderris brunnea</i>	Brown Pomaderris	August – October	Targeted survey October 2025.
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	October	Targeted survey October 2025.
<i>Pultenaea parviflora</i>	<i>Pultenaea parviflora</i>	September – November	Targeted survey October 2025.
<i>Pultenaea pedunculata</i>	Matted Bush-pea	September – November	Targeted survey October 2025.

Threatened fauna

Fauna habitat assessment was undertaken to determine whether the vegetation to be impacted by the proposed development contained microhabitats suitable to support the candidate fauna species credit species, as outlined in Appendix 2. Details of this assessment are provided in Section 4.2.3.

Table 13 provides a list of candidate fauna species credit species considered in this assessment, each species' required survey period and the relevant method of assessment. Further detail of the targeted surveys undertaken are provided below and shown on Figure 9.

Table 13 Candidate fauna species credit species

Species name	Common name	Survey period	Method of assessment
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	October – January	- Targeted survey in October 2025 (dusk watches over four nights). - Cumberland Ecology (2025) also undertook targeted surveys in January, February, March, May 2022 (hollow inspections and searches for lone males).
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	July – December	- Targeted survey (raptor nest searches) in September 2025. - Also surveyed by Cumberland Ecology (2025) in February, March and May 2022 (raptor nest searches).
<i>Hieraaetus morphnoides</i>	Little Eagle	August – October	- Targeted survey (raptor nest searches) in September 2025. - Also surveyed by Cumberland Ecology (2025) in February, March and May 2022 (raptor nest searches).
<i>Lophoictinia isura</i>	Square-tailed Kite	September – January	- Targeted survey in September 2025. - Also surveyed by Cumberland Ecology (2025) in February, March and May 2022 (raptor nest searches).
<i>Myotis macropus</i>	Southern Myotis	October – March	- Not targeted with surveys by Biosis. - Cumberland Ecology (2025) targeted surveys in February, March 2022 (recorded in subject land).

Species name	Common name	Survey period	Method of assessment
<i>Ninox connivens</i>	Barking Owl	Year-round	- Biosis targeted survey in October 2025 (owl call-playback and spotlighting over 4 nights). - Cumberland Ecology(2025) also targeted survey in May 2022 (owl call-playback and spotlighting over 2 nights).
<i>Ninox strenua</i>	Powerful Owl	Year-round	- Biosis targeted survey in October 2025 (owl call-playback and spotlighting over 4 nights). - Cumberland Ecology(2025) also targeted survey in May 2022 (owl call-playback and spotlighting over 2 nights).
<i>Pandion cristatus</i>	Eastern Osprey	April – November	Targeted survey in September 2025.
<i>Petaurus norfolcensis</i>	Squirrel Glider	Year-round	Incidental survey - Biosis incidental survey in September and October 2025 (during owl spotlighting survey over 4 nights). Targeted survey - Cumberland Ecology (2025) also undertook targeted surveys in February, March, May 2022 (spotlighting and call-playback over 2 nights).
<i>Phascolarctos cinereus</i>	Koala	Year-round	Incidental survey - Biosis incidental survey in September and October 2025 (during owl spotlighting survey over four nights). Targeted survey - Cumberland Ecology (2025) also undertook targeted surveys in February, March, May 2022 (spotlighting and call-playback over 2 nights).
<i>Tyto novaehollandiae</i>	Masked Owl	Year-round	- Biosis targeted survey in October 2025 (owl call-playback and spotlighting over 4 nights). - Cumberland Ecology(2025) also targeted survey in May 2022 (owl call-playback and spotlighting over 2 nights).

4.2.3 Threatened species survey details

Targeted threatened species surveys and weather observations undertaken by Biosis in September and October 2025 are shown in Table 14.

Table 14 Weather observations during targeted flora and fauna surveys (near Kemps Creek, NSW)

Survey undertaken	Survey date	Temperature (°C)*		Rain (mm)*
		Min.	Max.	
Targeted fauna survey (raptor stick nests)	17/09/2025	16.9	25.2	0
Targeted flora survey (Oct spp.)	07/10/2025	13.3	23.0	2.2
Targeted fauna survey (Owls)	07/10/2025	13.3	23.0	2.2
Targeted fauna survey (Owls)	08/10/2025	12.9	31.5	0
Targeted fauna survey (Owls)	09/10/2025	20.1	28.3	0
Targeted fauna survey (Owls)	15/10/2025	13.7	28.8	0

*Information from the Australia Government Bureau of Meteorology website for Horsley Park, NSW.

Further details of surveys undertaken as part of the current assessment undertaken by Biosis are provided below.

Threatened flora

Survey method and effort

Targeted surveys for the threatened flora species identified in Table 12 were conducted using parallel field traverses in accordance with the *Surveying threatened plants and their habitats* (DPIE 2020b) BAM guideline. Targeted surveys were undertaken by two botanists over one day in October 2025.

Targeted surveys have also been previously undertaken by Cumberland Ecology (2025) for Downy Wattle, Juniper-leaved Grevillea, *Marsdenia viridiflora* subsp. *viridiflora* and Spiked Rice-flower within the subject land. None of these species were detected by Cumberland Ecology during these targeted surveys and a review of the survey effort and timing has indicated that these surveys were appropriately conducted.

Two additional threatened flora species, White-flowered Wax Plant *Cynanchum elegans* and Austral Toadflax *Thesium australe*, were also previously assessed by Cumberland Ecology (2022). These species have not been included within the current assessment as they have not been generated in the BAM-C candidate list for this Project. These species were adequately surveyed for in the Cumberland Ecology BDAR and were not detected.

Justification of survey method and effort

Surveys followed the *Surveying threatened plants and their habitats* (DPIE 2020b) BAM guideline which is the appropriate guidelines for threatened candidate flora species under the BAM.

Timing of survey

Survey was conducted in line with requirements detailed in the TBDC for nearly every species. The exception is *Marsdenia viridiflora* subsp. *viridiflora* which was surveyed a month prior (i.e., in October) to its survey

season (November to February). This species is identifiable outside of season and no specimens similar to this species were detected during survey. This species is readily identifiable outside its peak season due to distinctive vegetative features, including leaf shape, arrangement, and growth habit, which are consistent year-round. Furthermore, the species was not detected by Cumberland Ecology (2025) in their survey of the subject land in January and February 2022 and the species' presence has been confidently discounted from the subject land.

Survey personnel and relevant experience

Targeted flora surveys were undertaken by the Biosis ecologists listed in Table 15.

Table 15 Targeted flora survey personnel and relevant experience

Staff member	Role	Relevant experience
Todd Horton	Botanist	Over 3 years' experience undertaking flora surveys in NSW.
Jake Scwebel	Senior Botanist and BAM accredited assessor	Over 5 years' experience undertaking flora surveys in NSW.

Results

Table 16 provides a summary of the results of the targeted flora surveys completed.

Table 16 Summary of targeted flora survey method and results

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
<i>Acacia pubescens</i>	Downy Wattle	Parallel traverses, incidental survey	Not recorded	Not required
<i>Commersonia prostrata</i>	Dwarf Kerrawang	Parallel traverses, incidental survey	Not recorded	Not required
<i>Dillwynia tenuifolia</i>	<i>Dillwynia tenuifolia</i>	Parallel traverses, incidental survey	Not recorded	Not required
<i>Eucalyptus benthamii</i>	Camden White Gum	Parallel traverses, incidental survey	Not recorded	Not required
<i>Eucalyptus glaucina</i>	Slaty Red Gum	Parallel traverses, incidental survey	Not recorded	Not required
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Juniper-leaved Grevillea	Parallel traverses, incidental survey	Not recorded	Not required
<i>Hibbertia puberula</i>	<i>Hibbertia puberula</i>	Parallel traverses, incidental survey	Not recorded	Not required
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> - endangered population	<i>Marsdenia viridiflora</i> R. Br. subsp. <i>viridiflora</i> population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith	Parallel traverses, incidental survey	Not recorded	Not required

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
	local government areas			
<i>Maundia triglochinos</i>	<i>Maundia triglochinos</i>	Assumed present	Not recorded (not targeted)	Extent of PCT 3975 (0.40 ha)
<i>Micromyrtus minutiflora</i>	<i>Micromyrtus minutiflora</i>	Parallel traverses, incidental survey	Not recorded	Not required
<i>Persicaria elatior</i>	Tall Knotweed	Assumed present	Not recorded (not targeted)	Extent of PCT 3975 (0.40 ha)
<i>Persoonia nutans</i>	Nodding Geebung	Parallel traverses, incidental survey	Not recorded	Not required
<i>Pimelea curviflora</i> var. <i>curviflora</i>	<i>Pimelea curviflora</i> var. <i>curviflora</i>	Parallel traverses, incidental survey	Not recorded	Not required
<i>Pimelea spicata</i>	Spiked Rice-flower	Parallel traverses, incidental survey	Not recorded	Not required
<i>Pomaderris brunnea</i>	Brown Pomaderris	Parallel traverses, incidental survey	Not recorded	Not required
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	Parallel traverses, incidental survey	Not recorded	Not required
<i>Pultenaea parviflora</i>	<i>Pultenaea parviflora</i>	Parallel traverses, incidental survey	Not recorded	Not required
<i>Pultenaea pedunculata</i>	Matted Bush-pea	Parallel traverses, incidental survey	Not recorded	Not required

Limitations

The majority of candidate flora species have been adequately assessed by Biosis during the October 2025 targeted surveys as outlined above. The exceptions are for *Maundia triglochinos* and *Persicaria elatior* for which presence has been assumed as a precautionary measure within areas of mapped PCT 3975 due to timing constraints for targeted survey periods. As highlighted above, targeted surveys for *Marsdenia viridiflora* subsp. *viridiflora* were also conducted out of season. However, due to previous targeted survey by Cumberland Ecology (2025), and the lack of any similar specimens identified during targeted surveys, the species' presence has been confidently discounted from the subject land.

Fauna habitat assessments

A fauna habitat assessment was undertaken to determine the presence of microhabitats and other critical habitat components (habitat constraints) suitable for all fauna candidate species outlined in Table 13 and Appendix 2. Habitat assessments focussed on the presence of the following features within the subject land:

- Habitat trees including large and/or hollow-bearing trees, stick nests, availability of flowering shrubs and canopy/understorey feed tree species.
- Soil type and presence of cliffs, overhangs and other rocky areas.
- Condition and type of native vegetation and the presence of exotic species.
- Presence and condition of pools and waterways.

- Quantity of ground litter and woody debris.
- Searches for indirect evidence of fauna (i.e. feathers, tracks and scats).
- General degradation of the site as a result of past and current disturbances such as vegetation clearing and industrial land management practices.
- Topography and landscape morphology.
- Presence of flying-fox camps.

Several habitat features with potential to support threatened species credit species were identified during these habitat assessments. These features have been summarised in Table 17.

Table 17 Habitat features with potential to support threatened species credit species in the subject land

Habitat feature	Presence within the development footprint
Hollow-bearing trees	Habitat trees supporting hollows of a variety of size classes from small (<50 mm diameter) through to extra-large (<400 mm diameter) were present across the subject land. These trees have the potential to provide breeding resources for a range of native fauna species including threatened Gang-gang Cockatoo and threatened owls (Barking Owl, Masked Owl and Powerful Owl).
Feed tree species	Tree species identified as Koala use trees within the Central Coast Koala management area, which includes the subject land, were detected during the field assessment including highly preferred species Forest Red Gum and Grey Box. However, there are no Koala records within the subject land or development site with highly limited resources due to the sparse nature of the remaining scattered trees. Trees and shrubs providing food resources for smaller mammals such as Squirrel Glider were not recorded.
Minor watercourses and waterbodies (dams)	Minor watercourses in the subject land include one unnamed non-perennial natural watercourse in the east. This watercourse is heavily degraded, and little water remains in the length of the watercourse. This watercourse was surveyed as potential habitat during targeted surveys by Cumberland Ecology (2025) in 2022 for Green and Golden Bell Frog, which was not recorded during these targeted surveys. This watercourse provides some connective habitat for common frog species. Similarly, artificial waterbodies (i.e., human-made dams) in the subject land were also identified as potential habitat for threatened amphibians. Riparian areas also have the potential to support threatened fauna species in a fragmented landscape such as the one relevant to the current project. The dams in the subject land were subject to targeted surveys for Green and Golden Bell Frog in 2022 by Cumberland Ecology (2025) and the species was not detected.

Field capture of detailed fauna habitat information allowed for confirmation of absence of habitat features and microhabitats for a range of candidate threatened species across surveyed portions of the development footprint. Fauna habitat assessments were captured using ArcGIS polygons attributed with specific habitat criteria that allowed for planning of further targeted survey for select species, or the exclusion of the potential for occurrence of various candidate species from the subject land.

Diurnal birds (Cockatoos)

Survey method and effort

Targeted surveyed for Gang-gang Cockatoo were conducted through dusk watches of identified potential breeding habitat (i.e., hollow-bearing trees identified during the fauna habitat assessment detailed above) in

accordance with the TBDC. Repeated dusk watches were undertaken to establish if any breeding birds were utilising the potential habitat within the subject land.

Targeted surveys have also been previously undertaken by Cumberland Ecology (2025) (searches for lone males and searches of potential nests). This species was not detected by Cumberland Ecology during these targeted surveys, although the timing for some of these surveys were outside the survey period.

Justification of survey method and effort

Survey followed the survey comments in the TBDC which is the appropriate survey method for these species under the BAM.

Timing of survey

Survey was conducted in September 2025 which is within the allowable survey methods for the identified raptor species.

Survey personnel and relevant experience

Targeted diurnal birds (Cockatoos) survey was undertaken by the Biosis ecologists listed in Table 22.

Table 18 Targeted diurnal birds (raptors) survey personnel and relevant experience

Staff member	Role	Relevant experience
Rachel Moore	Senior Zoologist	Over 4 years' experience undertaking fauna surveys in NSW.
Joel Nicholson	Senior Zoologist	Over 5 years' experience undertaking fauna surveys in NSW.
Tara Lillicot	Senior Zoologist	Over 3 years' experience undertaking fauna surveys in NSW.
Trevor Coombes	Graduate Zoologist	Over 1 years' experience undertaking fauna surveys in NSW.
Jake Schwebel	Senior Botanist	Over 5 years' experience undertaking flora and fauna surveys in NSW.

Results

Table 23 provides a summary of the results of the targeted diurnal birds (Cockatoos) surveys completed.

Table 19 Summary of targeted diurnal birds (raptors) survey method and results

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Search for stick nests and breeding individuals.	Not recorded	Not required
<i>Hieraetus morphnoides</i>	Little Eagle	Search for stick nests and breeding individuals.	Not recorded	Not required
<i>Lophoictinia isura</i>	Square-tailed Kite	Search for stick nests and breeding individuals.	Not recorded	Not required

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
<i>Pandion cristatus</i>	Eastern Osprey	Search for stick nests and breeding individuals.	Not recorded	Not required

Limitations

No limitations apply to the above survey.

Diurnal birds (raptors)

Survey method and effort

Targeted surveys for threatened raptors (i.e., Eastern Osprey, Little Eagle, Square-tailed Kite and White-bellied Sea-Eagle) were conducted through searches for stick nests and breeding individuals in accordance with the requirements of the TBDC.

Targeted surveys have also been previously undertaken by Cumberland Ecology (2025) for Little Eagle, Square-tiled Kite and White-bellied Sea-Eagle within the subject land. None of these species were detected by Cumberland Ecology during these targeted surveys and a review of the survey effort and timing has indicated that these surveys were appropriately conducted.

Justification of survey method and effort

Survey followed the survey comments in the TBDC which is the appropriate survey method for these species under the BAM.

Timing of survey

Survey was conducted in September 2025 which is within the allowable survey methods for the identified raptor species.

Survey personnel and relevant experience

Targeted diurnal birds (raptors) survey was undertaken by the Biosis ecologists listed in Table 20.

Table 20 Targeted diurnal birds (raptors) survey personnel and relevant experience

Staff member	Role	Relevant experience
Joel Nicholson	Senior Zoologist	Over 5 years' experience undertaking flora surveys in NSW.

Results

Table 21 provides a summary of the results of the targeted diurnal birds (raptors) surveys completed.

Table 21 Summary of targeted diurnal birds (raptors) survey method and results

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Search for stick nests and breeding individuals.	Not recorded	Not required
<i>Hieraaetus morphnoides</i>	Little Eagle	Search for stick nests and breeding individuals.	Not recorded	Not required
<i>Lophoictinia isura</i>	Square-tailed Kite	Search for stick nests and breeding individuals.	Not recorded	Not required
<i>Pandion cristatus</i>	Eastern Osprey	Search for stick nests and breeding individuals.	Not recorded	Not required

Limitations

No limitations apply to the above survey.

Nocturnal birds

Survey method and effort

Targeted surveys for large forest owls (i.e., Barking Owl, Masked Owl and Powerful Owl) were conducted through monitoring of potential nest trees that were identified during the habitat assessment (living or dead trees with hollows >20cm diameter) via stag watching and spotlighting surveys. Stag watching was undertaken at dusk for approximately 30 minutes at locations with large hollows considered most suitable for use by owls. Once dark, spotlighting surveys using high powered torches were undertaken throughout woodland areas within the study area to search for signs of breeding. Call playback surveys were also undertaken at one location within the study area. Call playback was used for each species in conjunction with stag watching and spotlighting surveys and involved initially listening for 10 minutes, spotlighting for 10 minutes, playing the call intermittently for five minutes, listening for five minutes and searching the surrounding areas for five minutes.

This methodology was applied by Biosis over four nights on 7 to 9 October 2025 and 15 October 2025. None of these species were detected by Biosis during these targeted surveys.

A similar method to the above (spotlighting, dusk watches and call-playback) was also undertaken by Cumberland Ecology (2025) over two nights in May 2022. None of these species were detected by Cumberland Ecology during these targeted surveys and a review of the survey effort and timing has indicated that these surveys were appropriately conducted.

Justification of survey method and effort

Survey guideline followed included the survey comments detailed in the TBDC for these species.

Under these guidelines, a total survey effort of six nights is needed for these three owl species. Based on the combined survey effort by Cumberland Ecology and Biosis within the subject land, a total of six nights has been completed.

Timing of survey

Survey was conducted in line with requirements in the TBDC. Surveys were conducted in May 2022 and October 2025, with the TBDC allowing survey year-round.

Survey personnel and relevant experience

Nocturnal bird surveys were undertaken by the Biosis ecologists in October 2025 are outlined in Table 22.

Table 22 Targeted nocturnal bird survey personnel and relevant experience

Staff member	Role	Relevant experience
Rachel Moore	Senior Zoologist	Over 4 years' experience undertaking fauna surveys in NSW.
Joel Nicholson	Senior Zoologist	Over 5 years' experience undertaking fauna surveys in NSW.
Tara Lillicot	Senior Zoologist	Over 3 years' experience undertaking fauna surveys in NSW.
Trevor Coombes	Graduate Zoologist	Over 1 years' experience undertaking fauna surveys in NSW.
Jake Schwebel	Senior Botanist	Over 5 years' experience undertaking flora and fauna surveys in NSW.

Results

Table 23 provides a summary of the results of the nocturnal bird surveys completed.

Table 23 Summary of nocturnal bird survey method and results

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
<i>Ninox connivens</i>	Barking Owl	Stag watching, spotlighting, call playback	Not recorded	Not required
<i>Tyto novaehollandiae</i>	Masked Owl	Stag watching, spotlighting, call playback	Not recorded	Not required
<i>Ninox strenua</i>	Powerful Owl	Stag watching, spotlighting, call playback	Not recorded	Not required

Limitations

Biosis completed a total survey effort of four surveys nights as part of targeted surveys for these three owl species. Cumberland Ecology (2025) has previously undertaken surveys for these owl species over two nights. This provides a total survey effort of six nights within the subject land which satisfies the BAM requirements. Whilst Biosis has reviewed the work undertaken by Cumberland Ecology, including the level of effort and survey timing, Biosis has not completed the full six nights of survey effort ourselves. If required, Biosis can complete additional survey to satisfy the TBDC requirements and provide updates to this BDAR as part of later submission phases. However, based on the survey effort to date, the presence of these three owl species has been confidently discounted from the subject land.

Mammals

Survey method and effort

Targeted surveys for Squirrel and Koala were not conducted by Biosis. Incidental surveys for these species were undertaken as part of the comprehensive spotlighting undertaken across the subject land as part of the nocturnal bird surveys in October 2025. These incidental surveys did not record either of these two species.

Targeted surveys have been previously undertaken by Cumberland Ecology (2025) for these species within the subject land. These surveys included two consecutive spotlighting nights in February 2022 and four consecutive spotlighting nights in March 2022 along two 500 metres transects. Call playback was also undertaken along these transects. These surveys did not record either of these two species.

Based on these previous surveys these two species have been excluded from the study area.

Justification of survey method and effort

Biosis has not undertaken targeted survey.

Timing of survey

Survey for both species can be undertaken year-round.

Survey personnel and relevant experience

Incidental survey was undertaken by the Biosis ecologists listed in Table 24.

Table 24 Incidental mammal survey personnel and relevant experience

Staff member	Role	Relevant experience
Rachel Moore	Senior Zoologist	Over 4 years' experience undertaking fauna surveys in NSW.
Joel Nicholson	Senior Zoologist	Over 5 years' experience undertaking fauna surveys in NSW.
Tara Lillicot	Senior Zoologist	Over 3 years' experience undertaking fauna surveys in NSW.
Trevor Coombes	Graduate Zoologist	Over 1 years' experience undertaking fauna surveys in NSW.
Jake Schwebel	Senior Botanist	Over 5 years' experience undertaking flora and fauna surveys in NSW.

Results

Table 21 provides a summary of the results of the incidental surveys completed.

Table 25 Summary of incidental mammal survey method and results

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
<i>Petaurus norfolcensis</i>	Squirrel Glider	Incidental survey (spotlighting)	Not recorded	Not required
<i>Phascolarctos cinereus</i>	Koala	Incidental (spotlighting)	Not recorded	Not required

Limitations

Biosis has undertaken incidental (spotlighting) surveys over four nights only. These spotlighting surveys were targeting owl species and likely would have detected the presence of these two species, however they were not targeted as part of those surveys. Cumberland Ecology (2025) has previously undertaken targeted surveys for both Koala and Squirrel Glider utilising both spotlighting and call playback techniques. Biosis has reviewed the work undertaken by Cumberland Ecology, including the level of effort and survey timing, and it appears satisfactory, however Biosis has not undertaken dedicated targeted surveys ourselves. If required, Biosis can complete additional survey to satisfy the TBDC requirements and provide updates to this BDAR as part of later submission phases. However, based on the survey effort to date, the presence of these two species has been confidently discounted from the subject land.

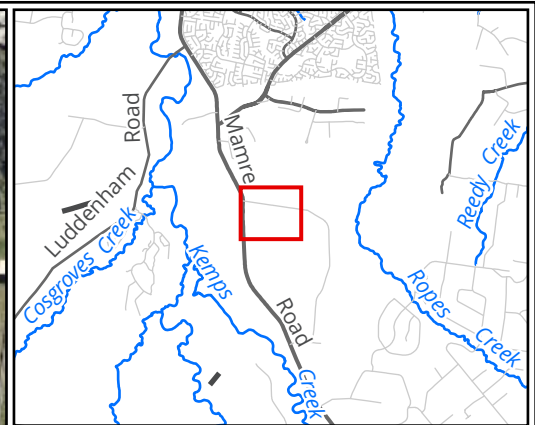
4.2.4 Incidental flora and fauna surveys

No additional threatened flora species were recorded during incidental survey of the subject land.

Southern Myotis *Myotis macropus* was recorded during the 2022 BDAR field investigations by Cumberland Ecology. This species has been considered as a candidate species.

Grey-headed Flying-fox *Pteropus poliocephalus* was recorded during the 2022 BDAR field investigations by Cumberland Ecology. This species is not considered a candidate species as no camps or maternity roosts are present in the subject land, however this species has been included as a predicted species. This species is unlikely to be impacted by the proposed Project due to only marginal habitat and foraging resources present in the subject land.

Greater Broad-nosed Bat *Scoteanax rueppellii* was recorded during the 2022 BDAR field investigations by Cumberland Ecology and has been added to the BAM-C as a predicted species for the subject land.



Legend

- Subject land
- Development site
- Development footprint
- Fauna survey tracks
- Flora survey tracks
- Owl survey call playback

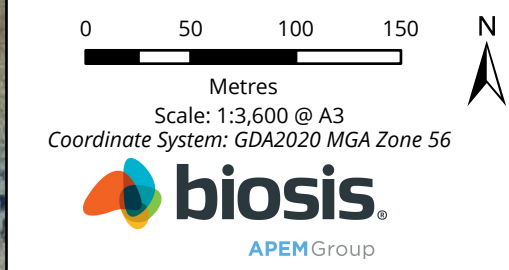
Threatened fauna species (BioNet)

- Cumberland Plain Land Snail - 10526
- Eastern Coastal Free-tailed Bat - 10544
- Greater Broad-nosed Bat - 10748
- Grey-headed Flying-fox - 10697
- Little Eagle - 20131
- Southern Myotis - 10549

Threatened fauna species (Biosis)

- Grey-headed Flying-fox - 10697
- Little Eagle - 20131

Figure 9 Targeted species mapping



4.2.5 Appropriate local data

Under Section 5 of the BAM (DPIE 2020a), an assessor may use more appropriate local data (instead of data from the TBDC) when assessing the habitat suitability for threatened species. No such local data has been used for threatened species assessment.

4.2.6 Expert reports

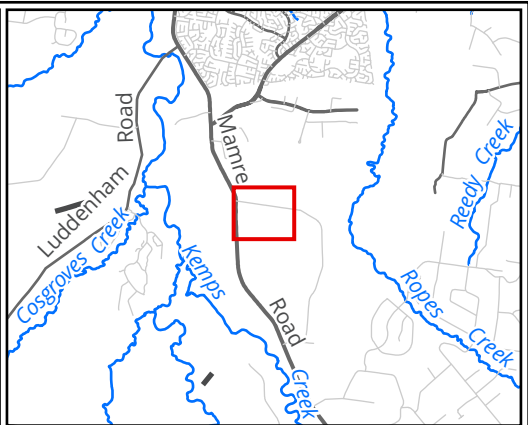
Sections 5.2 and 5.3 of the BAM outlines that an expert report may be obtained instead of undertaking a species survey for a Project, where the expert report is prepared by a person who, in the opinion of the Environment Agency Head, possesses specialised knowledge based on training, study or experience to provide an expert opinion in relation to the biodiversity values to which an expert report relates (DPIE 2020a). No expert reports were utilised for the current assessment.

4.2.7 Threatened species summary and polygons

Table 26 provides details of threatened species impacted by the project and outlines the attributes that comprise the threatened species polygons. The presence of threatened species impacted by the project is illustrated in Figure 9 and Figure 10.

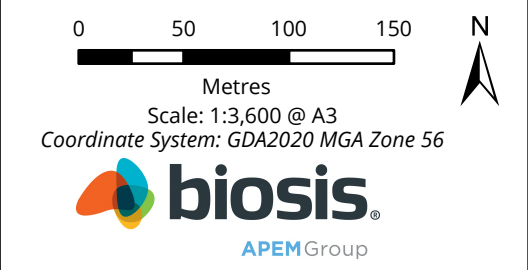
Table 26 Threatened species polygons within the subject land

Threatened species	Impact (ha)	Unit of measure	Biodiversity risk weighting	Polygon attributes
Flora				
<i>Maundia triglochinoxides</i>	0.40 ha of PCT 3975	Ha (area)	2	The extent of PCT 3975 representing potential wetland habitat for this species
<i>Persicaria elatior</i>	0.40 ha of PCT 3975	Ha (area)	2	The extent of PCT 3975 representing potential wetland habitat for this species
Fauna				
Southern Myotis	0.01 ha of PCT 3320_DNG 0.26 ha of PCT 3320_Low 0.63 ha of PCT 3320_Moderate 0.40 ha of PCT 3975	Ha (area)	2	All areas within 200 metres of dams representing potential foraging habitat for this species



- Legend**
- Subject land
 - Development footprint
 - Threatened species polygon**
 - Maundia triglochinos*
 - Southern myotis - *Myotis macropus*
 - Tall Knotweed - *Persicaria elatior*

Figure 10 Threatened species polygons



Stage 2 — Impact assessment (Biodiversity Values)

5 Avoid and minimise impacts

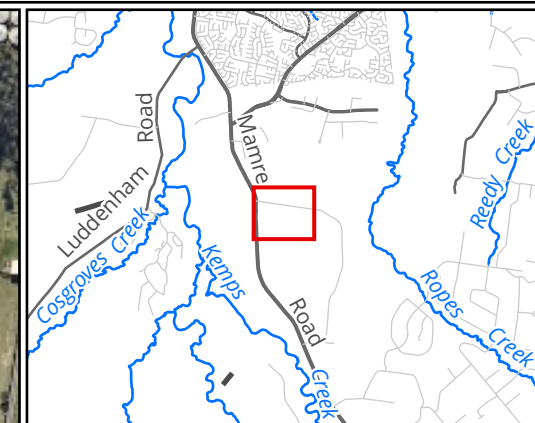
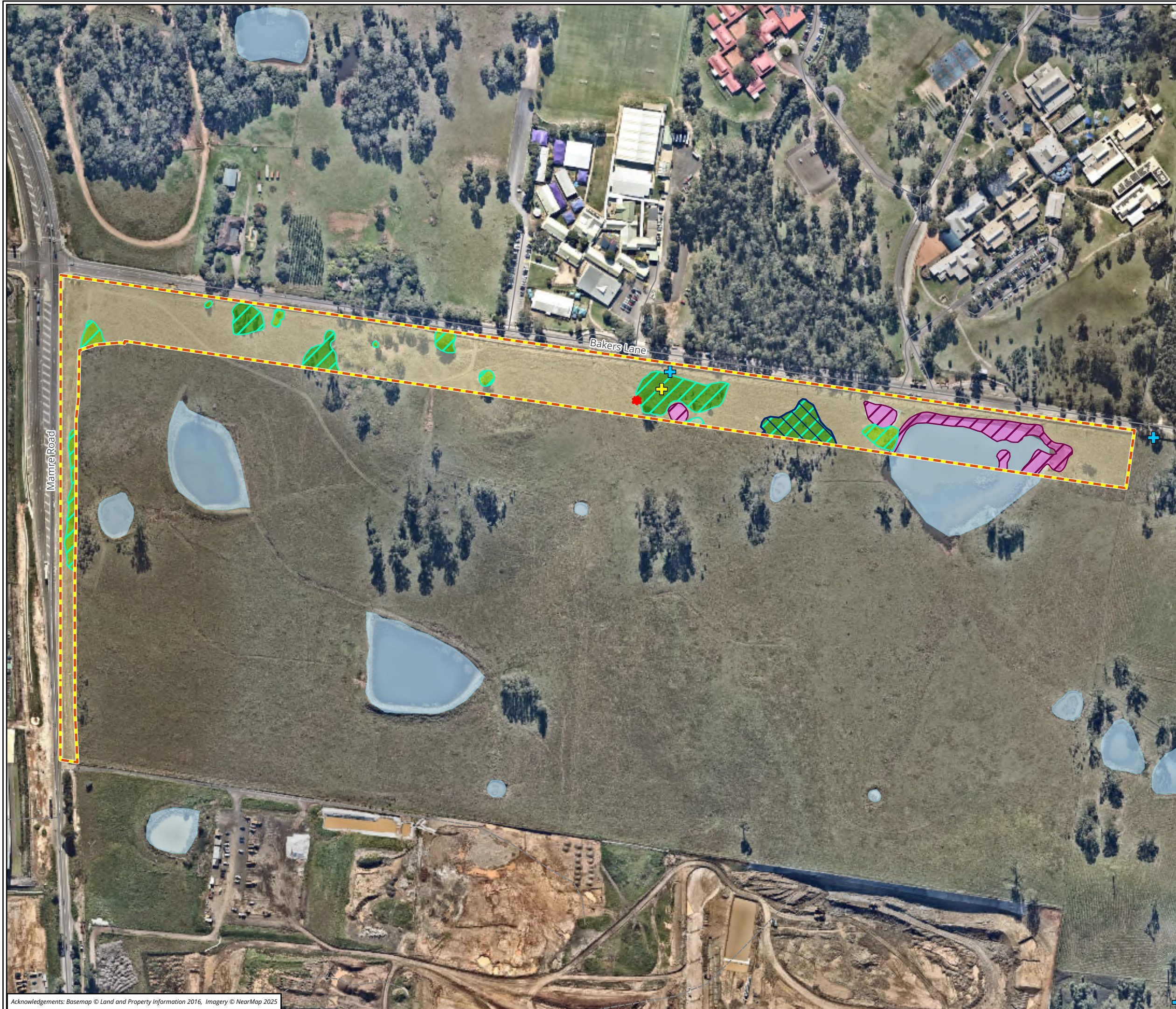
This section demonstrates the efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the Project in accordance with the BAM.

The principal means to reduce impacts on biodiversity values within the development site is to avoid and/or minimise the removal of native vegetation and fauna habitat. Opportunities to avoid or minimise impacts within the subject land are limited given the configuration and size of the excluded land. The Project has proposed to utilise a site that is largely certified land within the Mamre Road Precinct area (MRP DCP) and has been identified for development by being certified as urban capable land under the CPCP. The remaining non-certified land in the the subject land contains fragmented, disturbed patches of vegetation with limited connectivity in a highly disturbed landscape. The disturbed nature of this vegetation was considered during site selection, and the site was selected on this basis to minimise impacts on larger, more intact woodland remnants elsewhere in the region and to focus development on land of lower ecological value. By situating the development within this already disturbed area rather than adjacent areas of more intact native vegetation in the locality, the project inherently minimises biodiversity impacts.

In addition, considering the development site is predominantly composed of certified urban-capable land, the site (and wider locality) has been identified at a strategic level as suitable for urban development and represents an area where development is anticipated. This strategic site selection ensures that residual impacts are focused on a limited, highly disturbed portion of non-certified land, Impacts to non-certified area native vegetation is limited to 1.35 hectares, with the majority of impacts occurring to certified land native vegetation in the development site (18.03 hectares). The Project has designed access roads in the existing Bakers Lane footprint. As such the risk of vehicle strikes to native fauna species that are currently present through the adjacent Bakers Lane will not be exacerbated due to the placement of the Project's road and road upgrades adjacent to the existing Bakers Lane. Bakers Lane & Southern Link Road will be constructed by others, and are not included within the current SSDA.

The Project have designed the buildings to occur within the centre of the development site and the landscaping to largely occur on external faces of the site in the northern, eastern, western and southern boundaries. The design of landscaped areas on the external boundaries of the development site post-construction will connect the development site vegetation to be planted and the surrounding vegetation in the assessment area. For example, landscaped biodiversity value will connect to the vegetation north of the current Bakers Lane, which is proposed to be the Southern Link Road post-construction, this will be delivered by others and does not form part of the current SSDA.

Figure 11 and Figure 12 show the final development footprint that is considered to minimise impacts on biodiversity values through construction and operation planning and design. Prescribed impacts and indirect impact zones are shown in Figure 13 and Figure 14.



Legend

- Subject land
- Development footprint
- Hollow-bearing tree

Vegetation zone

- VZ01 - PCT 3320 - DNG
- VZ02 - PCT 3320 - Low
- VZ03 - PCT 3320 - Moderate regrowth
- VZ04 - PCT 3975 - Moderate

Threatened ecological communities

- Freshwater Wetlands on Coastal Floodplains of the New South
- Wales North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)
- Cumberland Plain Woodland in the Sydney Basin Bioregion (CEEC, BC Act)
- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CEEC, EPBC Act)

Threatened fauna species (Biosis)

- Grey-headed Flying-fox - 10697
- Little Eagle - 20131

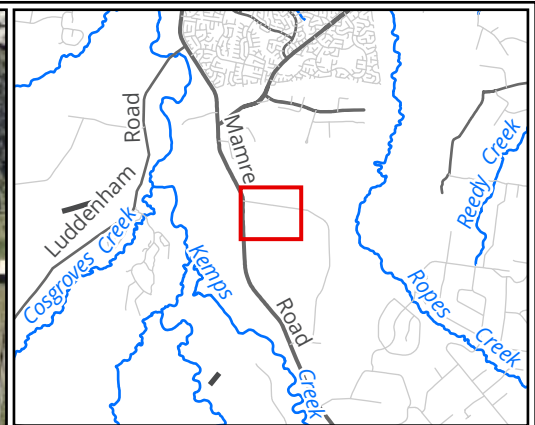
Figure 11 Final development footprint



Scale: 1:3,600 @ A3
Coordinate System: GDA2020 MGA Zone 56

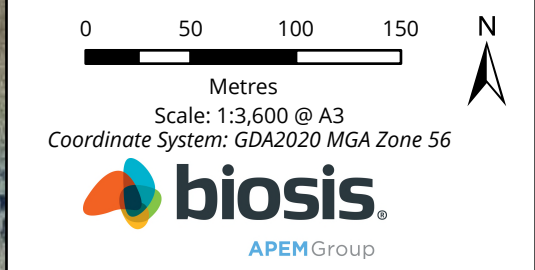


Matter: 43542, Date: 17 October 2025,
Prepared for: JC, Prepared by: JB, Last edited by: jbeckius
Location: P:
V43500sV43542\Mapping\43542_MamreRd_KempsCrk_BDAR_Part2.aprx
Layout: 43542_F11_FinalDF



- Legend**
- Subject land
 - Development footprint
 - Areas of avoidance (development footprint not assessed in this BDAR)

Figure 12 Avoidance



6 Impacts that are unable to be avoided

Assessment of direct and indirect impacts unable to be avoided has been undertaken in accordance with the BAM (DPIE 2020a). The following direct and indirect impacts are unable to be avoided in progressing the proposed development in the subject land.

6.1 Direct impacts

Direct impacts include vegetation clearing, dam infill and non-native vegetation removal calculated from the area of the proposed development footprint in the subject land.

Direct impacts to the subject land arising from the project include:

- Removal of 1.36 ha of native vegetation comprising:
 - 0.63 ha of PCT 3320 in Moderate (Regrowth) condition of which all is consistent with the BC Act listed CEEC *Cumberland Plain Woodland*. One patch of PCT 3320 in Moderate - regrowth condition (0.19 ha) is consistent with the EPBC Act listed CEEC *Cumberland Plains Shale Woodlands* as well as the BC Act CEEC.
 - 0.30 ha of PCT 3320 in Low condition consistent with the BC Act listed CEEC *Cumberland Plain Woodland*.
 - 0.01 ha of PCT 3320 in DNG condition consistent with the BC Act listed CEEC *Cumberland Plain Woodland*.
 - 0.40 ha of PCT 3975 in Moderate condition consistent with the BC Act listed EEC *Freshwater Wetlands on Coastal Floodplains*.
- Removal of Southern Myotis foraging habitat, consistent with PCT 3975 and PCT 3320 within 200 metres of dams including:
 - 0.01 ha of PCT 3320 in DNG condition.
 - 0.26 ha of PCT 3320 in Low condition.
 - 0.63 ha of PCT 3320 in Moderate - regrowth condition.
 - 0.40 ha of PCT 3975 in Moderate condition.
- Removal of 0.40 ha of PCT 3975 of potential habitat for *Maundia triglochinos* and *Persicaria elatior* (assumed present).

These impacts will be permanent and will occur from the outset of the development. Mitigation measures outlined in Section 7 above will help to minimise the potential impacts to biodiversity values that remain present within assessment area directly adjacent to the subject land. A summary of PCTs/zones directly impacted is demonstrated in Table 27.

Table 27 Summary of direct impacts to vegetation in the subject land

Zone	PCT	TEC	Area within subject land (ha)	Area impacted within the subject land (ha)	VI Score
3320_Moderate	PCT 3320	EPBC Act listed CEEC <i>Cumberland Plains Shale Woodlands</i> (one patch only of 0.19 ha) and BC Act listed CEEC <i>Cumberland Plain Woodland</i> (all patches)	0.63 ha	0.63 ha	37
3320_Low	PCT 3320	BC Act listed CEEC <i>Cumberland Plain Woodland</i>	0.30 ha	0.30 ha	25.7
3320_DNG	PCT 3320	BC Act listed CEEC <i>Cumberland Plain Woodland</i>	0.01 ha	0.01 ha	11.6
3975_Moderate	PCT 3975	BC Act listed EEC <i>Sydney Freshwater Wetlands</i>	0.40 ha	0.40 ha	58.8

Table 28 Summary of direct impacts species credit habitat in the subject land

Species	Sensitivity	Area (ha)
Southern Myotis	High	0.01 ha of PCT 3320 in DNG condition. 0.26 ha of PCT 3320 in Low condition. 0.63 ha of PCT 3320 in Moderate – regrowth condition. 0.40 ha of PCT 3975 in Moderate condition.
<i>Maundia triglochinos</i>	High	0.40 ha of PCT 3975 in Moderate condition.
<i>Persicaria elatior</i>	High	0.40 ha of PCT 3975 in Moderate condition.

6.1.1 Loss of hollow bearing trees

In total, five hollow-bearing trees and one hollow-bearing stag will be impacted in the subject land by the proposed development for the Project. Hollow-bearing trees and stags range from medium to very large in size, with small (<50mm), medium (50-149mm) to large (150-400mm) hollows in these trees throughout the site. Mitigation for the removal of hollow-bearing trees and stags is outlined in Section 7 of this BDAR.

6.2 Indirect impacts

This section details potential indirect impacts associated with the construction and operation of the Project following the implementation of proposed avoidance and minimisation measures. Indirect impacts are considered to potentially occur in areas outside the subject land. Indirect impacts can in some circumstances be adequately mitigated as recommended within this assessment, via active management and within a Construction Environmental Management Plan (CEMP). Potential indirect impacts arising from the project are outlined and addressed in Table 29 below and displayed in Figure 13.

Table 29 Assessment of indirect impacts

Indirect impact (Describe impact, e.g. transport of weeds and pathogens from the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences
Inadvertent impacts on adjacent habitat or vegetation	• Adjacent native vegetation connectivity in the assessment area. • Hollow-bearing trees – potential breeding habitat for common hollow dependent fauna species. • Stick nests. • Logs and organic litter. • All ecosystem credit species assumed present in the surrounding assessment area.	• Connectivity to native vegetation and habitat to the north and east of the subject land. • Any hollow-bearing trees or habitat for assumed ecosystem credit species in the assessment area. • Southern Myotis habitat (treed areas) in locality.	One-off	Long-term	Construction and operation.	Low likelihood. Impacts to adjacent vegetation during construction and operational phase can be prevented or minimised through appropriate exclusion fencing, implementation of a CEMP detailing best practice environmental protection measures, strict water quality practices and stormwater controls, and by ensuring any lighting is directed towards the developed area, rather than towards the adjacent retained habitats.
Reduced viability of adjacent habitat due to edge effects	• Adjacent native vegetation connectivity in the assessment area.	• Connectivity to native vegetation and habitat to the north and	Ongoing	Short-term	Construction and operation.	Moderate likelihood. Adjacent habitats to the north and east of the subject land are currently subject to a high degree of edge effects due to prior clearing and surrounding existing industrial and agricultural land use.

Indirect impact (Describe impact, e.g. transport of weeds and pathogens from the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences
	- Hollow-bearing trees – potential breeding habitat for common hollow dependent fauna species. - All ecosystem credit species assumed present in the surrounding assessment area.	- east of the subject land. - Any hollow-bearing trees or habitat for assumed ecosystem credit species in the assessment area.				Since little (1.35 ha) vegetation is to be removed from the subject land and a significant increase to edge effects is not expected to occur to the remnant vegetation surrounding the subject land, as a result of the proposed development.
Reduced viability of adjacent habitat due to noise, dust or light spill	- Adjacent native vegetation connectivity in the assessment area. - Hollow-bearing trees – potential breeding habitat for common hollow-bearing tree dependent fauna species. - All ecosystem credit species assumed	- Connectivity to native vegetation and habitat to the north and east of the subject land. - Any hollow-bearing trees or habitat for assumed ecosystem credit species in the assessment area.	Temporary	Short-term	Construction and operation.	Moderate likelihood. It is predicted that the adjacent habitat to the north and east of the subject land will be impacted in a small way by noise, dust and light spill, during construction and operation of the future development of the subject land. However, this will be managed via best practices outlined in a CEMP. The subject land also already occurs in an industrial and special use area, and light and noise pollution is most likely moderate currently. This will likely not substantially increase due to the proposed future development.

Indirect impact (Describe impact, e.g. transport of weeds and pathogens from the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences
	present in the surrounding assessment area.	Southern Myotis habitat (treed areas) in locality.				
Transport of weeds and pathogens from the site to adjacent vegetation	Adjacent native vegetation connectivity in the assessment area.	Connectivity to native vegetation and habitat to the north and east of the subject land.	Ongoing	Long-term	Construction and operation.	Moderate likelihood. Weeds occurring within the subject land are common. Increased transport of pathogens and weeds that are not already within adjacent vegetation patches is unlikely to occur but will be managed by biosecurity measures outlined in the CEMP.
Increased risk of starvation, exposure and loss of shade or shelter	- Adjacent native vegetation connectivity in the assessment area. - Hollow-bearing trees – potential breeding habitat for common hollow-bearing tree dependent fauna species. - All ecosystem credit species assumed present in the surrounding	- Connectivity to native vegetation and habitat to the north and east of the subject land. - Any hollow-bearing trees or habitat for assumed ecosystem credit species in the assessment area. - Southern Myotis habitat (treed areas) in locality.	Ongoing	Long-term	Construction and operation.	Low likelihood. The habitat present in the subject land is considered marginal for most fauna species given the disturbed condition, however, provides habitat for Southern Myotis (recorded in subject land) and as potential habitat for <i>Maundia triglochinos</i> and <i>Persicaria elatior</i> . The proposed future development will not result in an increased risk of starvation, exposure and loss of shade or shelter to native species due to the small total area of vegetation being removed in the subject land (1.35 ha) and it very small proportion of commensurate habitats available in the immediate vicinity.

Indirect impact (Describe impact, e.g. transport of weeds and pathogens from the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences
	assessment area.					
Loss of breeding habitats	- Hollow-bearing trees – potential breeding habitat for common hollow-bearing tree dependent fauna species. - All ecosystem credit species assumed present.	Hollow-bearing trees.	One-off	Long-term	Construction.	Moderate likelihood. Specialist breeding habitat in the form of small to large hollows will be impacted by the proposed future development. Retained vegetation in assessment area provides higher quality habitat and will not be reduced by the proposed development.
Trampling of threatened flora species	Not applicable.	Not applicable.	Not applicable.	Long-term.	Construction and operation.	Moderate likelihood. No threatened flora species were found, but two species have been assumed present within the subject land (<i>Maundia triglochinos</i> and <i>Persicaria elatior</i>), and thus trampling of threatened flora species is possible. However, the whole subject land is proposed to be prepared for the construction of the Project.
Inhibition of nitrogen fixation and increased soil salinity	Adjacent native vegetation connectivity in the assessment area.	Connectivity to native vegetation and habitat to the north and east of the subject land.	Unknown.	Long-term	Construction and operation.	Moderate likelihood. Any future excavations or soil disturbance resulting from the future development of the subject land would be largely restricted to areas having undergone significant previous disturbance through grazing and clearing. As such it is not considered likely that the future development of the subject land would

Indirect impact (Describe impact, e.g. transport of weeds and pathogens from the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences
						result in substantial changes to the level of nitrogen fixation or soil salinity in the locality.
Fertiliser drift	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Negligible likelihood. No fertiliser is proposed to be used.
Rubbish dumping	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Negligible likelihood. Standard environmental controls for the project will ensure potential impacts are minimised. Works will follow an approved CEMP or similar and specific waste and water management requirements.
Wood collection	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Negligible likelihood. Future development proposed within the subject land is unlikely to increase access to any retained vegetation outside of the subject land, beyond current access capacity. Based on the future industrial use of the subject land, future landholders are not expected to be likely to undertake wood collection within the retained vegetation adjacent to a level that it will have a detrimental effect. Unauthorised access and collection of wood is expected to be minimal.
Removal and disturbance of rocks, including bush rock	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Negligible likelihood. The subject land does not support bush rock.

Indirect impact (Describe impact, e.g. transport of weeds and pathogens from the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences
Increase in predators and pest animal populations	- All ecosystem credit species assumed present. - Common fauna species present.	Native vegetation within the surrounding assessment area.	One-off.	Long-term.	Operation.	Moderate likelihood. The subject land already occurs within a semi-urbanised setting with pets, such as dogs and horses, and common pest species like rabbits and foxes are likely present. The subject land is already largely cleared. The remaining vegetation clearance proposed by the development, and proposed land use, is unlikely to increase predatory species populations.
Changed fire regimes	Adjacent native vegetation connectivity in the assessment area.	Native vegetation within the surrounding assessment area.	Ongoing	Long-term	Construction and operation.	The proposal occurs in a semi-urbanised area. Appropriate asset protection zones and fire mitigation systems will be implemented for the future development, and the proposal will not result in an increased risk of fire.
Disturbance to specialist breeding and foraging habitat, e.g. important mapped areas	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Negligible. No mapped important habitat occurs within the subject land.
Fragmentation of movement corridors	Adjacent native vegetation connectivity in the assessment area.	Connectivity to native vegetation and habitat to the north and east of the subject land.	One-off.	Long-term.	Construction, operation, rehabilitation.	Moderate likelihood. Movement corridors are currently in the north and east towards vegetation and waterways/waterbodies in the locality. The project will result in the removal of 1.35 ha of native vegetation that fringes the subject land to the north, west

Indirect impact (Describe impact, e.g. transport of weeds and pathogens from the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences
	- Hollow-bearing trees – potential breeding habitat for common hollow-bearing tree dependent fauna species. - All ecosystem credit species assumed present in the surrounding assessment area.	- Any hollow-bearing trees or habitat for assumed ecosystem credit species in the assessment area. - Waterways and waterbodies.				and east. The removal of vegetation along the north and east may fragment movement corridors, however extensive remnant vegetation exists to the north of Bakers Lane (possible movement corridors) which will not be impacted by the development. Landscaping during rehabilitation of the site post-construction may strengthen connective habitat for generic, highly mobile fauna species.

6.3 Prescribed impacts

Identification and assessment of prescribed biodiversity impacts are outlined and addressed in Table 30, and the section below, and shown in Figure 14.

Table 30 Identification of prescribed impacts

Prescribed impact	Description of relevant habitat features associated with prescribed impacts	Threatened species likely to utilise habitat features associated with prescribed impact	Importance of habitat feature to impacted species
Karst, caves, crevices, cliffs, rocks and other geological features of significance	No karst, caves, crevices, cliffs rocks or other geological features of significance occur within the subject land.	Not applicable.	Not applicable.
Occurrences of human-made structures and non-native vegetation	One dilapidated building previously existed in the subject land but has since been demolished, therefore provides no habitat values. Non-native vegetation exists as exotic planted shrubs and trees around the demolished building site, as well as exotic grasses throughout the subject land.	The non-native vegetation within the subject lands is not likely to be utilised by threatened species.	Non-native vegetation in the subject land is unlikely to support key habitat requirements for fauna species.
Corridors or other areas of connectivity linking habitat for threatened entities	The subject land provides movement corridors from the northern and eastern vegetation and watercourses and waterbodies in the subject land.	All ecosystem credit species assumed present. Common fauna species.	Within the locality the subject land is connected with some areas of uncleared vegetation and habitat which also act as movement corridors.
Water bodies or any hydrological processes that sustain threatened entities	Three human-made dams and one unnamed non-perennial natural watercourse exist in the subject land in a degraded state. Nonetheless these areas provide generic fauna habitat values. Dams with fringing native vegetation (PCT 3975) conform with the BC Act listed <i>Freshwater Wetlands on Coastal Floodplains EEC</i> .	Southern Myotis was recorded on site and is associated with areas of PCT 3975 and this EEC associated with the dams in the subject land.	This habitat is likely a small part of this highly mobile species' utilised habitats. Due to the minimal extent of vegetation removal on site compared to the broader locality's vegetation extent and available waterbodies, Southern Myotis is likely to utilise the habitat adjacent to the subject land after the proposed development is finished.
Protected animals that may use the proposed wind farm development site as a flyway or migration route	Not applicable. Project is not a wind farm development.	Not applicable.	Not applicable.
Where the proposed development may result in vehicle strike on	The project will result in increased vehicle traffic during construction and operations. This increased vehicle traffic has the potential to impact upon native fauna species	All ecosystem credit species assumed present.	Non-threatened, ground dwelling fauna known to inhabit the general area, particularly common species such as Kangaroos and Emus are notoriously prone to vehicle strike. Low flying ground foraging birds

Prescribed impact	Description of relevant habitat features associated with prescribed impacts	Threatened species likely to utilise habitat features associated with prescribed impact	Importance of habitat feature to impacted species
threatened fauna or on animals that are part of a threatened ecological community	that are active during the day and evening, and generally with a higher potential for impact in areas where refuge/forage habitat exists immediately adjacent to areas where vehicle movements will occur (along Bakers Lane).	Common fauna species. Southern Myotis.	are also prone to increased collision due to increase in traffic during construction. Vehicle strike is likely to be an impact already in place, due to the existence of Mamre Road to the west and Bakers Lane to the north, which is unlikely to be significantly exacerbated during construction.

6.3.1 Non-native vegetation

Nature

There are no areas of predominantly non-native vegetation that support habitat of any significant value to threatened species in the subject land. Non-native vegetation within the subject land occurs as naturalised components in retained native vegetation areas and exotic grassland.

Extent

Non-native vegetation is the predominant vegetation type in the subject land, approximately 5.36 ha exists within the subject land.

Duration

All non-native vegetation is proposed to be removed by the Project.

Consequences for entities detailed in Table 30

No threatened species are likely to utilise these areas of non-native vegetation and are unlikely to be impacted by its removal.

6.3.2 Habitat connectivity

Nature

Habitat connectivity pathways occur through the subject land and broader landscape in varying degrees of quality and length.

The key connectivity features relevant to the subject land are patches of vegetation in the north and east of the subject land and the existing waterbodies (dams) that connect to the natural waterway (unnamed, non-perennial) that connects to the adjacent waterbodies and habitat to the east of the subject land.

Extent

All areas of vegetation and waterways are to be impacted by the proposed development including 1.35 ha of native vegetation.

Duration

Impacts are considered long-term as they will occur for a perceivably indefinite period of time post-construction.

Consequences for entities detailed in Table 30

Within the locality the subject land is partly connected with vast extents of uncleared vegetation and habitat which also act as movement corridors. The Project will result in the permanent removal of the connectivity value the subject land currently provides for surrounding native vegetation to the north and east of the subject land. Native vegetation within the subject land will no longer have the ability to act as a movement

corridor for fauna species. However, the Project will not remove any key areas of connectivity within the broader surrounds. The proposed development will not result in the loss of, or substantial impacts to key functional corridors within the landscape. It is expected that fauna species will continue to utilise the existing corridors adjacent to the subject land and broader landscape, with minor or negligible impact to movement patterns and/or population viability.

6.3.3 Vehicle strikes

Nature

The Project has the potential to result in increased vehicle strikes during the construction and operational phase of the Project as a result of increased vehicle movements, and in particular heavy vehicles. The Project will not significantly increase vehicle movements post construction of the Southern Link Road (delivered by Others, and not included within the current SSD).

Extent

Increased heavy vehicle movements will occur and be ongoing for the life of the Project, however, the main increase in vehicular movement will occur during the construction phase of the Project and prior to completion.

Duration

The potential for increased vehicle strikes will occur and be ongoing for the life of the Project and beyond.

Consequences

Ground dwelling fauna known to inhabit the general area are notoriously prone to vehicle strike. Low flying ground foraging birds are also prone to increased collision due to increase in traffic during construction. Vehicle strike is likely to be an impact already in place, which is unlikely to be exacerbated during construction and post-construction due to the existing roads adjacent to the subject land, Mamre Road and Bakers Lane. The Project is not expected to result in any substantial or significant impacts to threatened species associated with vehicle strikes.

6.4 Impacts considered uncertain

Impacts considered uncertain are generally those that cannot be quantified and are difficult to predict. This includes many of the indirect and prescribed impacts discussed in Sections 6.2 and 6.3 above, such as:

- Inadvertent impacts to native vegetation adjacent the development footprint.
- Introduction of pests, pathogens and weeds to native vegetation adjacent the development footprint and further afield.
- Vehicle strikes.

In the context of the current Project and assessment, it is considered that impacts considered uncertain are generally able to be managed to negligible or satisfactory levels through the application of a CEMP and its sub-plans, as well as ecological supervision of hollow-bearing tree removal and dam infill as outlined in Section 7 of this BDAR. Monitoring, adaptive management and adequate response are the key components that will be in place to successfully mitigate potential uncertain impacts to biodiversity (Section 7).

6.5 Impacts to Groundwater Dependent Ecosystems (GDE)

Assessment of the potential for the subject land to support groundwater dependant ecosystems (GDEs) was undertaken using the Australian Government's Bureau of Meteorology Groundwater Dependant Ecosystems Atlas (BOM 2019). The subject land is not mapped as supporting GDEs associated with an aquifer in Appendix 8 of the *Risk Assessment Guidelines for Groundwater Dependent Ecosystems* (DPI 2012). The subject land is not mapped as having Groundwater Vulnerability (MRP DCP 2021 and WSEA).

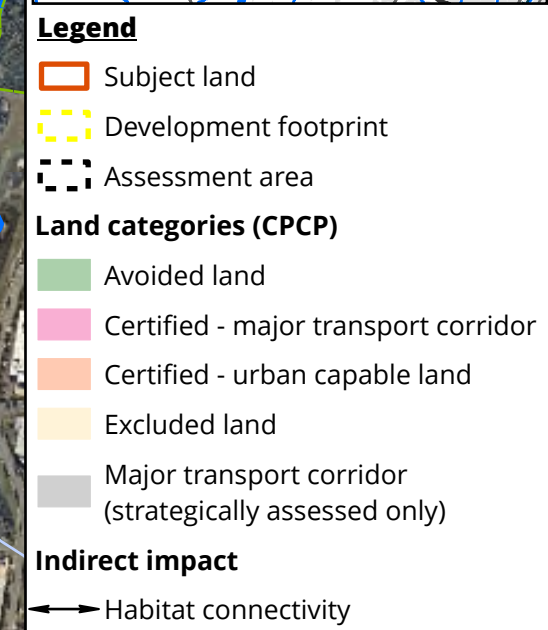
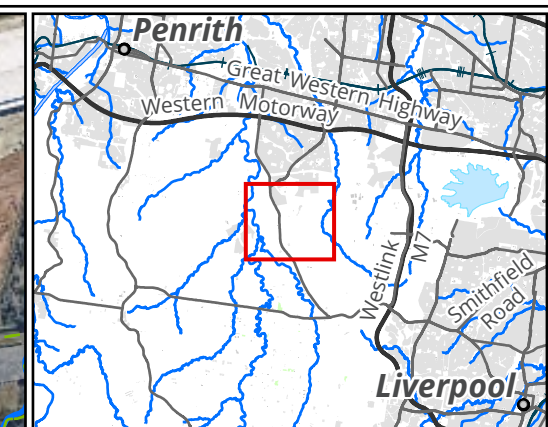
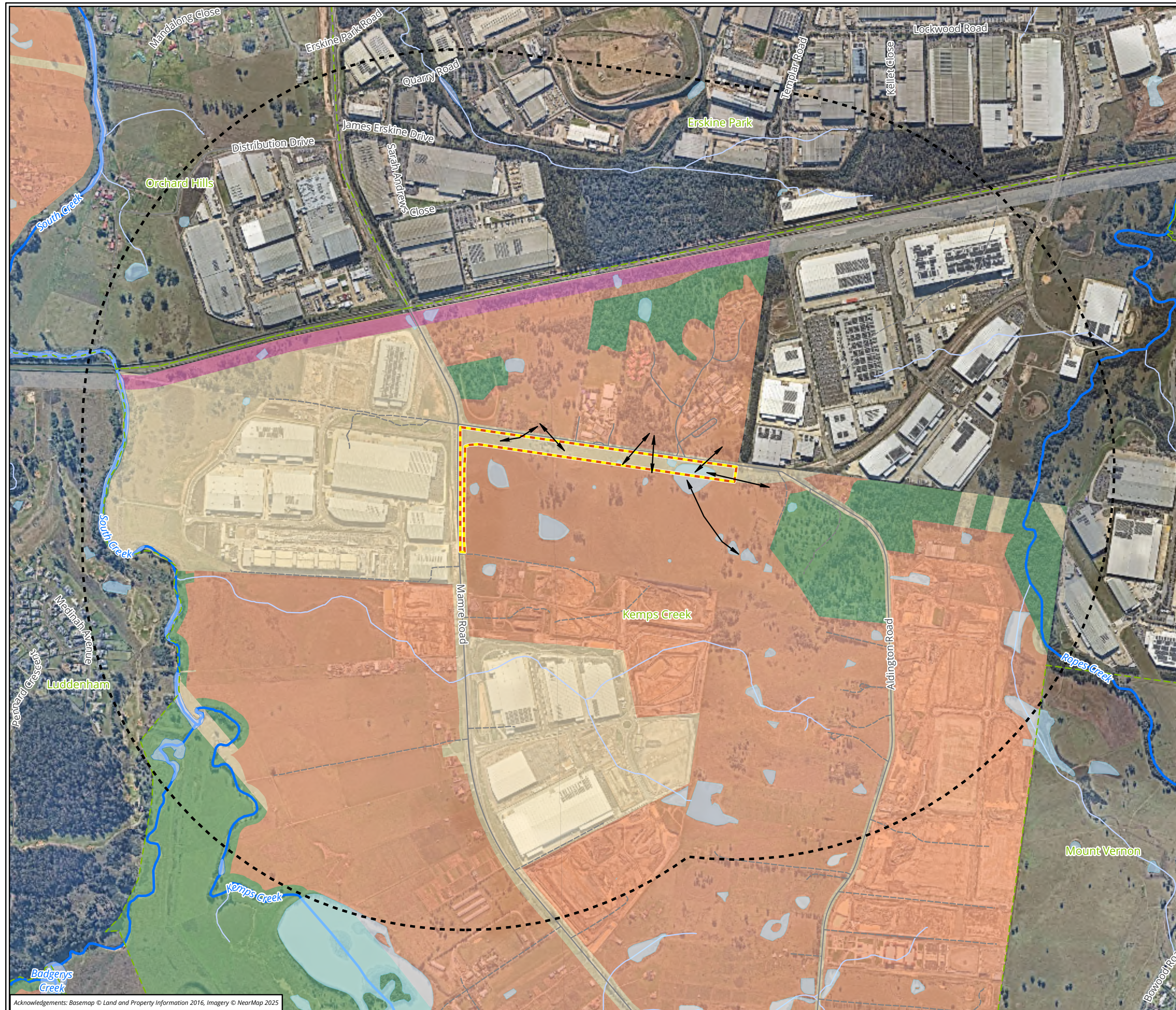
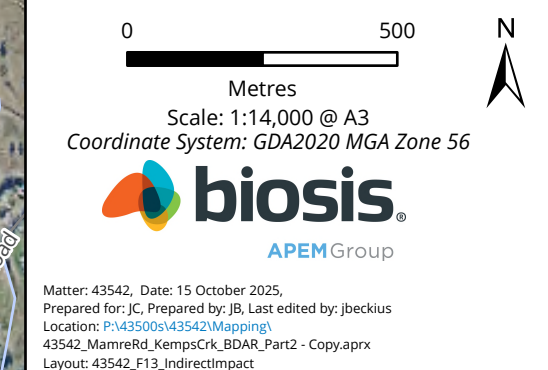
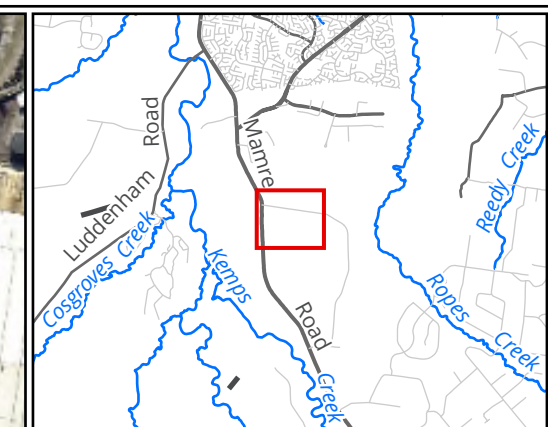


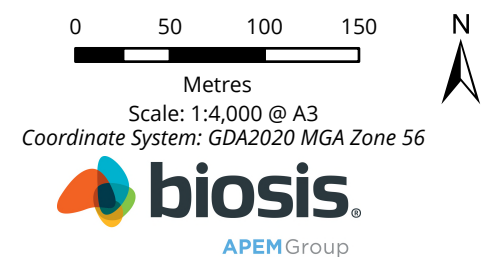
Figure 13 Estimated zones of indirect impact





- Legend**
- Subject land
 - Development footprint
 - Strahler stream order**
 - 1
 - Prescribed impacts**
 - Non-native vegetation
 - Vehicle strikes
 - Habitat connectivity

Figure 14 Prescribed impacts



7 Mitigation and management of impacts

Identification of measures to mitigate or manage impacts has been undertaken in accordance with the BAM (DPIE 2020a), including considerations such as:

- Techniques, timing, frequency and responsibility.
- Identification of measures for which there is risk of failure.
- Evaluation of the risk and consequence of any residual impacts.
- Documentation of any adaptive management strategy proposed.

Identification of measures for mitigating impacts related to:

- Displacement of resident fauna.
- Indirect impacts on native vegetation and habitat.
- Mitigating prescribed biodiversity impacts.
- Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain.

Measures to mitigate or manage impacts are described in Table 31 below.

Table 31 Measures to mitigate and manage impacts

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
Native vegetation removal and displacement of resident fauna	A CEMP should be implemented for the development site that would include the following sub-plans or protocols: • Vegetation clearance protocol. • Hollow-bearing tree removal specification. • Dam infill procedures for native fauna recovery. • Fauna injury protocol.	Mitigate risk of impact to environmental controls during project construction.	Ongoing/throughout earthworks and vegetation removal.	Construction contractor, the developer and its representatives.
	Any hollow-bearing trees marked for removal in the development site should be removed according to a two-staged vegetation clearance protocol to ensure no injury or loss of fauna, including: • Hollow-bearing trees to be inspected immediately prior to removal, by a qualified ecologist.	No direct impact to resident fauna during vegetation removal.	Immediately prior to vegetation removal.	Qualified ecologist and construction contractor.

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	All vegetation in the development site is to be inspected immediately prior to removal by construction contractors to confirm absence of foraging fauna in vegetation. If fauna is observed, unexpected threatened species find procedure, as detailed in a CEMP, to be implemented.	No direct impact to resident fauna during vegetation removal.	Immediately prior to vegetation removal.	Construction contractor.
	A Vegetation Management Plan (VMP) should be implemented for the development site for landscaping areas proposed.	Management and monitoring of landscape vegetation post-construction. Limitation of weed ingress into surrounding retained areas outside of the development site.	Immediately after landscaping commences.	Construction contractor, the developer and its representatives.
Direct impacts to waterways and waterbodies	Minimise impacts to waterbodies and waterways in the development site and surrounds, including dams and one Stahler Order one stream in the subject land. - Prior to construction, a suitably experienced and qualified Project Ecologist should be appointed to oversee ecological works in waterways and waterbodies of the development site. - In the unlikely event that unexpected threatened species are identified within the riparian areas during the project, works should cease and an ecologist contacted. - Appropriate erosion and sediment control measures should be installed at all sites to avoid sedimentation of receiving water bodies or other indirect impacts to	No direct impacts to resident fauna utilising waterbodies or waterways in the development site.	Design, prior to construction, during construction, post-construction.	Construction contractor, The Project Ecologist, the developer and its representatives.

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	surrounding biodiversity values. A dam dewatering plan is to be required for the removal of the farm dams within subject land and development site.			
Introduction and spread of weeds	Implementation of the Weed Eradication and Management Plan (WEMP) as outlined in (Biosis 2025a) is required directly after construction and considered during operation and construction works.	Limitation of weed ingress into surrounding retained areas outside of the development site.		
Indirect impacts on native vegetation and habitat	Install appropriate stormwater and erosion controls in the development site.	No further degradation to retained vegetation and habitats adjacent to the development site.	Ongoing/Throughout construction.	Construction contractor.
	Installation of appropriate exclusion fencing around trees and vegetation to be retained adjacent to the development site: - The radius of the tree protection zone (TPZ) is calculated for each tree by multiplying its diameter at breast height by 12, in accordance with the (Council of Australian Standards 2009). - A TPZ should not be less than 2 m, or greater than 15 m, except where crown protection is required (Council of Australian Standards 2009). - This would include appropriate signage such as 'No Go Zone' or 'Environmental Protection Area'. - Identify the location of any 'No Go Zones' in site inductions and a CEMP.	No further degradation to retained vegetation and habitats adjacent to the development site.	Before and throughout construction.	Construction contractor.
	All material stockpiles, vehicle parking and machinery	No further degradation to	Ongoing/Throughout construction.	Construction contractor.

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	storage will be located within cleared areas proposed for clearing, and not in areas of native vegetation that are to be retained.	retained vegetation and habitats adjacent to the development site.		
	Where appropriate native vegetation cleared from the subject land should be mulched for re-use on the site during landscaping, to stabilise bare ground.	No further degradation to retained vegetation and habitats adjacent to the development site.	Ongoing/Throughout construction.	Construction contractor.
Mitigating prescribed biodiversity impacts	Habitat connectivity: - Plans showing areas to be cleared and areas to be protected, including exclusion zones and protected habitat features (CEMP) directly adjacent to the development site if likely to impact. - Clearing protocols for all vegetation and habitat to be removed in the development site.	Effective management of prescribed impacts such that they do not occur or are minimal.	Ongoing/Throughout construction.	Construction contractor.
Adaptive management strategies proposed to monitor and respond to impacts on biodiversity values that are uncertain	Implementation of an appropriate CEMP during works. Preparation of a Tree Retention Plan if applicable and Landscape Plan for Lot design, road verges and open spaces in consultation with the Project's Bushfire Consultant, Arborist, and Engineer, at DA stage to facilitate the further retention of trees and habitat features within the development site.	Mitigate risk of impact to environmental controls during project construction.	Ongoing/throughout earthworks.	Construction contractor.

7.1 Adaptive management strategy

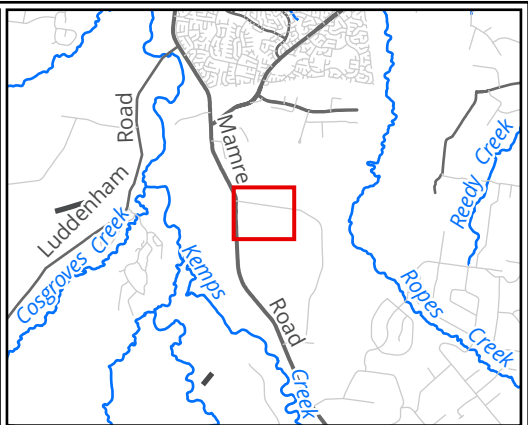
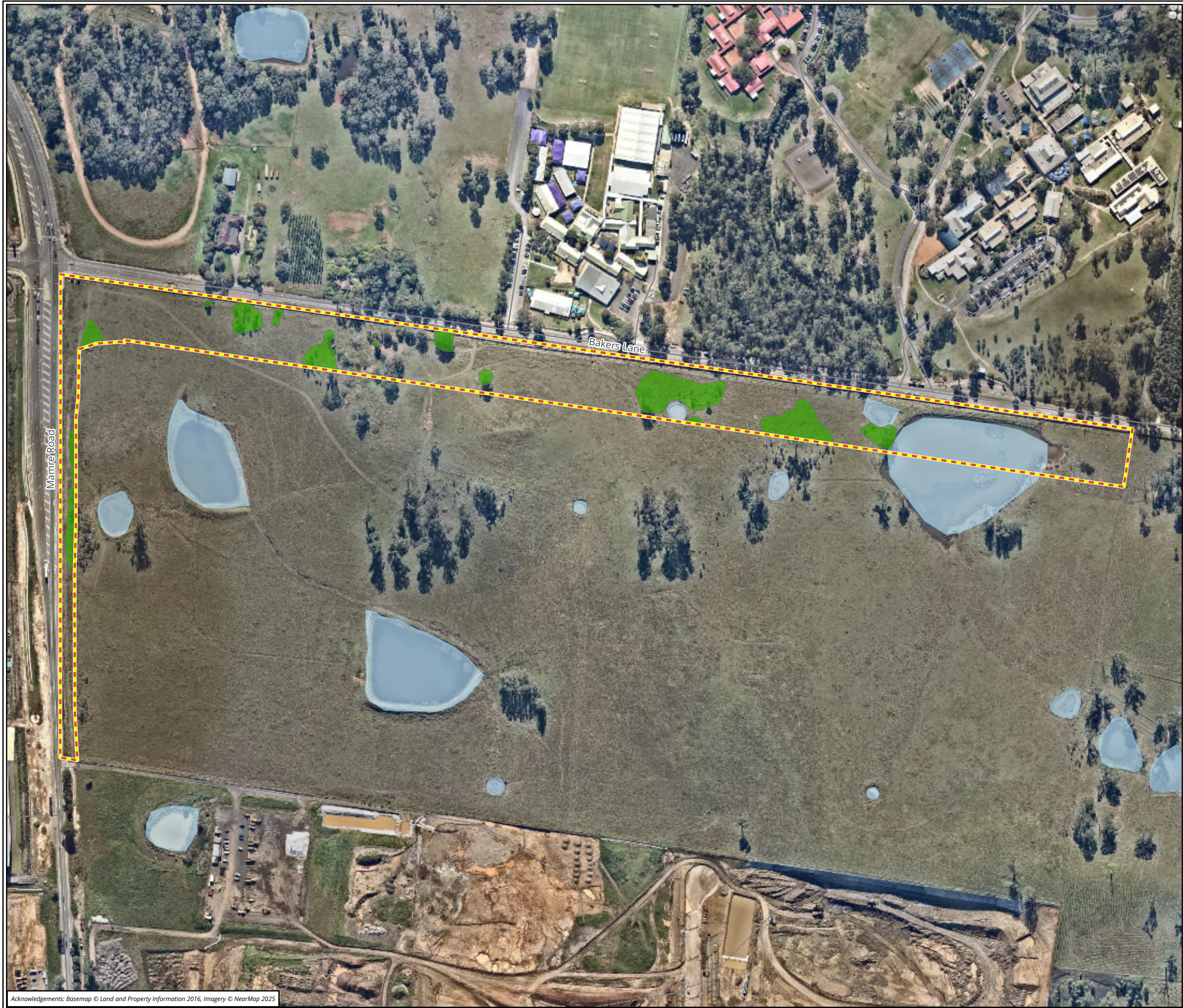
Construction and operational management plans will all contain an adaptive management component. Adaptive management strategies will be receptive to any new and relevant data that may arise through ongoing assessment and monitoring and are key to the successful implementation of crucial objectives yet also allow flexibility to changing dynamics and ongoing feedback and results. This includes measures to monitor predicted and uncertain impacts in the development site which will trigger adaptive management actions and allow for effective and quick responses.

8 Serious and irreversible impacts

This section addresses the TECs and/or threatened species that are at risk of a SAI. In accordance with Clause 6.7 of the BC Regulation an impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because:

- (a) Principle 1: It will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.
- (b) Principle 2: It will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size.
- (c) Principle 3: It is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution.
- (d) Principle 4: The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

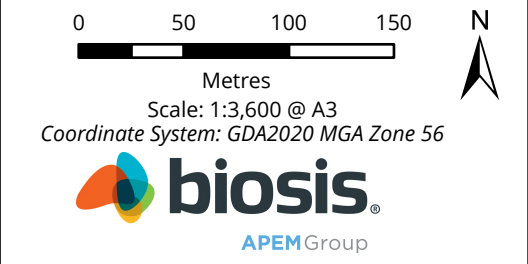
One TEC, Cumberland Plain Shale Woodlands (CEEC) is considered to meet the above principles and may be impacted by the development footprint of the Project in the subject land. A detailed SAI assessment is provided in Appendix 4. Figure 15 shows the extent of CEEC at risk of an SAI within the subject land.



Legend

- Subject land
- Development footprint
- Serious and Irreversible Impacts**
- Cumberland Plain Woodland in the Sydney Basin Bioregion (CEEC)

Figure 15 Serious and Irreversible Impacts



9 Impact summary

This section outlines the impact summary for the Project which has identified and assessed impacts on TECs and threatened species including:

- Identification of impacts requiring offset.
- Identification of impacts not requiring offset.
- Identification of areas not requiring offset.

Figure 16 shows the location of impacts requiring offset, impacts not requiring offset and areas not requiring assessment.

9.1 Identification of impacts requiring offset

9.1.1 Impacts to native vegetation (ecosystem credits)

As outlined in Section 9.2.1 of the BAM, the assessor must determine an offset for all impacts of proposals on PCTs that are associated with a vegetation zone that has a vegetation integrity score of:

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

On this basis, offsets are required for all vegetation zones except vegetation zone 3320_DNG (VI score of 11.6) as it has a VI score less than 15.

The offset requirement for the proposal was calculated using the BAM Calculator. Table 32 provides a summary of the ecosystem credit offsets required for impacts from proposed development at the subject land.

Table 32 Offsets required (ecosystem credits)

Vegetation zone	Area (ha)	Impact	VI score	Offset required	TEC	Hollow-bearing trees	Credit requirement
3320_Moderate	0.63 ha	Clearance	37	Yes	EPBC Act (partly – approximately 0.19 ha) and BC Act	Y	15
3320_Low	0.30 ha	Clearance	25.7	Yes	BC Act	Y	5
3975_Moderate	0.40 ha	Clearance	58.8	Yes	BC Act	N	12

9.1.2 Impacts to threatened species and their habitat

As outlined in Section 9.2.2 of the BAM an offset is also required for the impacts of the proposals on the habitat of threatened species assessed for ecosystem credits and associated with a PCT in a vegetation zone with a vegetation integrity score of ≥ 17 .

The offset requirement for the proposal was calculated using the BAM Calculator. Table 33 provides a summary of the species credit offsets required for impacts from proposed development at the subject land.

Table 33 Offsets required (species credits)

Vegetation zone	Species	Habitat condition (vegetation integrity score) loss	Area (ha)	Biodiversity risk weighting	Credit requirement
3320_Moderate	Southern Myotis	37	0.63 ha	2	12
3320_Low	Southern Myotis	25.7	0.26 ha	2	3
3320_DNG	Southern Myotis	11.6	0.01 ha	2	1
3975_Moderate	Southern Myotis	58.8	0.40 ha	2	12
3975_Moderate	<i>Maundia triglochinosoides</i>	58.8	0.40 ha	2	12
3975_Moderate	<i>Persicaria elatior</i>	58.8	0.40 ha	2	12

Species polygons for the above three species credit species impacted by the Project are illustrated in Figure 10 and Figure 16.

9.2 Identification of impacts not requiring offset

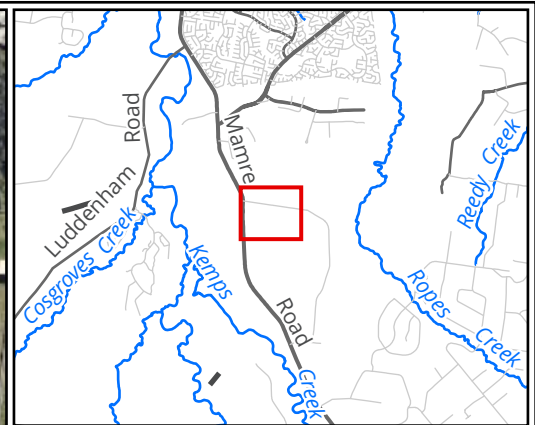
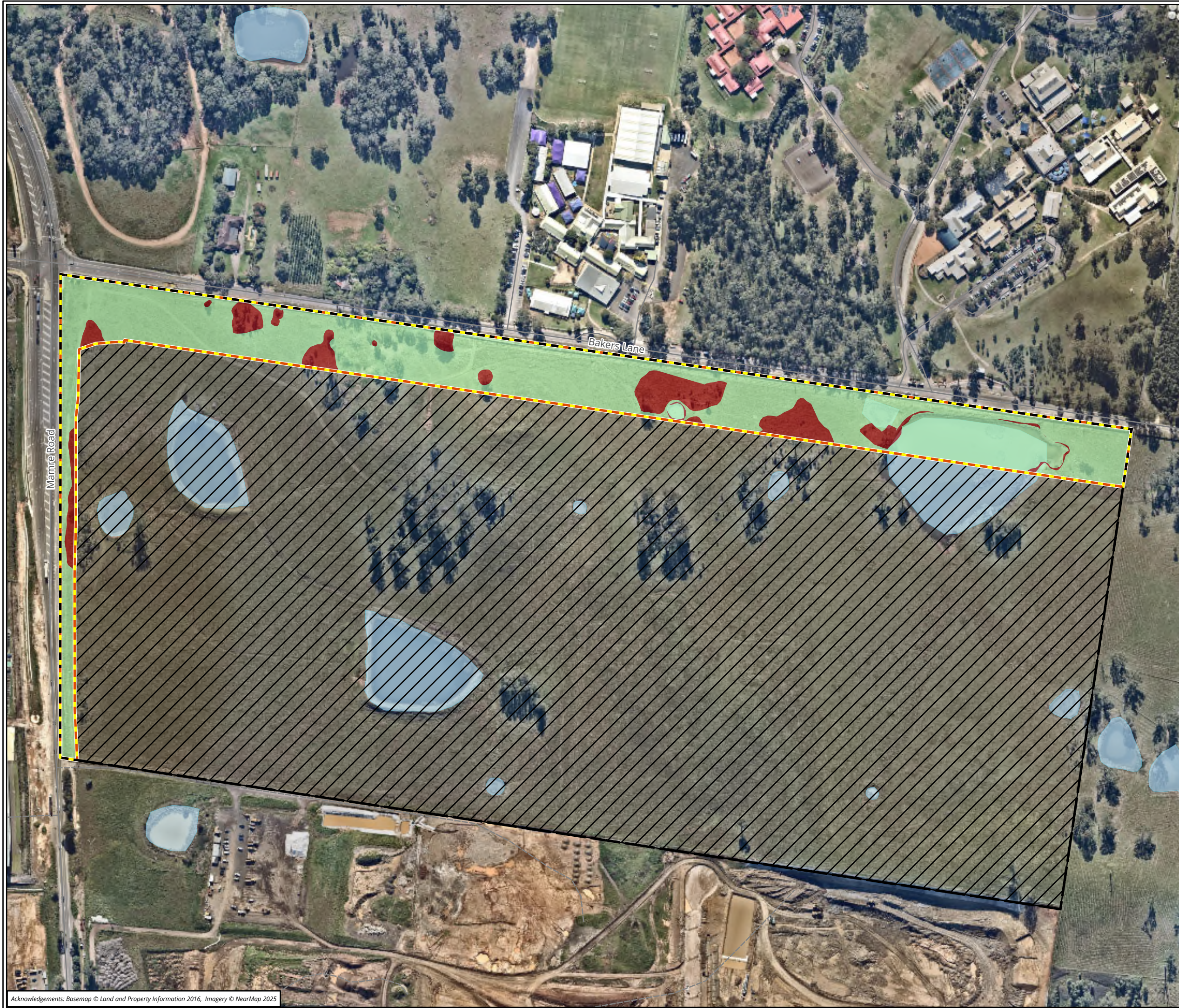
Following assessment the following impacts do not require offsetting in accordance with BAM:

- Offsets are not required for ecosystem credits for vegetation zone 3320_DNG (VI score of 11.6) as it has a VI score less than 15.

9.3 Identification of areas not requiring impact assessment

Assessment the following areas is not required in accordance with BAM:

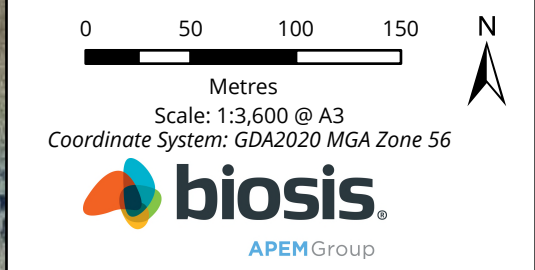
- Non-native vegetation including exotic shrubs, trees and exotic grassland does not need to be assessed for impacts or offsets. These areas have been assessed for potential threatened species habitat in this BDAR.
- The remainder of the development site outside of the subject land due to being categorised as Urban Capable Land and therefore certified land under the CPCP. The certified land areas of the development site have been broadly considered for context for the subject land, for mitigation measures for the Project and for any requirements or consideration under the FM Act and WM Act.



Legend

- Subject land
- Development site
- Development footprint
- Offset details**
- Requiring offset
- Not requiring offset
- Not requiring assessment

Figure 16 Impacts requiring offsets, not requiring offset, not requiring assessment



10 Biodiversity credit report

Offsetting through the transfer and retirement of biodiversity credits, or paying into the BCT Offset Fund, is required for the current assessment for impacts to one vegetation zone at the subject land. A biodiversity credit report is provided on the following pages.

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00060716/BAAS25013/25/00060717	706-752 Mamre Road Kemps Creek BDAR	05/08/2025
Assessor Name	Report Created	BAM Data version *
Jake Schwebel	02/02/2026	Current classification (live - default) (82)
Assessor Number	BAM Case Status	Date Finalised
BAAS25013	Finalised	16/01/2026
Assessment Revision	BOS entry trigger	Assessment Type
2	BOS Threshold: Area clearing threshold	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 SAI	Ecosystem credits
Cumberland Shale Plains Woodland												
1	3320_Moderate	Cumberland Plain Woodland in the Sydney Basin Bioregion	37	37.0	0.63	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	15

BAM Credit Summary Report

2	3320_Low	Cumberland Plain Woodland in the Sydney Basin Bioregion	25.7	25.7	0.3	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	5
3	3320_DNG	Cumberland Plain Woodland in the Sydney Basin Bioregion	11.6	11.6	0.01	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	0
											Subtotal	20
Southern Lower Floodplain Freshwater Wetland												
4	3975_Moderate	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	58.8	58.8	0.4	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		12
											Subtotal	12
											Total	32

Species credits for threatened species

BAM Credit Summary Report

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
<i>Maundia triglochinos / Maundia triglochinos (Flora)</i>									
3975_Moderate	58.8	58.8	0.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	12
								Subtotal	12
<i>Myotis macropus / Southern Myotis (Fauna)</i>									
3320_Moderate	37.0	37.0	0.63	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	12
3320_Low	25.7	25.7	0.26	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	3
3320_DNG	11.6	11.6	0.01	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1
3975_Moderate	58.8	58.8	0.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	12
								Subtotal	28

BAM Credit Summary Report

<i>Persicaria elatior</i> / Tall Knotweed (Flora)									
3975_Moderate	58.8	58.8	0.4	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	12
								Subtotal	12

11 Assessment against biodiversity legislation

11.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the Australian Government's key piece of environmental legislation. The EPBC Act applies to developments and associated activities that have the potential to significantly impact on Matters of National Environmental Significance (MNES) protected under the Act. Under the EPBC Act, activities that have potential to result in significant impacts on MNES must be referred to the Commonwealth Minister for the Environment and Water for assessment.

An assessment of the impacts of the proposed development on MNES, against heads of consideration outlined in Commonwealth of Australia (2013) was prepared to determine whether referral of the proposed development to the Commonwealth Minister for the Environment and Water is required. MNES relevant to the proposed development are summarised in Table 34.

Table 34 Assessment of the proposed development against the EPBC Act

Matter of NES	Project specifics	Potential for significant impact
Threatened species	Threatened fauna species assessed due to some suitable habitat: - Swift Parrot. - Australian Painted Snipe. General marginal foraging habitat is present in the study area for Grey-headed Flying-fox, however this habitat is marginal foraging only, no camps or maternity roost were recorded during 2022 or 2025 field surveys.	There is a low likelihood of impact to Swift Parrot (excluded as a candidate species due to no mapped important habitat) and Australian Painted Snipe (ecosystem credit species) due to degraded nature of the site, limited suitable habitat and small area of habitat removal of 1.35 ha of native vegetation. As such SIC assessments have been completed and included in Appendix 5.2 (Swift Parrot) and Appendix 5.3 (Australian Painted Snipe). Grey-headed Flying-fox is highly unlikely to be significantly impacted by the proposed development due to the available larger extant foraging habitat in the broader assessment area and locality that is more suitable. No other threatened species likely to be impacted by the proposed development.
Threatened ecological communities	EPBC Act listed <i>Cumberland Plains Shale Woodlands</i> CEEC.	Of the 0.63 ha PCT 3320 in the subject land, 0.19 ha of this is consistent with the EPBC Act CEEC and will be impacted by the Project. Low likelihood of significant impact, as assessed in Appendix 5, the CEEC occurs in a highly fragmented and isolated patch, subject to historical disturbance and current weed ingress.

Matter of NES	Project specifics	Potential for significant impact
Migratory species	No habitat suitable for migratory species.	No direct impact is expected to any migratory listed species.
National Heritage Places	No direct, indirect or prescribed impacts to National Heritage Places.	No potential for impact.
Wetlands of international importance (Ramsar sites)	No direct, indirect or prescribed impacts to Ramsar sites.	No potential for impact.

On the basis of criteria outlined in Commonwealth of Australia (2013), it is considered unlikely that a significant impact on a MNES would result from the project, and thus a referral to the Commonwealth Minister for the Environment and Water is not required.

11.2 Biodiversity Conservation Act 2016

The BC Act is the key piece of legislation providing for the protection and conservation of biodiversity in NSW through the listing of threatened species and communities and key threatening processes (KTPs). Impacts to threatened species and communities are assessed under Section 7.3 of the BC Act.

Threatened species and communities listed under the BC Act relevant to the subject land are provided in Section 4 and Appendix 2. A summary of impacts to threatened species, populations and communities present or assumed present within the subject land is provided in Section 4.2.7.

Southern Myotis was recorded during the 2022 BDAR field investigations by Cumberland Ecology (2025). As such, this species has been considered present and an offset obligation has been calculated.

Greater Broad-nosed Bat *Scoteanax rueppellii* was recorded during the 2022 BDAR field investigations by Cumberland Ecology (2025) and has been added to the BAM-C as a predicted (ecosystem) species for the subject land.

The BOS has been triggered under the EP&A Act and BC Act as the Project is an SSD. This BDAR has been prepared for the proposed development accordingly.

11.3 Fisheries Management Act 1994

The FM Act provides for the protection and conservation of aquatic species and their habitat throughout NSW; via conservation of fish stocks and Key Fish Habitats, and conservation of threatened entities of fish and marine vegetation. Impacts to threatened species, populations and communities, and critical habitats listed under the FM Act must be assessed through an Assessment of Significance process.

NSW DPI is required to assess all projects that involve structures that span the full width of a waterway (including pipe crossings) or modifies the velocity or quantity of water. Under the provisions of the EP&A Act, NSW DPI is an 'approval body' for local development that requires one or more of the following permits under Part 7 the FM Act:

- Section 144 – Aquaculture permit, i.e., cultivating fish or marine vegetation for sale/commercial purposes.
- Section 201 – Permit to carry out works of dredging or reclamation, i.e., any excavation within or filling of water land.

- Section 205 – Permit to harm (cut, remove, damage, destroy, shade etc) marine vegetation (mangroves, seagrass and seaweeds).
- Section 219 – Permit to obstruct the free passage of fish.

In line with the above, under the FM Act, a proponent is required to provide formal notification to Fisheries NSW for dredging and reclamation works within waterways that form Key Fish Habitat; and obtain a permit for works that obstruct free fish passage in any waterway, regardless of Key Fish Habitat status. When reviewing applications, the DPI will assess the likelihood of impacts to waterways in relation to their sensitivity (TYPE) and waterway class (CLASS).

A description of waterways is provided in Section 2.1.5. One unnamed natural watercourse is classified as a first order stream (Strahler 1964), under the WM Act. No predicted habitat for threatened aquatic species is mapped on the DPI spatial data portal within the subject land.

As there is no mapped key fish habitat within the subject land or within the assessment area, the Project is unlikely to result in impacts to fish passage. No instream woody debris is proposed to be removed and therefore a permit under Part 7 of the FM Act is not required. As the waterways do not support aquatic ecological communities, fish passage is unlikely to be impacted by works.

11.4 Water Management Act 2000

The WM Act provides for the sustainable and integrated management of the state's water. The WM Act is supported by a series of interpretation guidelines which provide design considerations and overarching management measures for works on waterfront land. These considerations and management measures should be considered when planning and undertaking the proposed development. To which the following guidelines are relevant:

- *Guidelines for watercourse crossings on waterfront land* (DPE 2022b).
- *Guidelines for outlet structures on waterfront land* (DPE 2022c).
- *Guidelines for laying pipes and cables in watercourses on waterfront land* (DPE 2022d).
- *Guidelines for instream works on waterfront land* (DPE 2022e).

Under the WM Act an approval is required to undertake controlled activities on waterfront land, unless that activity is otherwise exempt under Section 91E of the WM Act, Section 4.41 of the EP&A Act, or Part 2 of the *Water Management Regulation 2018*. Waterfront land is defined within the Act as the bed of any river, lake or estuary and any land within 40 metres of the river banks, lake shore or estuary mean high water mark.

DPI Water recommends riparian widths based on watercourse order under the Strahler method in order to protect waterways from damage such as erosion (Strahler 1964). One unnamed natural watercourse is mapped within the subject land and is classified as Strahler One order stream, which usually requires a riparian corridor width of 10 metres from the 'top of bank' on either side (DPE 2022f). Works are proposed within 40 metres of the top of the bank along this waterway.

However, as the proposed development is SSD, it is therefore exempt from the requirement to obtain a Controlled Activity Approval for activities on or under waterfront land as per Section 4.41 of the EP&A Act. Therefore, works proposed within the mapped riparian corridor will be assessed as part of SSD's EIS. The proposed development is consistent with the riparian corridor matrix (first and second order waterways) of the NSW Natural Resources Access Regulator (NRAR) (2022f).

Biosis have assessed aquatic and riparian values in the subject land and development site in an Aquatic and Riparian Assessment Report for the Project (Biosis 2025b).

11.5 Environmental Planning and Assessment Act 1979

The EP&A Act was enacted to encourage the proper consideration and management of impacts of proposed development or land-use changes on the environment (both natural and built) and the community. The EP&A Act is administered by NSW DCCEW.

The EP&A Act provides the overarching structure for planning in NSW and is supported by other statutory environmental planning instruments. Sections of the EP&A Act of primary relevance to the natural environment are outlined further below.

Section 1.7 of the EP&A Act requires proponents and consent authorities to consider if a development will have a significant effect on threatened species, populations or communities listed under the BC Act and FM Act.

Where a development will result in a significant effect to a threatened species, population or community a Species Impact Statement (SIS) or preparation of a BOS application is required. This BDAR has been prepared for the development accordingly.

Threatened species and communities listed under the BC Act relevant to the subject land are provided in Section 4 and Appendix 2. A summary of impacts to threatened species, populations and communities present or assumed present within the subject land is provided in Section 4.2.7.

11.5.1 State Environmental Planning Policies

State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 2: Vegetation in non-rural areas

This chapter aims to protect the biodiversity values of trees and other vegetation in non-rural areas of NSW and to preserve the amenity of non-rural areas through the preservation of trees and other vegetation by ensuring that the BOS will apply to all clearing of native vegetation that exceeds the offset thresholds in urban areas and environmental conservation zones that do not require development consent.

This chapter applies to land zoned IN1 and SP2 in the City of Penrith LGA as defined in Clause 2.3. Consent is required for clearance of vegetation within land zones and LGAs to which this chapters applies therefore this BDAR meet the requirements of this chapter.

Chapter 3: Koala Habitat Protection 2020

This chapter applies to land zoned RU1, RU2 or RU3. As the subject land occurs on land zoned SP2 and IN1, this chapter does not apply.

Chapter 4: Koala Habitat Protection 2021

Chapter 4 Koala Habitat Protection aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.

The subject land is located within the City of Penrith Council (Council) LGA. Penrith Council is not listed under Schedule 2, Chapter 4 of Biodiversity and Conservation SEPP, and is not subject to the requirements laid out by the policy.

Chapter 13: Strategic conservation planning

This chapter aims to facilitate appropriate development on biodiversity certified land. It requires asset protection zones (APZ) (associated vegetation clearance) to be wholly located on Certified – Urban Capable Land and the approved mitigation measure be complied with. As the subject land is not located on biodiversity certified land, this chapter does not apply to this BDAR.

This Chapter does apply to the broader development site, where the development footprint will impact the whole of the development site. These areas are not the subject of this BDAR, however should be considered for areas within certified land subject to the Project development.

State Environmental Planning Policy (Industry and Employment) 2024

The Mamre Road Precinct DCP 2021 and the WSEA

The *Mamre Road Precinct Development Control Plan 2021* (MRP DCP) provides detailed planning controls for industrial development in the Mamre Road Precinct within the Western Sydney Employment Area (WSEA).

The WSEA was established to supply businesses in the region with land for industry and employment (NSW Department of Planning, Industry and Environment 2020). This can include transport, logistics, warehousing, and office space. The WSEA is located approximately 50 kilometres from the Sydney CBD and provides businesses access to roads and utility services. The WSEA includes eleven precincts, and the subject land is located within the Mamre Road Precinct. The Mamre Road Precinct was rezoned in June 2020 and provides approximately 850 ha of industrial land which could accommodate approximately 5,200 construction jobs and 17,000 on-going jobs when fully developed. The rezoning of the precinct preserves around 95 ha of land for environmental conservation and open space and protects a site for a potential Western Sydney freight intermodal terminal.

Under the WSEA as part of the Industry and Employment SEPP Amendment (WSEA) 2024 (NSW Government 2024), the subject land is zoned as IN1 – General Industrial with some sections along the western boundary zoned as SP2 – Infrastructure. The current zoning of the subject land and development site under the WSEA is shown in Figure 3. The Project has been designed in accordance with the objectives of the MRP DCP and the WSEA and therefore the Industry and Planning SEPP (NSW Government 2024).

The Mamre Road Structure Plan

The *Mamre Road Precinct Structure Plan* (as part of the above MRP DCP and WSEA) forms the basis for urban development in the Mamre Road Precinct by setting out the following:

- The major road network and potential access points.
- A potential intermodal terminal and associated dedicated freight network to connect with the proposed Western Sydney Freight Line.
- The environmental, open space and drainage networks.
- The locations of critical infrastructure, including the Warragamba Pipelines.
- The proposed land uses including employment lands, utilities, service hubs and recreation.

- Areas requiring protection or special consideration of environmental, heritage or amenity values.

The main objective of this plan relevant to this BDAR and the Project is ensuring the protection of environmental values, including the adjacent biodiversity values aimed to be protected through mitigation measures to be implemented in for this Project, as outlined in Section 7 of this BDAR.

11.5.2 The Cumberland Plain Conservation Plan (CPCP)

The CPCP is a conservation plan developed for Western Sydney to help meet the future needs of the community while protecting TECs and threatened flora and fauna species listed under the BC Act and the EPBC Act. The CPCP meets requirements for strategic biodiversity certification under the BC Act and strategic assessment under the EPBC Act. The CPCP facilitates the biodiversity approvals required to deliver four nominated areas for development in Western Sydney and supports major transport infrastructure. The subject land is located within the area identified as the Western Sydney Aerotropolis as detailed previously in Section 11.5.4. Overall, the CPCP identifies the following categories of land within the nominated areas:

- Certified – urban capable land.
- Certified – major transport corridor.
- Excluded land.
- Avoided land.

As previously mentioned, the subject land is part of the development site and is categorised as ‘Excluded Land’ under the CPCP area and is therefore non-certified land subject to this BDAR. The remaining land in the development site is categorised as ‘Urban Capable Land’ and is certified land in the CPCP area. Full application of the BAM is not required for the certified land in the development site, however consideration of the Biosecurity Act, FM Act and WM Act is relevant, as explored in sections 11.3, 11.4 and 11.6 of this BDAR.

11.5.3 State Environmental Planning Policy (Precincts – Western Parkland City) 2021

The subject land is located outside of the boundaries of the Western Sydney Growth Centres, and therefore is not biodiversity certified under the Western Parkland City SEPP (2021). Certified land in the subject land is associated with the CPCP.

11.5.4 Western Sydney Aerotropolis 2020

Although the Project lies within the Western Sydney Aerotropolis Nominated Area, it lies just outside (~500m) the precincts defined in the *State Environmental Planning Policy (Western Sydney Aerotropolis) 2020* (the Aerotropolis SEPP). Therefore, the Aerotropolis SEPP does not apply to the Project and is not considered further.

11.6 Biosecurity Act 2015

The Biosecurity Act provides for the identification, classification and control of priority weeds with the purpose of determining if a biosecurity risk is likely to occur. A biosecurity risk is defined as the risk of a biosecurity impact occurring, which for weeds includes the introduction, presence, spread or increase of a pest into or within NSW or any part of the State. A pest plant has the potential to; harm or reduce biodiversity or out-compete other organisms for resources, including food, water, nutrients, habitat and sunlight.

The General Biosecurity Duty as outlined in the Biosecurity Act states:

All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

Nine priority weeds for the Greater Sydney LLS region have been recorded in the subject land or development site and are listed in Table 35, along with their associated Duty.

A Weed Eradication Management Plan (WEMP) has been created by Biosis for the Project area with associated management actions for the subject land (Biosis 2025a).

Table 35 Priority weeds within the subject land

Scientific name	Common name	Relevant biosecurity duty
<i>Asparagus asparagoides</i>	Bridal Creeper	General Biosecurity Duty
<i>Cestrum parqui</i>	Green Cestrum	General Biosecurity Duty
<i>Dolichandra unguis-cati</i>	Cat's Claw Creeper	General Biosecurity Duty
<i>Dovyalis afra</i>	Kei apple	General Biosecurity Duty
<i>Lycium ferocissimum</i>	African boxthorn	General Biosecurity Duty
<i>Nassella neesiana</i>	Chilean needle grass	General Biosecurity Duty
<i>Olea europaea</i> subsp. <i>cuspidata</i>	African Olive	General Biosecurity Duty
<i>Rubus fruticosus</i> sp. agg.	Blackberry	General Biosecurity Duty
<i>Senecio madagascariensis</i>	Fireweed	General Biosecurity Duty

11.7 Local Land Services Act 2013

As the subject land is not within a rural area, and the development does not require consent, the LLS Act does not apply to the development with respect to clearing of native vegetation.

12 Conclusion

The development site is largely bio-certified under the CPCP. However, further biodiversity assessment is required for areas of land excluded from biodiversity certification, which includes an approximately 7.18 hectare portion of land along the northern and western edges of the development site (the subject land). It is important to note that the subject land as assessed in this BDAR, is subject to an existing SSDA which is close to approval and proposes works across the entire site, which is consistent in terms of impacts to this BDAR. Additionally, the excluded area (the subject land) subject to this BDAR is also largely associated with the future Southern Link Road development, which is to be assessed separately to this BDAR.

This BDAR has been prepared to assess the impacts of the proposed development on biodiversity values within non-certified areas, in accordance with the BAM, the EP&A Act, the BC Act and the EPBC Act. The project involves the removal of vegetation to allow for the construction of a data centre campus, consisting of four-storey data centre buildings (4x four shells and 2x five shells), six technical office buildings, and a campus office. 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.

Of the 7.18 hectares of land within the subject land, 1.36 hectares consists of native vegetation comprising two PCTs in various conditional states, which will be removed under the project:

- 0.63 ha of PCT 3320 in Moderate (Regrowth) condition of which all is consistent with the BC Act listed CEEC *Cumberland Plain Woodland*. One patch of PCT 3320 in Moderate - regrowth condition (0.19 ha) is consistent with the EPBC Act listed CEEC *Cumberland Plains Shale Woodlands* as well as the BC Act CEEC.
- 0.30 ha of PCT 3320 in Low condition consistent with the BC Act listed CEEC *Cumberland Plain Woodland*.
- 0.01 ha of PCT 3320 in DNG condition consistent with the BC Act listed CEEC *Cumberland Plain Woodland*.
- 0.40 ha of PCT 3975 in Moderate condition consistent with the BC Act listed EEC *Freshwater Wetlands on Coastal Floodplains*.

Southern Myotis was recorded during field investigations, and its habitat within the subject land includes areas within 200 metres of dams and water bodies, totalling an area of 1.3 hectares of PCTs 3320 and 3975. *Maundia triglochoides* and *Persicaria elatior* were not directly recorded but are assumed present in areas of PCT 3975, totalling an area of 0.4 hectares of habitat within the subject land.

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 non-native vegetation and connectivity of different areas of habitat that facilitates movement across a species range have been considered.

The Project's biodiversity impact reduction strategy focuses on avoiding and minimising the removal of native vegetation and fauna habitat. The site was chosen largely within certified urban capable land under the CPCP, within the Mamre Road Precinct, to limit impacts on higher-value biodiversity areas within the locality. The subject land contains 1.36 hectares of fragmented, disturbed native vegetation with limited connectivity, while most impacts (18.03 hectares of native vegetation) occur within certified land. Impacts to biodiversity have also been minimised through the detailed design process, including aligning access roads with the existing

Bakers Lane, avoiding increased risks of vehicle strikes to fauna, and siting buildings within the centre of the site to allow landscaping along the outer boundaries (north, east, west, and south), which will enhance connectivity between the development site and the broader locality.

A suite of further mitigation measures is proposed within this BDAR to minimise and manage the remaining impacts to biodiversity values, including the preparation of a CEMP, outlining requirements for pre-clearance surveys and clearance supervision, a WEMP, a VMP, a dam dewatering plan, and appropriate erosion and sedimentation controls.

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:

- 15 ecosystem credits for PCT 3320 in Moderate - regrowth condition.
- 5 ecosystem credits for PCT 3320 in Low condition.
- 12 ecosystem credits for PCT 3975 in Moderate condition.
- 28 species credits for Southern Myotis *Myotis macropus* (previously recorded by Cumberland Ecology (2025) for habitat in the subject land.
- 12 species credits for *Maundia triglochinos* (assumed present) in the subject land for PCT 3975 in Moderate condition.
- 12 species credits for *Persicaria elatior* (assumed present) in the subject land for PCT 3975 in Moderate condition.

The BDAR concludes that while the project will result in the loss of native vegetation and threatened species habitat, the impacts are not considered significant under the EPBC Act, and thus a referral to the Commonwealth Minister for the Environment and Water is not required. Mitigation measures and offsets will be implemented to address residual impacts and ensure compliance with biodiversity legislation.

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Appendices

Appendix 1 Survey methods

Appendix 1.1 Nomenclature

The flora taxonomy (classification) used in this report follows the most recent Flora of NSW (Harden 2002, Harden 1993, Harden 2000, Harden 2002). All doubtful species names were verified with the online Australian Plant Name Index (Australian National Botanic Gardens & Australian National Herbarium 2007). Flora species, including threatened species and introduced flora species, are referred to by both their common and then scientific names when first mentioned. Subsequent references to flora species cite the common names only, unless there is no common name, for which scientific name will be used. Common names, where available, have been included in threatened species tables and the complete flora list in Appendix 3.

Names of vertebrates follow the Census of Australian Vertebrates (CAVs) maintained by the Cth DCCEEW (DSEWPac 2009). In the body of this report vertebrates are referred to by both their common and scientific names when first mentioned. Subsequent references to these species cite the common name only.

Appendix 1.2 Permits and licences

The biodiversity assessment was conducted under the terms of Biosis' Scientific Licence issued by NSW DCCEEW under the BC Act (SL100758, expiry date 30 June 2026). Wildlife surveys were conducted under the Secretary's Animal Care & Ethics Committee Approval (TRIM 17.892, expiry date 31 January 2028). The BAM Assessment was undertaken by Accredited Assessor Jake Schwebel (BAAS21053), and the quality review of the BDAR was carried out by Accredited Assessor Callan Wharfe (BAAS18138).

Appendix 1.3 Limitations

Field surveys were undertaken in accordance with the BAM (DPIE 2020a). Ecological surveys provide a sampling of flora and fauna at a given time and season. Factors influencing detectability of species during survey include species dormancy, seasonal conditions, ephemeral status of waterbodies, and migration and breeding behaviours of some fauna. In many cases, these factors do not present a significant limitation to assessing the overall biodiversity values of a site.

Biosis' field surveys were conducted in September and October 2025 during mild weather, which is a suitable time to determine the presence of most flora and fauna threatened species in the subject land. Due to the degraded nature of the site, Biosis' field team were able to sufficiently survey for threatened flora and fauna species within the recommended survey period of October (spring) for most species.

The survey requirements for candidate (species credit species) *Maundia triglochinoides* and *Persicaria elatior* were not met as survey for these flora species are from November to March, and December and May respectively for each species. These flora species have therefore been assumed present in the subject land in areas of PCT 3975.

Surveys undertaken, combined with habitat assessments and desktop analysis are considered sufficient to reach the conclusions herein regarding this and all other species' likelihood of occurrence within the subject land. Database searches, and associated conclusions on the likelihood of species to occur within the assessment area, are reliant upon external data sources and information managed by third parties.

Appendix 2 BAM Candidate species assessment

Table A 1 Threatened flora species assessment

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
<i>Acacia pubescens</i> Downy Wattle	VU	VU	Yes	A spreading shrub primarily confined to the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers at Barden Ridge, Oakdale and Mountain Lagoon. Grows in Cooks/River Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland, usually within roadside and bushland remnants. Grows on shale, sandstone, alluvium and gravelly soils, often including ironstone.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.
<i>Commersonia prostrata</i> Dwarf Kerrawang	EN	EN	Yes	Ground hugging shrub with populations sparsely distributed in the Southern Highlands, Southern Tablelands and the North Coast. Grows in gullies, along drainage lines and in disturbed areas in a variety of communities including Coastal Freshwater Wetlands of the Sydney Basin Bioregion, New England Dry Sclerophyll Forests, Temperate Montane Grasslands and Subalpine Grasslands. Grows in sand or peat soils.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
<i>Deyeuxia appressa</i>	EN	EN	Yes	Erect, perennial grass, endemic to NSW. Restricted to two records, one in 1930 at Herne Bay south of Bankstown and the other in 1941 from Killara near Hornsby. Grows on wet ground in Sydney Coastal Dry Sclerophyll Forests and Eastern Riverine Forests.	Negligible	No	No	Negligible	Excluded as a candidate. This species has only two records in 1930s and 1940s from known areas. The subject land is outside of the known record areas and is highly degraded and unlikely to support this species. This species has therefore been excluded due to geographic limitation and limited records existing.
<i>Dillwynia tenuifolia</i> - endangered population	--	EN Pop	Yes	Low, spreading shrub restricted to the Cumberland Plain in Western Sydney. Grows in scrubby or heathy areas within a variety of communities including Castlereagh Ironbark Forest, Shale Gravel Transition Forest, Castlereagh Scribbly Gum Woodland and Sydney Hinterland Dry Sclerophyll Forests. Grows on tertiary alluvium, laterised clays and in shale-sandstone transitions. An endangered population of this species occurs at Kemps Creek, in the Greater Sydney Area.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
<i>Eucalyptus benthamii</i> Camden White Gum	VU	CE	Yes	The Camden White Gum is a large tree species which grows on deep alluvial sandy soils. This eucalypt is known from two major subpopulations; one in the Kedumba Valley of the Blue Mountains National Park, and the other in Bents Basin State Recreation Area.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.
<i>Eucalyptus glaucina</i> Slaty Red Gum	VU	VU	Yes	Medium sized tree, confined to the north coast of NSW at Casino as well as Taree to Broke, west of Maitland. Grows in a variety of communities including Hunter - Macleay Dry Sclerophyll Forests, Coastal Floodplain Wetlands, Northern Hinterland Wet Sclerophyll Forests and Coastal Valley Grassy Woodlands. Grows on deep, moderately fertile, well watered soils.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
<i>Grevillea juniperina</i> subsp. <i>juniperina</i> Juniper-leaved Grevillea	--	VU	Yes	Spreading to erect medium sized shrub endemic to Western Sydney with a distribution spanning from Blacktown, Erskine Park, Londonderry and Windsor and outlying populations at Kemps Creek and Pitt Town. Grows at elevations <50 m in Cumberland Plain Woodland, Castlereagh Ironbark Forest, Castlereagh Scribbly Gum Woodland, Shale/Gravel Transition Forest, Sydney Sand Flats Dry Sclerophyll Forests and Coastal Valley Grassy Woodlands. Grows in sandy to clay loam soils and red pseudolateritic gravels derived from Wianamatta Shale and Tertiary Alluvium.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.
<i>Hibbertia puberula</i>	--	EN	Yes	Shrublet with a distribution extending from Wollemi National Park south to Morton National Park and the south coast near Nowra. Grows in a variety of communities including Southern Tableland Dry Sclerophyll Forests, Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Heath Swamps, Coastal Valley Grassy Woodlands and Sydney Coastal Heaths. Grows on sandy soils, occasionally on clay soils.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> - endangered population Native Pear	--	EN Pop	Yes	Slender climber with twining stems with a scattered distribution within the Prospect, Bankstown, Smithfield, Cabramatta Creek, St Mary's and north from Razorback Range. Grows in vine thickets and open shale woodland in a variety of communities including Cumberland Dry Sclerophyll Forests, Coastal Floodplains Wetlands, Coastal Valley Grassy Woodlands and Dry Rainforests.	Low	Yes	Yes (outside of recommended survey period)	Low	Surveyed (not present). Targeted surveys were undertaken outside of the recommended survey period for this species during October by Biosis in 2025. This species is readily identifiable outside of this survey period. This species was also subject to targeted surveys by Cumberland Ecology (2025) in 2022 within the subject land and they also did not detect the species.
<i>Maundia triglochinoidea</i>	--	VU	Yes	Perennial sedge restricted to coastal NSW from Wyong extending northwards to southern Queensland. Grows in shallow freshwater channels, lagoons, creeks, dams or swamps in a variety of communities including Coastal Floodplain Wetlands, Coastal Swamp Forests, Coastal Freshwater Lagoons, Coastal Heath Swamps and Coastal Valley Grassy Woodlands. Grows in heavy clay, low nutrient soils.	Assumed present	Yes	No	Assumed present	Assumed present. This species has been assumed present in the subject land in areas of PCT 3975.
<i>Micromyrtus minutiflora</i>	VU	EN	Yes	Slender, spreading shrub restricted to the western edge of the Cumberland Plain	Low	No	Yes	Low	Surveyed (not present). Targeted surveys were

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
				between Richmond and Penrith. Grows in Cumberland Dry Sclerophyll Forests and Sydney Sand Flats Dry Sclerophyll Forests including Castlereagh Scribbly Gum Woodlands, Castlereagh Ironbark Forests, and Shale/Gravel Transition Forests. Grows in tertiary alluvium and consolidated river sediments.					undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.
<i>Persicaria elatior</i> Tall Knotweed	VU	VU	Yes	Erect herb found growing in south-eastern NSW at Mount Dromedary, Moruya State Forest near Turlinjah, Upper Avon River catchment north of Robertson, Bermagui and Picton Lakes. Also grows in northern NSW around Raymond Terrace near Newcastle and Cherry Tree and Gibberagee State Forests in the Grafton area. Grows in damp places usually on the margins of waterbodies and in swamp forests in a variety of communities including Coastal Floodplain Wetlands, Coastal Swamp Forests, Eastern Riverine Forests, Coastal Freshwater Lagoons and Coastal Heath Swamps.	Assumed present.	Yes	No	Assumed present	Assumed present. This species has been assumed present in the subject land in areas of PCT 3975.

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
<i>Persoonia nutans</i> Nodding Geebung	EN	EN	Yes	Erect or spreading shrub with a disjunct distribution restricted to the Cumberland Plain between Richmond in the north and Macquarie Fields in the south with core distribution occurring in the Penrith and to a lesser extent, Hawkesbury regions. Grows in Cumberland Dry Sclerophyll Forests including Agnes Banks Woodland, Castlereagh Scribbly Gum Woodland, Cooks River/Castlereagh Ironbark Forest and Shale-Sandstone Transition Forest as well as Sydney Sand Flats Dry Sclerophyll Forests and Coastal Valley Grassy Woodlands. Grows in sandy soils derived from aeolian or alluvial sediments as well as in tertiary alluviums to the south of its range.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.
<i>Pimelea curviflora</i> var. <i>curviflora</i>	VU	VU	Yes	Small to medium sized shrub restricted to the coastal areas of Sydney between northern Sydney and Maroota with an outlying population at Croom Reserve near Albion Park in the Illawarra region. Grows on ridgetops and upper slopes amongst grasses and sedges in a variety of communities including Cumberland Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths and Northern Hinterland Wet Sclerophyll Forests. Can be inconspicuous	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This species was not recorded.

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
				amongst grasses and sedges although easier to find in October to May when flowering. Grows on sandstone substrates in shale/lateritic soils and shale/sandstone transition soils.					
<i>Pimelea spicata</i> Spiked Rice Flower	EN	EN	Yes	Small erect or spreading shrub with populations occurring in two disjunct areas, one occurring on the Cumberland Plain from Marayong and Prospect Reservoir south to Narellan and Douglas Park, and the other occurring in the Illawarra from Landsdowne to Shellharbour and north Kiama. Grows in Maritime Grasslands and Coastal Valley Grassy Woodlands including Cumberland Plain Woodlands and Moist Shale Woodlands within the Cumberland Basin and in Coast Banksia Open Woodland Coastal Grasslands in the Illawarra region. Grows on well structured clay soils.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This species was not recorded.
<i>Pomaderris brunnea</i> Brown Pomaderris	VU	EN	Yes	Medium sized shrub with a distribution limited to the area around the Colo, Nepean and Hawkesbury Rivers including the Bargo area and near Camden. Grows on floodplains and creeklines in a variety of communities including Sydney Hinterland Dry Sclerophyll Forests, Central Gorge Dry Sclerophyll Forests, Coastal Floodplain Wetlands, Coastal Valley Grasslands and North Coast Wet Sclerophyll Forests. Grows in clay and alluvial soils.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
<i>Pomaderris prunifolia</i> - endangered population	--	EN Pop	Yes	Small shrub restricted to the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas including Rydalmere, Rookwood Cemetery and The Crest at Bankstown. Found growing on rocky slopes adjacent to creek lines, road reserves and small gullies in Cumberland Dry Sclerophyll Forests including Cooks River/Castlereagh Ironbark Forest and Northern Hinterland Dry Sclerophyll Forests. Grows in shale soils on sandstone substrates.	Negligible	No	No	Negligible	Excluded as a candidate. The subject land does not occur within the LGAs containing the endangered population for the species. Known from only three sites within the listed local government areas at Rydalmere, within Rookwood Cemetery and at The Crest of Bankstown. This species is therefore very unlikely to occur and has been excluded due to geographic limitations.
<i>Pterostylis saxicola</i> Sydney Plains Greenhood	EN	EN	Yes	Deciduous terrestrial orchid restricted to a few small populations located in Western Sydney between Freemans Reach in the north and Picton in the south including Georges River National Park. Found growing near streams in depression on sandstone rock shelves above cliff lines faces, moist, sheltered ridges and creek banks on mossy rocks in Temperate Montane Grasslands, Northern Warm Temperate Rainforests, Southern Warm Temperate Rainforests and Southern Tableland Wet Sclerophyll Forests. Grows in small pockets of shallow shale or shale/sandstone transition soils over sandstone substrates.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This species was not recorded.

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
<i>Pultenaea parviflora</i>	VU	EN	Yes	Small erect, branching shrub endemic to the Cumberland Plain from Windsor to Penrith east to Dean Park with outlying populations at Kemps Creek and Wilberforce. Found growing in Cumberland Dry Sclerophyll Forests including Castlereagh Ironbark Forest, Shale Gravel Transition Forest and Castlereagh Scribbly Gum Woodland, Sydney Coastal Dry Sclerophyll Forests, Sydney Sand Flats Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands and Southern Lowland Wet Sclerophyll Forests. Grows in soils derived from Wianamatta shale, laterite or alluvium.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.
<i>Pultenaea pedunculata</i> Matted Bush-pea	--	EN	Yes	Small prostrate, mat forming shrub restricted to three disjunct populations, in Villawood, Prestons and north-west of Appin in the Cumberland Plains in Sydney, the coast between Tathra and Bermagui and the Windellama area south of Goulburn. Found growing in a variety of habitats including intact woodland, creeklines, broad valleys, headlands, rock crevices, disturbed sites such as road batters and coastal cliffs in a variety of communities including Central Gorge Dry Sclerophyll Forests, South Coast Sands Dry Sclerophyll Forests, Cumberland Dry Sclerophyll Forests, Temperate Montane Grasslands, Coastal Valley Grassy Woodlands and Southern Tableland Wet Sclerophyll	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys were undertaken for this species during an optimal period for survey (October) by Biosis in 2025. This conspicuous species was not recorded.

Species	Status		BAM predicted Species SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC Act	BC Act							
				Forests. Grows in a variety of soils including sandy clay soils, loam soils, transitional soils with ironstone nodule inclusions and soils derived from Wianamatta shale, laterite or alluvium.					
<i>Wahlenbergia multicaulis</i> - endangered population Tadgell's Bluebell	--	EN Pop	Yes	Medium sized, perennial tufted herb confined to 13 sites located at Thornleigh, Mount Ku-ring-gai, Rookwood, Chullora, Bass Hill, Bankstown, Georges Hall, Campsie, South Granville and Greenacre. Found growing in forests, woodlands, grasslands, wetlands, adjacent to watercourses and disturbed sites in a variety of communities including Sandstone Gully Forest, Cooks River / Castlereagh Ironbark Forest, Cumberland Dry Sclerophyll Forests, Coastal Floodplain Wetlands, Coastal Valley Grassy Woodlands and Southern Lowland Wet Sclerophyll Forests. Grows on poorly drained, yellow podsolic soils interspersed with concretionary ironstone such as the Villawood soil series or Hawkesbury soil landscape.	Negligible	No	No	Negligible	Excluded as a candidate. This species is confined to 13 sites located at Thornleigh, Mount Ku-ring-gai, Rookwood, Chullora, Bass Hill, Bankstown, Georges Hall, Campsie, South Granville and Greenacre. The subject land is outside of these known areas with limited suitable habitat. This species has therefore been excluded based on geographic limitations.

Table A 2 Threatened fauna species assessment

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Anthochaera phrygia</i> Regent Honeyeater	CE	CE	Yes	Regent Honeyeaters are semi-nomadic, occurring in temperate eucalypt woodlands and open forests. Most records are from box-ironbark eucalypt forest associations and wet lowland coastal forests. Nectar and fruit from mistletoes are also eaten. This species usually nest in tall mature eucalypts and Sheoaks.	Low	No	No	Low	Excluded as a candidate. Important Habitat Mapping (NSW DCCEE 2025c) is available for this species but this does not include any areas within the development footprint. As such the species has been excluded as a candidate based on habitat constraints in the BAM-C. Further consideration is not required.
<i>Burhinus grallarius</i> Bush Stone-curlew	-	EN	Yes	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Occurs in lightly timbered open forest and woodland, or partly cleared farmland with remnants of woodland, with a ground cover of short sparse grass and few or no shrubs where fallen branches and leaf litter are present.	Low	No	No	Low	Excluded as a candidate. There are no records of this species within 5 km of the subject land, and only 5 records within 10 km of the study area. Habitat features that form a requirement for this species, including fallen or standing dead timber, were not recorded in the subject land during field investigations. As such, the species has been excluded as a candidate based on habitat constraints in the BAM-C.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									Further consideration is not required.
<i>Calidris ferruginea</i> Curlew Sandpiper	CE	EN	Yes	Inhabits sheltered intertidal mudflats. Also non-tidal swamps, lagoons and lakes near the coast. Infrequently recorded inland.	Low	No	No	Low	Excluded as a candidate. Important Habitat Mapping (NSW DCCEE 2025c) is available for this species but this does not include any areas within the development footprint. As such the species has been excluded as a candidate based on habitat constraints in the BAM-C. Further consideration is not required.
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo	EN	EN	Yes	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine Snow Gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.	Low	Yes	Yes	Low	Surveyed (not present) A BAM candidate species (for breeding habitat). A small number (8) of records exist within 10 km of the subject land. Records of the species are generally found further west and north in tall mountain forests along sandstone escarpments. The species was also not detected during targeted field investigations. Further consideration of this species is not required.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Calyptorhynchus lathami lathami</i> South-Eastern Glossy Black- Cockatoo	EN	EN	Yes	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine Snow Gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.	Low	No	No	Low	Excluded as a candidate. Limited hollows suitable for South-eastern Glossy Black-Cockatoo <i>Calyptorhynchus lathami lathami</i> occur in the subject land, in the context of highly degraded, thinned woodland patches. Potential nesting hollows observed in the subject land during targeted surveys for threatened owls (which would also be a similar size for South-eastern Glossy Black-Cockatoo) were limited and in some cases currently utilised by other common avian species. Food resources for this species including <i>Allocasuarina</i> and <i>Casuarina</i> tree species are absent from the subject land. Minimal <i>Allocasuarina</i> feed occurs in the broader development site and assessment area. Therefore this species has been excluded as a candidate species for the subject land.
<i>Cercartetus nanus</i>	-	VU	Yes	Patchily distributed from the coast to the	Low	No	No	Low	Excluded as a candidate.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Eastern Pygmy-possum				Great Dividing Range, and as far as Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Inhabits rainforest through to sclerophyll forest and tree heath. Banksias and myrtaceous shrubs and trees are a favoured food source. Soft fruits are eaten when flowers are unavailable and it also feeds on insects. Will often nest in tree hollows, but can also construct its own nest. Because of its small size it is able to utilise a range of hollow sizes including very small hollows. Individuals will use a number of different hollows and an individual has been recorded using up to 9 nest sites within a 0.5 ha area over a 5 month period.					Habitat in the form of woodland with hollow-bearing trees is not present within the subject land. Whilst <i>Eucalyptus</i> species are present, the mid-storey has been cleared across the subject land. There is a distinct lack of diversity in shrub layer for the favoured Proteaceae and Myrtaceae families, preferred as a food resource by this species. Excluded as a candidate based on habitat degradation as marked in the BAM-C. Further consideration of this species is not required.
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	EN	EN	Yes	Occurs from the Queensland border to Ulladulla, with largest numbers from the sandstone escarpment country in the Sydney Basin and Hunter Valley. Primarily found in dry sclerophyll forests and woodlands, but also found in rainforest fringes and subalpine woodlands. Forages on small, flying insects below the forest canopy. Roosts in colonies of between three and 80 in caves, Fairy Martin nests and mines, and beneath rock overhangs, but usually less than 10	Low	No	No	Low	Excluded as a candidate. This species has been recorded at a moderate density, with 15 records existing within 10 km of the subject land. Habitat constraints that form a requirement for this species, including rocky habitat within 2 km of the subject land, are not present. As such, the

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				individuals. Likely that it hibernates during the cooler months. The only known existing maternity roost is in a sandstone cave near Coonabarabran.					species has been excluded as a candidate based on habitat constraints in the BAM-C. Further consideration is not required.
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	-	VU	Yes	A migratory species that is generally sedentary in Australia, although immature individuals and some adults are dispersive. Found in terrestrial and coastal wetlands; favouring deep freshwater swamps, lakes and reservoirs; shallow coastal lagoons and saltmarshes. It hunts over open terrestrial habitats. Feeds on birds, reptiles, fish, mammals, crustaceans and carrion. Roosts and makes nest in trees.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys did not identify any large stick nests on site suitable for the species. No further consideration is required.
<i>Heleioporus australiacus</i> Giant Burrowing Frog	VU	VU	Yes	Prefers hanging swamps on sandstone shelves adjacent to perennial non-flooding creeks. Can also occur within shale outcrops within sandstone formations. Known from wet and dry forests and montane woodland in the southern part range. Individuals can be found around sandy creek banks or foraging along ridge-tops during or directly after heavy rain. Males often call from burrows located in sandy banks next to water. Spends the majority of its time in non-breeding habitat 20-250m from breeding sites.	Low	No	No	Low	Excluded as a candidate. The subject land does not provide suitable habitat for the species in the form of ephemeral streams with permanent pools. Clay soils within the subject land are not considered preferred substrate for the species. Any potential waterways providing habitat are of poor quality and unlikely to support the species. No records of the species exist within 10 km of the subject

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									land. Based on the absence of nearby records and suitable habitat, this species does not require further consideration.
<i>Hieraaetus morphnoides</i> Little Eagle	-	VU	Yes	The Little Eagle is most abundant in lightly timbered areas with open areas nearby providing an abundance of prey species. It has often been recorded foraging in grasslands, crops, treeless dune fields, and recently logged areas. The Little Eagle nests in tall living trees within farmland, woodland and forests.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys did not identify any large stick nests on site suitable for the species. No further consideration is required.
<i>Lathamusdiscolor</i> Swift Parrot	CE	EN	Yes	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i> , Spotted Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Grey Box <i>E. microcarpa</i> , Grey Box <i>E. moluccana</i> and Blackbutt <i>E. pilularis</i> . This species is migratory, breeding in Tasmania and also	Low	No	No	Low	Excluded as a candidate. Important Habitat Mapping (NSW DCCEE 2025c) is available for this species but this does not include any areas within the development footprint. As such the species has been excluded as a candidate based on habitat constraints in the BAM-C. Further consideration is not required.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				nomadic, moving about in response to changing food availability.					
<i>Limosa limosa</i> Black-tailed Godwit	EN	VU	Yes	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state.	Low	No	No	Low	Excluded as a candidate. Important Habitat Mapping (NSW DCCEE 2025c) is available for this species but this does not include any areas within the development footprint. As such the species has been excluded as a candidate based on habitat constraints in the BAM-C. Further consideration is not required.
<i>Litoria aurea</i> Green and Golden Bell Frog	VU	EN	Yes	Most existing locations for the species occur as small, coastal, or near coastal populations, with records occurring between south of Grafton and northern VIC. The species is found in marshes, dams and stream sides, particularly those containing bullrushes or spikerushes. Preferred habitat contains water bodies that are unshaded, are free of predatory fish, have a grassy area nearby	Low	No	No	Low	Excluded as a candidate. This species has been recorded at a moderate density, with 17 records existing within 10 km of the subject land. While suitable breeding and foraging habitat exists within the subject land in the form of several large farm dams and one first

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				and have diurnal sheltering sites nearby such as vegetation or rocks, although the species has also been recorded from highly disturbed areas including disused industrial sites, brick pits, landfill areas and cleared land. Breeding usually occurs in summer. Tadpoles, which take approximately 10-12 weeks to develop, feed on algae and other vegetative matter. Adults eat insects as well as other frogs, including juveniles of their own species.					Strahler order stream, targeted surveys previously undertaken by Cumberland Ecology (2025) within the subject land did not detect presence. Further consideration of this species is not required.
<i>Lophoictinia isura</i> Square-tailed Kite	-	VU	Yes	Typically inhabits coastal forested and wooded lands of tropical and temperate Australia. In NSW it is often associated with ridge and gully forests dominated by <i>Eucalyptus longifolia</i> , <i>Corymbia maculata</i> , <i>E. elata</i> , or <i>E. smithii</i> . Individuals appear to occupy large hunting ranges of more than 100 km ² . They require large living trees for breeding, particularly near water with surrounding woodland /forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in a tree fork or on large horizontal limbs.	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys did not identify any large stick nests on site suitable for the species. No further consideration is required.
<i>Meridolum corneovirens</i> Cumberland Plain Land Snail	-	EN	Yes	Most likely restricted to Cumberland Plain, Castlereagh Woodlands and boundaries between River-flat Forest and Cumberland Plain Woodland. It is normally found beneath logs, debris and amongst accumulated leaf	Low	No	No	Low	Excluded as a candidate. This species has been recorded at a high density in the locality, with 648 records

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				and bark particularly at the base of trees. May also use soil cracks for refuge.					existing within 10 km of the subject land. While suitable habitat for the species exists within the subject land, targeted surveys previously undertaken by Cumberland Ecology (2025) within the subject land did not detect presence. Further consideration of this species is not required.
<i>Miniopterus australis</i> Little Bent-winged Bat	-	VU	Yes	Occurs from Northern Queensland to the Hawkesbury River near Sydney. Roost sites encompass a range of structures including caves, tunnels and stormwater drains. Young are raised by the females in large maternity colonies in caves in summer. Shows a preference for well timbered areas including rainforest, wet and dry sclerophyll forests, Melaleuca swamps and coastal forests. The Little Bentwing bat forages for small insects (such as moths, wasps and ants) beneath the canopy of densely vegetated habitats.	Low	No	No	Low	Excluded as a candidate. This species has been recorded at a moderate density, with 33 records existing within 10 km of the subject land. Habitat constraints that form a requirement for this species, including caves, tunnels, mines, and culverts, are not present within the subject land. As such, the species has been excluded as a candidate based on habitat constraints in the BAM-C. Further consideration is not required.
<i>Miniopterus orianae</i>	-	VU	Yes	Occurs from Victoria to Queensland, on both sides of the Great Dividing Range. Forms	Low	No	No	Low	Excluded as a candidate. This species has been

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>oceanensis</i> Large Bent-winged Bat				large maternity roosts (up to 100,000 individuals) in caves and mines in spring and summer. Individuals may fly several hundred kilometres to their wintering sites, where they roost in caves, culverts, buildings, and bridges. They occur in a broad range of habitats including rainforest, wet and dry sclerophyll forest, paperbark forest and open grasslands. Has a fast, direct flight and forages for flying insects (particularly moths) above the tree canopy and along waterways.					recorded at a moderate density, with 33 records existing within 10 km of the subject land. Habitat constraints that form a requirement for this species, including caves, tunnels, mines, and culverts, are not present within the subject land. As such, the species has been excluded as a candidate based on habitat constraints in the BAM-C. Further consideration is not required.
<i>Myotis macropus</i> Southern Myotis	-	VU	Yes	Scattered, mainly coastal distribution extending to South Australia along the Murray River. Roosts in caves, mines or tunnels, under bridges, in buildings, tree hollows, and even in dense foliage. Colonies occur close to water bodies, ranging from rainforest streams to large lakes and reservoirs. They catch aquatic insects and small fish with their large hind claws, and also catch flying insects.	Detected	Yes	No (previously completed)	Moderate	Previously detected. Southern Myotis was previously detected within the subject land by Cumberland Ecology (2025). A species polygon has been generated for this species.
<i>Ninox connivens</i> Barking Owl	-	VU	Yes	Generally found in open forests, woodlands, swamp woodlands, farmlands and dense scrub. Can also be found in the foothills and timber along watercourses in otherwise open country. Territories are typically 2000 ha in	Low	Yes	Yes	Low	Surveyed (not present). Only two records of this species exist within 10 km of the subject land. While suitable breeding habitat for

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				NSW habitats. Hunts small arboreal mammals or birds and terrestrial mammals when tree hollows are absent.					the species exists within the subject land in the form of large tree hollows, targeted surveys for the species did not detect presence. Further consideration of this species is not required.
<i>Ninox strenua</i> Powerful Owl	-	VU	Yes	The Powerful Owl occupies wet and dry eucalypt forests and rainforests. It may inhabit both un-logged and lightly logged forests as well as undisturbed forests where it usually roosts on the limbs of dense trees in gully areas. Large mature trees with hollows at least 0.5 m deep are required for nesting. Tree hollows are particularly important for the Powerful Owl because a large proportion of the diet is made up of hollow-dependent arboreal marsupials. Nest trees for this species are usually emergent with a diameter at breast height of at least 100 cm. It has a large home range of between 450 and 1450 ha.	Low	Yes	Yes	Low	Surveyed (not present). This species has been recorded at a moderate density, with 14 records existing within 10 km of the subject land. While suitable breeding habitat for the species exists within the subject land in the form of large tree hollows, targeted surveys for the species did not detect presence. Further consideration of this species is not required.
<i>Pandion cristatus</i> Eastern Osprey	-	VU	Yes	Found in coastal waters, inlets, estuaries and offshore islands. Occasionally found 100 km inland along larger rivers. It is water-dependent, hunting for fish in clear, open water. The Osprey occurs in terrestrial wetlands, coastal lands and offshore islands. It is a predominantly coastal species,	Low	Yes	Yes	Low	Surveyed (not present). Targeted surveys did not identify any large stick nests on site suitable for the species. No further consideration is required.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				generally using marine cliffs as nesting and roosting sites. Nests can also be made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.					
<i>Petaurus norfolcensis</i> Squirrel Glider	-	VU	Yes	Generally occurs in dry sclerophyll forests and woodlands but is absent from dense coastal ranges in the southern part of its range. Requires abundant hollow-bearing trees and a mix of eucalypts, banksias and acacias. Within a suitable vegetation community at least one species should flower heavily in winter and one species of eucalypt should be smooth barked.	Low	Yes	Yes	Low	Surveyed (not present). No records of the species exist within 10 km of the subject land. This species prefers Blackbutt-Bloodwood forest with a heath understorey and an Acacia midstorey, which is absent from the subject land. Incidental surveys by Biosis and targeted surveys previously undertaken by Cumberland Ecology (2025) did not detect presence within the subject land. Further consideration of this species is not required.
<i>Phascolarctos cinereus</i> Koala	EN	EN	Yes	In NSW the Koala mainly occurs on the central and north coasts with some populations in the western region. Koalas feed almost exclusively on eucalypt foliage, and their preferences vary regionally. Primary feed trees include <i>Eucalyptus robusta</i> , <i>E. tereticornis</i> , <i>E. punctata</i> , <i>E. haemostoma</i> and <i>E. signata</i> . They are solitary with varying	Low	Yes	Yes	Low	Surveyed (not present). Few koala feed trees exist within the subject land. A small number (9) of records exist within 10 km of the subject land. Incidental surveys by Biosis and targeted surveys previously undertaken by Cumberland

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				home ranges.					Ecology (2025) did not detect presence within the subject land. Further consideration of this species is not required.
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	VU	VU	Yes	Occurs along the NSW coast, extending further inland in the north. This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Roosts in large colonies, commonly in dense riparian vegetation.	Low	No	No	Low	Excluded as a candidate. No breeding camps were identified within the subject land during site investigations in September 2025, and no breeding camps have been previously recorded within the subject land. The species may forage within the subject land on occasion.
<i>Tyto novaehollandiae</i> Masked Owl	-	VU	Yes	The Masked Owl is found in range of wooded habitats that provide tall or dense mature trees with hollows suitable for nesting and roosting. It is mostly seen in open forests and woodlands adjacent to cleared lands. Prey includes hollow-dependent arboreal marsupials and terrestrial mammals.	Low	Yes	Yes	Low	Surveyed (not present). A small number (7) of records exist within 10 km of the study area, with the closest record approximately 2 km away. Suitable breeding habitat is present; however, targeted surveys did not detect presence on site. As such, this species does not require further consideration.

Appendix 3 Flora

Appendix 3.1 BAM plot field data

Table A 3 BAM plot floristics (P01 to P05)

Family	Scientific name	Common name	43542_P01		43542_P02		43542_P03		43542_P04		43542_P05	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Native species												
Apiaceae	<i>Centella asiatica</i>	Indian Pennywort										
Asphodelaceae	<i>Dianella longifolia</i>	Blueberry Lily	0.1	5					0.1	2		
Asteraceae	<i>Cotula australis</i>	Common Cotula										
Asteraceae	<i>Euchiton involucratus</i>	Star Cudweed									0.2	20
Asteraceae	<i>Euchiton sphaericus</i>	Star Cudweed							0.1	30		
Asteraceae	<i>Cyanthillium cinereum</i>	Little ironweed										
Campanulaceae	<i>Wahlenbergia gracilis</i>	Sprawling Bluebell	0.1	50			0.1	10	0.1	10	0.1	30
Campanulaceae	<i>Wahlenbergia communis</i>	Tufted Bluebell	0.1	3					0.1	5		
Chenopodiaceae	<i>Einadia hastata</i>	Berry Saltbush	0.1	5								
Chenopodiaceae	<i>Einadia nutans</i>	Climbing Saltbush										
Commelinaceae	<i>Commelina cyanea</i>	Native Wandering Jew										

Family	Scientific name	Common name	43542_P01		43542_P02		43542_P03		43542_P04		43542_P05	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed	0.1	50					0.2	200		
Cyperaceae	<i>Carex inversa</i>	Knob Sedge	0.1	10								
Cyperaceae	<i>Carex breviculmis</i>	--	0.1	5								
Cyperaceae	<i>Eleocharis sphacelata</i>	Tall Spike Rush			10	1000						
Fabaceae (Faboideae)	<i>Lotus australis</i>	Australian Trefoil					0.1	20				
Fabaceae (Faboideae)	<i>Grona varians</i>	--	0.1	10					0.1	2		
Fabaceae (Faboideae)	<i>Glycine tabacina</i>	Variable Glycine	0.1	20					0.1	1		
Goodeniaceae	<i>Brunonia australis</i>	Blue Pincushion	0.1	50								
Juncaceae	<i>Juncus usitatus</i>	--			10	50					10	100
Lythraceae	<i>Lythrum hyssopifolia</i>	Hyssop Loosestrife			0.1	5						
Marsileaceae	<i>Marsilea mutica</i>	--			20	1000						
Myrtaceae	<i>Eucalyptus tereticornis</i>	Forest Red Gum							10	20	30	40
Myrtaceae	<i>Eucalyptus moluccana</i>	Grey Box	5	10								
Onagraceae	<i>Ludwigia peploides</i> subsp. <i>montevidensis</i>	Water Primrose			0.1	5						
Oxalidaceae	<i>Oxalis perennans</i>	--	0.1	20								
Phyllanthaceae	<i>Phyllanthus virgatus</i>	Wiry Spurge	0.1	10								

Family	Scientific name	Common name	43542_P01		43542_P02		43542_P03		43542_P04		43542_P05	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Plantaginaceae	<i>Plantago gaudichaudii</i>	Narrow Plantain	0.1	20					0.1	20		
Poaceae	<i>Eragrostis brownii</i>	Brown's Lovegrass							0.1	10	0.1	5
Poaceae	<i>Cynodon dactylon</i>	Common Couch	3	800	30	1000	5	1000	5	5000	20	100
Poaceae	<i>Themeda triandra</i>	--	10	200								
Poaceae	<i>Eragrostis leptostachya</i>	Paddock Lovegrass									0.1	5
Poaceae	<i>Aristida ramosa</i>	Purple Wiregrass	15	500			0.2	20	10	2000	0.2	20
Poaceae	<i>Bothriochloa macra</i>	Red Grass	0.1	50					0.2	200		
Poaceae	<i>Dichelachne micrantha</i>	Shorthair Plumegrass							0.1	20	0.1	5
Poaceae	<i>Sporobolus creber</i>	Slender Rat's Tail Grass					2	100				
Poaceae	<i>Chloris ventricosa</i>	Tall Chloris	0.2	30								
Poaceae	<i>Microlaena stipoides</i>	Weeping Grass	0.5	400					0.2	50		
Rubiaceae	<i>Asperula conferta</i>	Common Woodruff	0.1	100			0.1	2	0.2	200		
Scrophulariaceae	<i>Bacopa monnieri</i>	Bacopa			0.3	500						
Introduced species												
Poaceae	<i>Axonopus fissifolius</i>	Narrow-leafed Carpet Grass	2	200			10	1000	0.5	500		
Poaceae	<i>Briza minor</i>	Shivery Grass					0.5	100				

Family	Scientific name	Common name	43542_P01		43542_P02		43542_P03		43542_P04		43542_P05	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Poaceae	<i>Briza subaristata</i>	--	20	400			20	1000	40	2000	10	100
Poaceae	<i>Bromus catharticus</i>	Praire Grass										
Asteraceae	<i>Carthamus lanatus</i>	Saffron Thistle							0.1	5		
Poaceae	<i>Cenchrus clandestinus</i>	Kikuyu Grass			10	500					0.2	20
Caryophyllaceae	<i>Cerastium glomeratum</i>	Mouse-ear Chickweed	0.1	20			0.1	20	0.1	100		
Poaceae	<i>Chloris gayana</i>	Rhodes Grass			0.5	40			1	80		
Asteraceae	<i>Cirsium vulgare</i>	Spear Thistle							0.1	10		
Asteraceae	<i>Conyza bonariensis</i>	Flaxleaf Fleabane										
Myrtaceae	<i>Corymbia citriodora</i>	Lemon-scented Gum										
Apiaceae	<i>Cyclospermum leptophyllum</i>	Slender Celery	0.1	10					0.1	200		
Cyperaceae	<i>Cyperus eragrostis</i>	Umbrella Sedge									0.2	30
Bignoniaceae	<i>Dolichandra unguis-cati</i>	--										
Flacourtiaceae	<i>Dovyalis caffra</i>	Kei Apple							0.1	1		
Poaceae	<i>Eragrostis curvula</i>	African Lovegrass	40	200	10	50	5	50	2	200	5	20
Papaveraceae	<i>Eschscholzia californica</i>	California Poppy										
Asteraceae	<i>Gamochaeta</i> spp.	--										

Family	Scientific name	Common name	43542_P01		43542_P02		43542_P03		43542_P04		43542_P05	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Fabaceae (Caesalpinioideae)	<i>Gleditsia triacanthos</i>	Honey Locust										
Asteraceae	<i>Hypochaeris albiflora</i>	White Flatweed										
Asteraceae	<i>Hypochaeris radicata</i>	Catsear	0.1	20			0.1	20	0.1	20		
Juncaceae	<i>Juncus acutus</i> subsp. <i>acutus</i>	Sharp Rush			1	5						
Brassicaceae	<i>Lepidium africanum</i>	Common Peppergrass	0.1	5								
Linaceae	<i>Linum trigynum</i>	French Flax	0.1	5					0.1	50		
Fabaceae (Faboideae)	<i>Lotus angustissimus</i>	Slender Birds-foot Trefoil	0.1	10					0.1	2	0.2	20
Primulaceae	<i>Lysimachia arvensis</i>	Scarlet Pimpernel	0.1	5					0.1	50		
Fabaceae (Faboideae)	<i>Medicago polymorpha</i>	Burr Medic										
Malvaceae	<i>Modiola caroliniana</i>	Red-flowered Mallow										
Poaceae	<i>Nassella neesiana</i>	Chilean Needle Grass										
Oleaceae	<i>Olea europaea</i> subsp. <i>cuspidata</i>	African Olive							0.1	1		
Asteraceae	<i>Onopordum acanthium</i> subsp. <i>acanthium</i>	Scotch Thistle									0.1	
Caryophyllaceae	<i>Paronychia brasiliensis</i>	Chilean Whitlow Wort, Brazilian Whitlow										
Poaceae	<i>Paspalum dilatatum</i>	Paspalum	10	100			50	2000	30	1000	5	30
Plantaginaceae	<i>Plantago lanceolata</i>	Lamb's Tongues			0.1	20	0.1	20	0.2	500		

Family	Scientific name	Common name	43542_P01		43542_P02		43542_P03		43542_P04		43542_P05	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Rubiaceae	<i>Richardia stellaris</i>	--	0.1	10								
Iridaceae	<i>Romulea rosea</i> var. <i>australis</i>	Onion Grass	0.1	5			0.1	20				
Asteraceae	<i>Senecio madagascariensis</i>	Fireweed	0.2	50			0.2	60	0.2	200	0.5	60
Poaceae	<i>Setaria parviflora</i>	--							0.2	200		
Rubiaceae	<i>Sherardia arvensis</i>	Field Madder							0.1	10		
Malvaceae	<i>Sida rhombifolia</i>	Paddy's Lucerne	0.1	20					0.1	10		
Solanaceae	<i>Solanum sisymbriifolium</i>	--							0.1	2		
Asteraceae	<i>Sonchus oleraceus</i>	Common Sowthistle							0.1	5	0.1	

Table A 4 BAM plot floristics (P08 to P11)

Family	Scientific name	Common name	43542_P08		43542_P09		43542_P10		43542_P11	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Native species										
Apiaceae	<i>Centella asiatica</i>	Indian Pennywort	0.1	10						
Asphodelaceae	<i>Dianella longifolia</i>	Blueberry Lily								
Asteraceae	<i>Cotula australis</i>	Common Cotula			0.1	10				
Asteraceae	<i>Euchiton involucratus</i>	Star Cudweed								
Asteraceae	<i>Euchiton sphaericus</i>	Star Cudweed								
Asteraceae	<i>Cyanthillium cinereum</i>	Little ironweed					0.1	2		
Campanulaceae	<i>Wahlenbergia gracilis</i>	Sprawling Bluebell	0.1	30					0.1	50
Campanulaceae	<i>Wahlenbergia communis</i>	Tufted Bluebell			0.1	50			0.1	20
Chenopodiaceae	<i>Einadia hastata</i>	Berry Saltbush								
Chenopodiaceae	<i>Einadia nutans</i>	Climbing Saltbush					0.1	1		
Commelinaceae	<i>Commelina cyanea</i>	Native Wandering Jew					0.1	5		
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed								
Cyperaceae	<i>Carex inversa</i>	Knob Sedge								
Cyperaceae	<i>Carex breviculmis</i>	--								

Family	Scientific name	Common name	43542_P08		43542_P09		43542_P10		43542_P11	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Cyperaceae	<i>Eleocharis sphacelata</i>	Tall Spike Rush								
Fabaceae (Faboideae)	<i>Lotus australis</i>	Australian Trefoil								
Fabaceae (Faboideae)	<i>Grona varians</i>	--			0.1	5	0.1	2		
Fabaceae (Faboideae)	<i>Glycine tabacina</i>	Variable Glycine								
Goodeniaceae	<i>Brunonia australis</i>	Blue Pincushion								
Juncaceae	<i>Juncus usitatus</i>	--	0.5	100						
Lythraceae	<i>Lythrum hyssopifolia</i>	Hyssop Loosestrife								
Marsileaceae	<i>Marsilea mutica</i>	--								
Myrtaceae	<i>Eucalyptus tereticornis</i>	Forest Red Gum	0.3	10						
Myrtaceae	<i>Eucalyptus moluccana</i>	Grey Box	5	3						
Onagraceae	<i>Ludwigia peploides</i> subsp. <i>montevidensis</i>	Water Primrose								
Oxalidaceae	<i>Oxalis perennans</i>	--	0.1	5					0.1	20
Phyllanthaceae	<i>Phyllanthus virgatus</i>	Wiry Spurge							0.1	2
Plantaginaceae	<i>Plantago gaudichaudii</i>	Narrow Plantain							0.1	20
Poaceae	<i>Eragrostis brownii</i>	Brown's Lovegrass								
Poaceae	<i>Cynodon dactylon</i>	Common Couch	10	1000	5	500	0.1	5	2	2000

Family	Scientific name	Common name	43542_P08		43542_P09		43542_P10		43542_P11	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Poaceae	<i>Themeda triandra</i>	--	0.1	5	0.1	10			25	2000
Poaceae	<i>Eragrostis leptostachya</i>	Paddock Lovegrass								
Poaceae	<i>Aristida ramosa</i>	Purple Wiregrass	1	50	0.3	50			10	500
Poaceae	<i>Bothriochloa macra</i>	Red Grass	0.1	10	0.2	200			0.1	20
Poaceae	<i>Dichelachne micrantha</i>	Shorthair Plumegrass								
Poaceae	<i>Sporobolus creber</i>	Slender Rat's Tail Grass								
Poaceae	<i>Chloris ventricosa</i>	Tall Chloris								
Poaceae	<i>Microlaena stipoides</i>	Weeping Grass			0.2	50	0.1	10		
Rubiaceae	<i>Asperula conferta</i>	Common Woodruff			0.1	20			0.1	50
Scrophulariaceae	<i>Bacopa monnieri</i>	Bacopa								
Introduced species										
Poaceae	<i>Axonopus fissifolius</i>	Narrow-leafed Carpet Grass							1	1000
Poaceae	<i>Briza minor</i>	Shivery Grass							0.3	50
Poaceae	<i>Briza subaristata</i>	--	20	2000	10	1000			25	2000
Poaceae	<i>Bromus catharticus</i>	Praire Grass					0.1	10		
Asteraceae	<i>Carthamus lanatus</i>	Saffron Thistle								

Family	Scientific name	Common name	43542_P08		43542_P09		43542_P10		43542_P11	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Poaceae	<i>Cenchrus clandestinus</i>	Kikuyu Grass								
Caryophyllaceae	<i>Cerastium glomeratum</i>	Mouse-ear Chickweed	0.1	30	0.1	20			0.1	20
Poaceae	<i>Chloris gayana</i>	Rhodes Grass								
Asteraceae	<i>Cirsium vulgare</i>	Spear Thistle	0.1	3	0.1	5	0.1	10		
Asteraceae	<i>Conyza bonariensis</i>	Flaxleaf Fleabane	0.1	10	0.1	10			0.1	20
Myrtaceae	<i>Corymbia citriodora</i>	Lemon-scented Gum					30	20		
Apiaceae	<i>Cyclospermum leptophyllum</i>	Slender Celery			0.1	20			0.1	100
Cyperaceae	<i>Cyperus eragrostis</i>	Umbrella Sedge								
Bignoniaceae	<i>Dolichandra unguis-cati</i>	--					0.1	10		
Flacourtiaceae	<i>Dovyalis caffra</i>	Kei Apple								
Poaceae	<i>Eragrostis curvula</i>	African Lovegrass	45	500	70	4000	0.1	5	5	200
Papaveraceae	<i>Eschscholzia californica</i>	California Poppy					0.1	5		
Asteraceae	<i>Gamochaeta</i> spp.	--							0.1	100
Fabaceae (Caesalpinioideae)	<i>Gleditsia triacanthos</i>	Honey Locust					0.5	1		
Asteraceae	<i>Hypochaeris albiflora</i>	White Flatweed							0.1	20
Asteraceae	<i>Hypochaeris radicata</i>	Catsear							0.1	20

Family	Scientific name	Common name	43542_P08		43542_P09		43542_P10		43542_P11	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Juncaceae	<i>Juncus acutus</i> subsp. <i>acutus</i>	Sharp Rush								
Brassicaceae	<i>Lepidium africanum</i>	Common Peppergrass								
Linaceae	<i>Linum trigynum</i>	French Flax	0.1	10	0.1	500			0.1	200
Fabaceae (Faboideae)	<i>Lotus angustissimus</i>	Slender Birds-foot Trefoil			0.1	50			0.1	20
Primulaceae	<i>Lysimachia arvensis</i>	Scarlet Pimpernel			0.1	5			0.1	20
Fabaceae (Faboideae)	<i>Medicago polymorpha</i>	Burr Medic			0.1	20	0.1	10		
Malvaceae	<i>Modiola caroliniana</i>	Red-flowered Mallow					0.1	5		
Poaceae	<i>Nassella neesiana</i>	Chilean Needle Grass					0.1	5		
Oleaceae	<i>Olea europaea</i> subsp. <i>cuspidata</i>	African Olive	0.1	1						
Asteraceae	<i>Onopordum acanthium</i> subsp. <i>acanthium</i>	Scotch Thistle								
Caryophyllaceae	<i>Paronychia brasiliensis</i>	Chilean Whitlow Wort, Brazilian Whitlow					0.1	10		
Poaceae	<i>Paspalum dilatatum</i>	Paspalum	20	1000	20	2000			30	3000
Plantaginaceae	<i>Plantago lanceolata</i>	Lamb's Tongues	0.1	30	0.2	200	0.1	10	0.1	50
Rubiaceae	<i>Richardia stellaris</i>	--								
Iridaceae	<i>Romulea rosea</i> var. <i>australis</i>	Onion Grass								
Asteraceae	<i>Senecio madagascariensis</i>	Fireweed	0.1	5	0.2	100	0.1	5	0.1	100

Family	Scientific name	Common name	43542_P08		43542_P09		43542_P10		43542_P11	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Poaceae	<i>Setaria parviflora</i>	--								
Rubiaceae	<i>Sherardia arvensis</i>	Field Madder								
Malvaceae	<i>Sida rhombifolia</i>	Paddy's Lucerne	0.1	5	0.1	5	0.1	10		
Solanaceae	<i>Solanum sisymbriifolium</i>	--					0.1	5		
Asteraceae	<i>Sonchus oleraceus</i>	Common Sowthistle			0.1	5				

Table A 5 BAM plot summary (part 1)

Plot ID	PCT	Area (ha)	Max. patch size	Condition	Zone	Easting	Northing	Bearing	Comp. Tree	Comp. Shrub	Comp. Grass	Comp. Forbs	Comp. Ferns	Comp. Other
43542_P01	3320	0.63	>100ha	Moderate	3320_Mod	295253	6254176	60	1	0	8	10	0	2
43542_P02	3975	0.40	>100ha	Moderate	3975_Mod	295668	6254148	270	0	0	3	3	1	0
43542_P03	Non-native	5.36	>100ha	Other	Non-native	294740	6254278	270	0	0	3	3	0	0
43542_P04	3320	0.30	>100ha	Low	3320_Low	294867	6254262	260	1	0	6	7	0	2
43542_P05	3320	0.30	>100ha	Low	3320_Low	294687	6254045	45	1	0	6	2	0	0
43542_P08	3320	0.30	>100ha	Low	3320_Low	295511	6254135	280	2	0	5	3	0	0
43542_P09	Non-native	5.36	>100ha	Other	Non-native	295207	6254214	280	0	0	5	3	0	1
43542_P10	Non-native	5.36	>100ha	Other	Non-native	295002	6254225	210	0	0	2	3	0	1
43542_P11	3320	0.01	>100ha	DNG	3320_DNG	295309	6254146	53	0	0	4	6	0	0

Table A 6 BAM plot summary (part 2)

Plot ID	PCT	Struc. Tree	Struc. Shrub	Struc. Grass	Struc. Forbs	Stuc. Ferns	Stuc. Other	Fun. Hollow Trees	Fun. Litter Cover	Fun Len. Fallen Logs
43542_P01	3320	5.0	0.0	29.0	1.0	0.0	0.2	1	10	4
43542_P02	3975	0.0	0.0	50.0	0.5	20.0	0.0	0	4	0
43542_P03	Non-native	0.0	0.0	7.2	0.3	0.0	0.0	0	5	0
43542_P04	3320	10.0	0.0	15.6	0.9	0.0	0.2	1	17.4	6
43542_P05	3320	30.0	0.0	30.5	0.3	0.0	0.0	1	14	2
43542_P08	3320	5.3	0.0	11.7	0.3	0.0	0.0	1	6	0
43542_P09	Non-native	0.0	0.0	5.8	0.3	0.0	0.1	0	2.4	0
43542_P10	Non-native	0.0	0.0	0.2	0.3	0.0	0.1	0	7	1
43542_P11	3320	0.0	0.0	37.1	0.6	0.0	0.0	0	10	0

Table A 7 BAM plot summary (part 3)

Plot ID	PCT	Fun. Tree Stem 5to9	Fun. Tree Stem 10to19	Fun. Tree Stem 20to29	Fun. Tree Stem 30to49	Fun. Tree50to79	Fun. Tree Regen	Fun. High Threat Exotic
43542_P01	3320	1	1	0	0	0	1	72.3
43542_P02	3975	0	0	0	0	0	0	21.5
43542_P03	Non-native	0	0	0	0	0	0	85.3
43542_P04	3320	1	1	1	0	1	1	73.8
43542_P05	3320	1	1	0	0	0	1	20.9
43542_P08	3320	1	1	0	0	1	1	85.1
43542_P09	Non-native	0	0	0	0	0	0	100.2
43542_P10	Non-native	0	1	1	3	1	0	0.9
43542_P11	3320	0	0	0	0	0	0	61.1

Appendix 3.2 BAM plot data sheets

BAM Plot Data Sheet					Site Sheet no:1 of 2	
		Survey Name		Veg Zone ID	Recorders	
Date	17/09/2025	SYD 4 BDAR		Moderate	TOH JJN	
Zone 56	Datum GDA94	Plot ID	43542_P01	Plot dimensions	50x20	Orientation of middle 60
Easting 295253	Northing 6254176	IBRA region	Sydney Basin	Photo #		
Plant Community Type		3320			EEC: None	Confidence M

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	1	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	1
	Grasses etc.	8	50 - 79 cm	0
	Forbs	10	30 - 49 cm	0
	Ferns	0	20 - 29cm	0
	Other	2	10 - 19 cm	1
Sum of Cover of native vascular plants by growth form group	Trees	5	5 - 9 cm	1
	Shrubs	0	< 5 cm	1
	Grasses etc.	29	Length of logs (m)	4
	Forbs	1	No. trees with hollows	1
	Ferns	0		
	Other	0.2		
High Threat Weed cover		72.3		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	20	5	10	10	5
Average of the 5 subplots	10				

Notes	
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Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	Slight slope 1-3 NE	Soil Surface Texture	Loam clay
Soil Colour	Light brown	Site Drainage	Dam	Distance to nearest water	29

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)			
Cultivation (inc. pasture)			

Soil erosion			
Firewood/CWD removal			
Grazing (identify native/livestock)	1	R	Cattle
Fire damage			
Storm damage			
Weediness	1	R	Fireweed
Other			

400 m2 plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	17/09/2025	SYD 4 BDAR	43542_P01	Toh jjn

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
GG	Aristida ramosa	N	15	500	
FG	Asperula conferta	N	0.1	100	
	Axonopus fissifolius	HTE	2	200	
GG	Bothriochloa macra	N	0.1	50	
	Briza subaristata	HTE	20	400	
FG	Brunonia australis	N	0.1	50	
GG	Carex breviculmis	N	0.1	5	
GG	Carex inversa	N	0.1	10	
	Cerastium glomeratum	E	0.1	20	
GG	Chloris ventricosa	N	0.2	30	
	Cyclospermum leptophyllum	E	0.1	10	
GG	Cynodon dactylon	N	3	800	
FG	Dianella longifolia	N	0.1	5	
FG	Dichondra repens	N	0.1	50	
FG	Einadia hastata	N	0.1	5	
	Eragrostis curvula	HTE	40	200	
TG	Eucalyptus moluccana	N	5	10	
OG	Glycine tabacina	N	0.1	20	
OG	Grona varians	N	0.1	10	
	Hypochaeris radicata	E	0.1	20	
	Lepidium africanum	E	0.1	5	
	Linum trigynum	E	0.1	5	
	Lotus angustissimus	E	0.1	10	
	Lysimachia arvensis	E	0.1	5	
GG	Microlaena stipoides	N	0.5	400	
FG	Oxalis perennans	N	0.1	20	
	Paspalum dilatatum	HTE	10	100	
FG	Phyllanthus virgatus	N	0.1	10	
FG	Plantago gaudichaudii	N	0.1	20	

	<i>Richardia stellaris</i>	E	0.1	10	
	<i>Romulea rosea</i> var. <i>australis</i>	HTE	0.1	5	
	<i>Senecio madagascariensis</i>	HTE	0.2	50	
	<i>Sida rhombifolia</i>	E	0.1	20	
GG	<i>Themeda triandra</i>	N	10	200	
FG	<i>Wahlenbergia communis</i>	N	0.1	3	
FG	<i>Wahlenbergia gracilis</i>	N	0.1	50	

BAM Plot Data Sheet					Site Sheet no:1 of 2		
		Survey Name		Veg Zone ID	Recorders		
Date	17/09/2025	43542_P02		Moderate	Toh jjn		
Zone 56	Datum GDA94	Plot ID	43542_P02	Plot dimensions	100x10	Orientation of middle	270
Easting 295668	Northing 6254148	IBRA region	Sydney Basin	Photo #			
Plant Community Type		3975			EEC: None	Confidence M	

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	0	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	0
	Grasses etc.	3	50 - 79 cm	0
	Forbs	3	30 - 49 cm	0
	Ferns	1	20 - 29cm	0
	Other	0	10 - 19 cm	0
Sum of Cover of native vascular plants by growth form group	Trees	0	5 - 9 cm	0
	Shrubs	0	< 5 cm	0
	Grasses etc.	50	Length of logs (m)	0
	Forbs	0.5	No. trees with hollows	0
	Ferns	20		
	Other	0		
High Threat Weed cover		21.5		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	5	0	10	0	5
Average of the 5 subplots	4				

Notes	
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Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	Flat	Soil Surface Texture	Loam clay
Soil Colour	Light brown	Site Drainage	Dam	Distance to nearest water	10m

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood/CWD removal			
Grazing (identify native/livestock)	2	R	Cattle

Fire damage			
Storm damage			
Weediness			
Other			

400 m2 plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	17/09/2025	43542_P02	43542_P02	Toh jjn

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
FG	Bacopa monnieri	N	0.3	500	
	Cenchrus clandestinus	HTE	10	500	
	Chloris gayana	HTE	0.5	40	
GG	Cynodon dactylon	N	30	1000	
GG	Eleocharis sphacelata	N	10	1000	
	Eragrostis curvula	HTE	10	50	
	Juncus acutus subsp. acutus	HTE	1	5	
GG	Juncus usitatus	N	10	50	
FG	Ludwigia peploides subsp. montevidensis	N	0.1	5	
FG	Lythrum hyssopifolia	N	0.1	5	
EG	Marsilea mutica	N	20	1000	
	Plantago lanceolata	E	0.1	20	
	Sporobolus africanus	E	1	50	

BAM Plot Data Sheet					Site Sheet no:1 of 2		
		Survey Name		Veg Zone ID	Recorders		
Date	17/09/2025	SYD 4 BDAR		Other	Toh jjn		
Zone 56	Datum GDA94	Plot ID	43542_P03	Plot dimensions	50x20	Orientation of middle	270
Easting 294740	Northing 6254278	IBRA region	Sydney Basin	Photo #			
Plant Community Type		0			EEC: No	Confidence H	

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	0	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	0
	Grasses etc.	3	50 - 79 cm	0
	Forbs	3	30 - 49 cm	0
	Ferns	0	20 - 29cm	0
	Other	0	10 - 19 cm	0
Sum of Cover of native vascular plants by growth form group	Trees	0	5 - 9 cm	0
	Shrubs	0	< 5 cm	0
	Grasses etc.	7.2	Length of logs (m)	0
	Forbs	0.3	No. trees with hollows	0
	Ferns	0		
	Other	0		
High Threat Weed cover		85.3		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	5	0	5	5	10
Average of the 5 subplots	5				

Notes	Exotic grasslands
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Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	1-2 west	Soil Surface Texture	Loam clay
Soil Colour	Light brown	Site Drainage	Dam nearby	Distance to nearest water	50

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood/CWD removal			
Grazing (identify native/livestock)			

Fire damage			
Storm damage			
Weediness			
Other			

400 m2 plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	17/09/2025	SYD 4 BDAR	43542_P03	Toh jjn

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
GG	Aristida ramosa	N	0.2	20	
FG	Asperula conferta	N	0.1	2	
	Axonopus fissifolius	HTE	10	1000	
	Briza minor	E	0.5	100	
	Briza subaristata	HTE	20	1000	
	Cerastium glomeratum	E	0.1	20	
GG	Cynodon dactylon	N	5	1000	
	Eragrostis curvula	HTE	5	50	
	Hypochaeris radicata	E	0.1	20	
FG	Lotus australis	N	0.1	20	
	Paspalum dilatatum	HTE	50	2000	
	Plantago lanceolata	E	0.1	20	
	Romulea rosea var. australis	HTE	0.1	20	
	Senecio madagascariensis	HTE	0.2	60	
GG	Sporobolus creber	N	2	100	
	Trifolium campestre	E	0.1	20	
	Trifolium repens	E	0.1	20	
	Vicia sativa subsp. sativa	E	0.1	2	
FG	Wahlenbergia gracilis	N	0.1	10	

BAM Plot Data Sheet					Site Sheet no:1 of 2		
		Survey Name		Veg Zone ID	Recorders		
Date	02/10/2025	Syd 4 BDAR		Low	NZ		
Zone 56	Datum GDA94	Plot ID	43542_P04	Plot dimensions	50x20	Orientation of middle	260
Easting 294867	Northing 6254262	IBRA region	Sydney Basin	Photo #			
Plant Community Type		3320			EEC: Yes	Confidence H	

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	1	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	0
	Grasses etc.	6	50 - 79 cm	1
	Forbs	7	30 - 49 cm	0
	Ferns	0	20 - 29cm	1
	Other	2	10 - 19 cm	1
Sum of Cover of native vascular plants by growth form group	Trees	10	5 - 9 cm	1
	Shrubs	0	< 5 cm	1
	Grasses etc.	15.6	Length of logs (m)	6
	Forbs	0.9	No. trees with hollows	1
	Ferns	0		
	Other	0.2		
High Threat Weed cover		73.8		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	15	45	10	5	12
Average of the 5 subplots	17.4				

Notes	PCT 3320 or 3319. TBD based on slope and PP advice.
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Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	Slightly downhill	Soil Surface Texture	Clay
Soil Colour	Orangy brown	Site Drainage	Good	Distance to nearest water	100 m

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood/CWD removal			
Grazing (identify native/livestock)			

Fire damage			
Storm damage			
Weediness			
Other			

400 m2 plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	02/10/2025	Syd 4 BDAR	43542_P04	NZ

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
GG	Aristida ramosa	N	10	2000	
FG	Asperula conferta	N	0.2	200	
	Axonopus fissifolius	HTE	0.5	500	
GG	Bothriochloa macra	N	0.2	200	
	Briza subaristata	HTE	40	2000	
	Carthamus lanatus	HTE	0.1	5	
	Cerastium glomeratum	E	0.1	100	
	Chloris gayana	HTE	1	80	
	Cirsium vulgare	E	0.1	10	
	Cyclospermum leptophyllum	E	0.1	200	
GG	Cynodon dactylon	N	5	5000	
FG	Dianella longifolia	N	0.1	2	
GG	Dichelachne micrantha	N	0.1	20	
FG	Dichondra repens	N	0.2	200	
	Dovyalis caffra	E	0.1	1	
GG	Eragrostis brownii	N	0.1	10	
	Eragrostis curvula	HTE	2	200	
TG	Eucalyptus tereticornis	N	10	20	
FG	Euchiton sphaericus	N	0.1	30	
OG	Glycine tabacina	N	0.1	1	
OG	Grona varians	N	0.1	2	
	Hypochaeris radicata	E	0.1	20	
	Linum trigynum	E	0.1	50	
	Lotus angustissimus	E	0.1	2	
	Lysimachia arvensis	E	0.1	50	
GG	Microlaena stipoides	N	0.2	50	
	Olea europaea subsp. cuspidata	E	0.1	1	
	Paspalum dilatatum	HTE	30	1000	
FG	Plantago gaudichaudii	N	0.1	20	
	Plantago lanceolata	E	0.2	500	
	Senecio madagascariensis	HTE	0.2	200	
	Setaria parviflora	E	0.2	200	

	<i>Sherardia arvensis</i>	E	0.1	10	
	<i>Sida rhombifolia</i>	E	0.1	10	
	<i>Solanum sisymbriifolium</i>	E	0.1	2	
	<i>Sonchus oleraceus</i>	E	0.1	5	
	<i>Sporobolus africanus</i>	E	0.1	10	
	<i>Trifolium dubium</i>	E	0.1	50	
	<i>Verbena bonariensis</i>	E	0.1	10	
	<i>Vicia sativa</i>	E	0.1	5	
FG	<i>Wahlenbergia communis</i>	N	0.1	5	
FG	<i>Wahlenbergia gracilis</i>	N	0.1	10	

BAM Plot Data Sheet					Site Sheet no:1 of 2		
		Survey Name		Veg Zone ID	Recorders		
Date	03/10/2025	SYD 4 BDAR		Low	NZ, TOH		
Zone 56	Datum GDA94	Plot ID	43542_P05	Plot dimensions	50x20	Orientation of middle	45
Easting 294687	Northing 6254045	IBRA region	Sydney Basin	Photo #			
Plant Community Type		3320			EEC: None	Confidence H	

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	1	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	1
	Grasses etc.	6	50 - 79 cm	0
	Forbs	2	30 - 49 cm	0
	Ferns	0	20 - 29cm	0
	Other	0	10 - 19 cm	1
Sum of Cover of native vascular plants by growth form group	Trees	30	5 - 9 cm	1
	Shrubs	0	< 5 cm	1
	Grasses etc.	30.5	Length of logs (m)	2
	Forbs	0.3	No. trees with hollows	1
	Ferns	0		
	Other	0		
High Threat Weed cover		20.9		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	25	20	10	10	5
Average of the 5 subplots	14				

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

Landform Pattern		Slope	Flat	Soil Surface Texture	Clay loam
Soil Colour	Brown to light brown	Site Drainage	Free to moderate	Distance to nearest water	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood/CWD removal			
Grazing (identify native/livestock)			

Fire damage			
Storm damage			
Weediness			
Other	1	O	Wet species due to being at the base of a dam

400 m2 plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	03/10/2025	SYD 4 BDAR	43542_P05	NZ, TOH

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
GG	Aristida ramosa	N	0.2	20	Ground
	Briza minor	E			
	Briza subaristata	HTE	10	100	
	Cenchrus clandestinus	HTE	0.2	20	Ground
GG	Cynodon dactylon	N	20	100	
	Cyperus eragrostis	HTE	0.2	30	
GG	Dichelachne micrantha	N	0.1	5	Ground
GG	Eragrostis brownii	N	0.1	5	Ground
	Eragrostis curvula	HTE	5	20	Ground
GG	Eragrostis leptostachya	N	0.1	5	Ground
TG	Eucalyptus tereticornis	N	30	40	Canopy
FG	Euchiton involucratu	N	0.2	20	
GG	Juncus usitatus	N	10	100	
	Lotus angustissimus	E	0.2	20	
	Onopordum acanthium subsp. acanthium	E	0.1		Ground
	Paspalum dilatatum	HTE	5	30	
	Senecio madagascariensis	HTE	0.5	60	Ground
	Sonchus oleraceus	E	0.1		Ground
	Sporobolus africanus	E			
	Taraxacum officinale	E	0.1	10	
	Verbena bonariensis	E	0.1	5	
FG	Wahlenbergia gracilis	N	0.1	30	

BAM Plot Data Sheet					Site Sheet no:1 of 2		
		Survey Name		Veg Zone ID	Recorders		
Date	03/10/2025	SYD 4 BDAR		Low	NZ		
Zone 56	Datum GDA94	Plot ID	43542_P08	Plot dimensions	50x20	Orientation of middle	280
Easting 295511	Northing 6254135	IBRA region	Sydney Basin	Photo #			
Plant Community Type		3320			EEC: Yes	Confidence H	

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	2	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	0
	Grasses etc.	5	50 - 79 cm	1
	Forbs	3	30 - 49 cm	0
	Ferns	0	20 - 29cm	0
	Other	0	10 - 19 cm	1
Sum of Cover of native vascular plants by growth form group	Trees	5.3	5 - 9 cm	1
	Shrubs	0	< 5 cm	1
	Grasses etc.	11.7	Length of logs (m)	0
	Forbs	0.3	No. trees with hollows	1
	Ferns	0		
	Other	0		
High Threat Weed cover		85.1		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	5	2	5	8	10
Average of the 5 subplots	6				

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

Landform Pattern		Slope	Slightly on a slope	Soil Surface Texture	Clay
Soil Colour	Brownish red	Site Drainage	Good	Distance to nearest water	1 m

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood/CWD removal			
Grazing (identify native/livestock)			

Fire damage			
Storm damage			
Weediness			
Other			

400 m2 plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	03/10/2025	SYD 4 BDAR	43542_P08	NZ

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
GG	Aristida ramosa	N	1	50	
GG	Bothriochloa macra	N	0.1	10	
	Briza subaristata	HTE	20	2000	
FG	Centella asiatica	N	0.1	10	
	Cerastium glomeratum	E	0.1	30	
	Cirsium vulgare	E	0.1	3	
	Conyza bonariensis	E	0.1	10	
GG	Cynodon dactylon	N	10	1000	
	Eragrostis curvula	HTE	45	500	
TG	Eucalyptus moluccana	N	5	3	
TG	Eucalyptus tereticornis	N	0.3	10	
GG	Juncus usitatus	N	0.5	100	
	Linum trigynum	E	0.1	10	
	Olea europaea subsp. cuspidata	E	0.1	1	
FG	Oxalis perennans	N	0.1	5	
	Paspalum dilatatum	HTE	20	1000	
	Plantago lanceolata	E	0.1	30	
	Senecio madagascariensis	HTE	0.1	5	
	Sida rhombifolia	E	0.1	5	
	Sporobolus africanus	E	0.1	10	
GG	Themeda triandra	N	0.1	5	
	Trifolium campestre	E	0.1	10	
FG	Wahlenbergia gracilis	N	0.1	30	

BAM Plot Data Sheet					Site Sheet no:1 of 2		
		Survey Name		Veg Zone ID	Recorders		
Date	03/10/2025	SYD 4 BDAR		Other	NZ		
Zone 56	Datum GDA94	Plot ID	43542_P09	Plot dimensions	100x10	Orientation of middle	280
Easting 295207	Northing 6254214	IBRA region	Sydney Basin	Photo #			
Plant Community Type		0			EEC: No	Confidence H	

BAM Attribute (400m2 plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	5
	Forbs	3
	Ferns	0
	Other	1
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	5.8
	Forbs	0.3
	Ferns	0
	Other	0.1
High Threat Weed cover		100.2

BAM Attribute (1000m2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	0
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	5	0	0	5	2
Average of the 5 subplots	2.4				

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

Landform Pattern		Slope	Slightly sopped.	Soil Surface Texture	Clay
Soil Colour	Dark brown	Site Drainage	Good	Distance to nearest water	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood/CWD removal			
Grazing (identify native/livestock)			

Fire damage			
Storm damage			
Weediness			
Other			

400 m2 plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	03/10/2025	SYD 4 BDAR	43542_P09	NZ

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
GG	Aristida ramosa	N	0.3	50	
FG	Asperula conferta	N	0.1	20	
GG	Bothriochloa macra	N	0.2	200	
	Briza subaristata	HTE	10	1000	
	Cerastium glomeratum	E	0.1	20	
	Cirsium vulgare	E	0.1	5	
	Conyza bonariensis	E	0.1	10	
FG	Cotula australis	N	0.1	10	
	Cyclosporum leptophyllum	E	0.1	20	
GG	Cynodon dactylon	N	5	500	
	Eragrostis curvula	HTE	70	4000	
OG	Grona varians	N	0.1	5	
	Linum trigynum	E	0.1	500	
	Lotus angustissimus	E	0.1	50	
	Lysimachia arvensis	E	0.1	5	
	Medicago polymorpha	E	0.1	20	
GG	Microlaena stipoides	N	0.2	50	
	Paspalum dilatatum	HTE	20	2000	
	Plantago lanceolata	E	0.2	200	
	Senecio madagascariensis	HTE	0.2	100	
	Sida rhombifolia	E	0.1	5	
	Sonchus oleraceus	E	0.1	5	
GG	Themeda triandra	N	0.1	10	
	Trifolium campestre	E	0.1	50	
	Verbena bonariensis	E	0.1	10	
FG	Wahlenbergia communis	N	0.1	50	

BAM Plot Data Sheet					Site Sheet no:1 of 2		
		Survey Name		Veg Zone ID	Recorders		
Date	07/10/2025	43542_P10		Other	JRS		
Zone 56	Datum GDA94	Plot ID	43542_P10	Plot dimensions	50x20	Orientation of middle	210
Easting 295002	Northing 6254225	IBRA region	Sydney Basin	Photo #			
Plant Community Type					EEC: None	Confidence H	

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	0	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	0
	Grasses etc.	2	50 - 79 cm	1
	Forbs	3	30 - 49 cm	3
	Ferns	0	20 - 29cm	1
	Other	1	10 - 19 cm	1
Sum of Cover of native vascular plants by growth form group	Trees	0	5 - 9 cm	0
	Shrubs	0	< 5 cm	0
	Grasses etc.	0.2	Length of logs (m)	1
	Forbs	0.3	No. trees with hollows	0
	Ferns	0		
	Other	0.1		
High Threat Weed cover		0.9		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	5	10	5	5	10
Average of the 5 subplots	7				

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

Landform Pattern		Slope	Low hill	Soil Surface Texture	Sandy clay
Soil Colour	Orange brown	Site Drainage	Moderate	Distance to nearest water	-

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood/CWD removal			
Grazing (identify native/livestock)			

Fire damage			
Storm damage			
Weediness			
Other			

400 m2 plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	07/10/2025	43542_P10	43542_P10	JRS

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Bromus catharticus	E	0.1	10	
	Cirsium vulgare	E	0.1	10	
FG	Commelina cyanea	N	0.1	5	
	Corymbia citriodora	E	30	20	
FG	Cyanthillium cinereum	N	0.1	2	
GG	Cynodon dactylon	N	0.1	5	
	Dolichandra unguis-cati	HTE	0.1	10	
FG	Einadia nutans	N	0.1	1	
	Eragrostis curvula	HTE	0.1	5	
	Eschscholzia californica	E	0.1	5	
	Gleditsia triacanthos	HTE	0.5	1	
OG	Grona varians	N	0.1	2	
	Medicago polymorpha	E	0.1	10	
GG	Microlaena stipoides	N	0.1	10	
	Modiola caroliniana	E	0.1	5	
	Nassella neesiana	HTE	0.1	5	
	Paronychia brasiliensis	E	0.1	10	
	Plantago lanceolata	E	0.1	10	
	Senecio madagascariensis	HTE	0.1	5	
	Sida rhombifolia	E	0.1	10	
	Solanum sisymbriifolium	E	0.1	5	
	Sporobolus africanus	E	0.1	2	
	Stachys arvensis	E	0.1	10	

BAM Plot Data Sheet					Site Sheet no:1 of 2		
		Survey Name		Veg Zone ID	Recorders		
Date	07/10/2025	SYD 4 BDAR		DNG	TOH		
Zone 56	Datum GDA94	Plot ID	43542_P11	Plot dimensions	50x20	Orientation of middle	53
Easting 295309	Northing 6254146	IBRA region	Sydney Basin	Photo #			
Plant Community Type		3320				EEC: None	Confidence H

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	0	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	0
	Grasses etc.	4	50 - 79 cm	0
	Forbs	6	30 - 49 cm	0
	Ferns	0	20 - 29cm	0
	Other	0	10 - 19 cm	0
Sum of Cover of native vascular plants by growth form group	Trees	0	5 - 9 cm	0
	Shrubs	0	< 5 cm	0
	Grasses etc.	37.1	Length of logs (m)	0
	Forbs	0.6	No. trees with hollows	0
	Ferns	0		
	Other	0		
High Threat Weed cover		61.1		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	15	10	15	5	5
Average of the 5 subplots	10				

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

Landform Pattern		Slope	Flat to gentle	Soil Surface Texture	Clay loam
Soil Colour	Brown	Site Drainage	Free	Distance to nearest water	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood/CWD removal			
Grazing (identify native/livestock)			

Fire damage			
Storm damage			
Weediness			
Other			

400 m2 plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	07/10/2025	SYD 4 BDAR	43542_P11	TOH

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
GG	Aristida ramosa	N	10	500	
FG	Asperula conferta	N	0.1	50	
	Axonopus fissifolius	HTE	1	1000	
GG	Bothriochloa macra	N	0.1	20	
	Briza minor	E	0.3	50	
	Briza subaristata	HTE	25	2000	
	Cerastium glomeratum	E	0.1	20	
	Conyza bonariensis	E	0.1	20	
	Cyclospermum leptophyllum	E	0.1	100	
GG	Cynodon dactylon	N	2	2000	
	Eragrostis curvula	HTE	5	200	
	Gamochaeta spp.	E	0.1	100	
	Hypochaeris albiflora	E	0.1	20	
	Hypochaeris radicata	E	0.1	20	
	Linum trigynum	E	0.1	200	
	Lotus angustissimus	E	0.1	20	
	Lysimachia arvensis	E	0.1	20	
FG	Oxalis perennans	N	0.1	20	
	Paspalum dilatatum	HTE	30	3000	
FG	Phyllanthus virgatus	N	0.1	2	
FG	Plantago gaudichaudii	N	0.1	20	
	Plantago lanceolata	E	0.1	50	
	Senecio madagascariensis	HTE	0.1	100	
GG	Themeda triandra	N	25	2000	
	Trifolium dubium	E	0.1	20	
	Verbena bonariensis	E	0.1	200	
FG	Wahlenbergia communis	N	0.1	20	
FG	Wahlenbergia gracilis	N	0.1	50	

Appendix 4 SAI

Appendix 4.1 Cumberland Plain Woodland CEEC

The *Cumberland Plain Woodland in the Sydney Basin Bioregion* is listed under the NSW BC Act as a Critically Endangered Ecological Community. The CEEC is listed in the BioNet TBDC as an entity subject to SAI in NSW. The CEEC is considered an entity at risk of SAI based on the following principles:

- Principle 1: an ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.
- Principle 2: an ecological community that is observed, inferred or reasonably suspected to be severely degraded or disturbed.

Within the subject land PCT 3320 Cumberland Shale Plains Woodland meets the conditions for listing of this CEEC.

Given the absence of definitive impact thresholds stated for the community, the potential for a SAI will be determined by the consent authority, guided by the additional assessment provided below in Table A 8.

Table A 8 Assessment of SAI for the Cumberland Plain Woodland CEEC

Information required (BAM Section 9.1.1)	Response
1. Impacts to the CEEC and the action and measures taken to avoid the direct and indirect impact on the CEEC at risk of an SAI.	The Project will impact upon a total of approximately 16.67 ha of PCT 3320 vegetation that meets the BC Act listing requirements for Cumberland Plain Woodland CEEC. However, of this 16.67 ha, 15.72 ha occurs on Existing Certified urban capable land under the CPCP, and as such is not subject to this assessment. Thus, the total area of Cumberland Plain Woodland impacted by the Project, and subject to this assessment, comprises approximately 0.94 ha (Figure 15). The vegetation to be removed occurs in the following conditions: • DNG: 0.01 hectares – VI score of 11.60. • Low: 0.30 hectares – VI score of 25.70. • Moderate: 0.63 hectares – VI score of 37.00. Measures undertaken by the proponent to avoid and minimise impacts to the CEEC (PCT 3320) in the surrounding assessment area directly adjacent to the development site are provided in Section 5, with mitigation measures provided in Section 7 of this BDAR. All areas of land subject to assessment within this BDAR are proposed for removal.
2a. Evidence of reduction in geographic distribution, 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	Species and ecological communities that have undergone large reductions or are likely to undergo large reductions in the future are considered to be at greater risk of extinction than those that have undergone or are likely to undergo smaller reductions (NSW TSSC 2018). To be considered under this principle, the ecological community should have been observed, estimated, inferred, or reasonably suspected to have undergone, or be projected to undergo, a very large reduction in distribution, being: • ≥80% reduction where the reduction is over a 50-year period (i.e. since 1970), either in the past, future, or any part of the past, present and future (DPIE 2019). Prior to European settlement, Cumberland Plain Woodland was extensive across the

Information required (BAM Section 9.1.1)	Response
proposal). (SAIL Principle 1)	Western Sydney area, and is estimated to have covered approximately 125,446 ha (DEC 2005, NPWS 2004). Whilst formerly extensive, the community now mostly occurs as small patches within the Cumberland IBRA subregion, with some occurrences extending into neighboring subregions. It is known to occur within the following LGAs: Auburn, Bankstown, Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta, Penrith and Wollondilly (DoEWA 2010). Whilst there is no guidance as to the proportion of geographic distribution reduction that has occurred over the last 50 years (i.e. since 1970), the fact that the CEEC is noted in the SAIL guidance document (DPIE 2019) as being subject to Principle 1, infers that it has occurred in recent times, and therefore at a rapid rate. According to <i>Remnant vegetation of the western Cumberland subregion, 2013 Update VIS_ID 4207</i> (DPE 2015), and <i>The Native Vegetation of the Sydney Metropolitan Area</i> (OEH 2016) and <i>Native Vegetation of Southeast NSW: A Revised Classification and Map for the Coast and Eastern Tablelands</i> (Tozer et al. 2010), the current extent of Cumberland Plain Woodland (PCT 849 and PCT 850 – under previous ‘legacy’ PCT numbers) within NSW is approximately 22,774 ha. This is a total reduction of approximately 82 % of the community’s geographic distribution.
2b. Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes. (SAIL Principle 2)	Reduction in ecological function relates to the IUCN principle of “very small population size” which for ecological communities means communities have very high levels of either environmental degradation or disruption of biotic processes, and interactions have an increased risk of failure to sustain their characteristic native species assemblages (Bland et al. 2016). Ecological communities that are considered to have a very large degree of environmental degradation or disruption of biotic processes or interactions are those with: • ≥90% extent and severity where the disruption or impacts are measured since 1970. • ≥80% extent and severity where the disruption or impacts are over a 50-year period, either in the past, future, or any part of the past, present and future (as per (Bland et al. 2016). (DPIE 2019). i. change in community structure, ii. change in species composition and iii. disruption of ecological processes The initial reduction in Cumberland Plain Woodland was due to tree-felling for timber and clearing for crops and pastures. This decline has accelerated since World War II, where there was a marked acceleration in urban and industrial development in the region, which continues to present day. Now, almost all of the remaining areas of the community are either regrowth forest or degraded woodland impacted by past clearing activities (OEH 2019). The final determination for Cumberland Plain Woodland notes that changes in community structure contribute to a very large reduction in the overall ecological functioning of Cumberland Plain Woodland (OEH 2019). Large trees that were once common prior to European settlement now occur very sparsely within the remaining patches of woodland or remain as isolated individuals within paddocks or urban areas. Loss of these large trees has contributed to the decline and extinctions in native bird and mammal species, once common throughout the Cumberland Plain., and the associated ecological processes they once supported Other structural changes include the removal of fallen woody debris and standing dead trees, removal of woody understorey plants. (OEH 2019). Changes in species composition over time have occurred a result of clearing vegetation for agricultural process

Information required (BAM Section 9.1.1)	Response
	and the selective retention of trees. The proportion of native and characteristic understorey grasses, forbs, shrubs etc. now present within the CEEC as a whole has been reduced by this process, which has been further exacerbated by the invasion of understorey weed species. iv. invasion and establishment of exotic species, v. degradation of habitat, and vi. fragmentation of habitat. Invasion of remnant woodland by exotic species poses a major threat to Cumberland Plain Woodland, with very large numbers of weed species invading many different areas of the community. These species degrade the community through smothering of indigenous plants, reducing both reproduction and survival, and by inhibiting the emergence and establishment of new seedlings (OEH 2019). These exotic weed species are now rapidly changing the structure and composition of Cumberland Plain Woodland remnants and pose a major problem for management (Benson & Howell 2002). Fragmentation has also resulted in a very large reduction in the ecological function of Cumberland Plain Woodland, with the remaining areas of the community being severely fragmented. The final determination for the community states that more than half of the remaining tree cover mapped by Tozer (2003) occurs in patches of less than 80 ha, with half of all mapped patches being smaller than 3 ha (OEH 2019). Whilst there is no guidance as to the proportion of this degradation has occurred in the last 50 years (i.e. since 1970), the fact that the CEEC is noted in the SAI guidance document (DPIE 2019) as being subject to Principle 2, infers that it has occurred in recent times.
2c. Evidence of restricted geographic distribution, based on the TEC's geographic range in NSW. (SAII Principle 3)	The geographic distribution of ecological communities is defined by the area of occupancy, sensu (Bland et al. 2016). Ecological communities with a very limited geographic distribution have an area of occupancy of less than or equal to two 10 x 10 km grid cells (200 km²) or an extent of occurrence of ≤1,000 km², sensu (Bland et al. 2016), and one of the following: • An observed or inferred continuing decline in: – A measure of spatial extent appropriate to the ecological community. – A measure of environmental quality appropriate to characteristic biota of the ecological community. – A measure of disruption to biotic interactions appropriate to the characteristic biota of the ecological community. • Observed or inferred threatening processes that are likely to cause continuing declines in geographic distribution, environmental quality or biotic interactions within the next 20 years. • An ecological community that exists at one location (DPIE 2019). i. extent of occurrence, ii. area of occurrence and iii. Number of threat-defined locations According to the final determination for the CEEC, Cumberland Plain Woodland is estimated to occur within an extent of occurrence of 2,810 km² and an area of occupancy of just under 2,100 km² based on 2 x 2 km grid cells (OEH 2019). There are no specific threat defined locations listed in the TBDC for the community. However, whilst the community is represented within conservation reserves, much of the remaining area occurs on private land or public easements, putting it at risk from small-scale clearing associated with housing, industrial development and transport infrastructure. Given the low area of occupancy and the facts that land-clearing is likely to remain a threatening process contributing to the decline of this community over the next twenty

Information required (BAM Section 9.1.1)	Response
2d. Evidence that the TEC is unlikely to respond to management. (SAIL Principle 4)	years, the CEEC can be considered a highly geographically restricted community. Based on the available information the CEEC does not currently meet the thresholds for consideration under SAIL Principle 3. This principle encompasses two components, firstly whether there are any particular traits of the community which limits its' response to management, and secondly whether there are any key threatening processes affecting the community which cannot be effectively managed (DPIE 2019). Conservation management of the community in areas subjected to historical clearing and agricultural grazing has resulted in some measurable recovery, provided the soil has not been disturbed by earthworks, cultivation, fertiliser application or other means of nutrient or moisture enrichment (OEH 2019). Conversely in areas that have been exposed to these soil disturbances, restoration has been proven to be problematic, with one abandoned pasture planting site showing no evidence of convergence in species composition with nearby remnant woodland stands over a 10 year period (OEH 2019). However, several management measures are detailed within the TBDC for this community. These include: • Community and land-holder liaison/ awareness and/or education. • Habitat management: Fire. • Habitat management: Ongoing EIA - Advice to consent and planning authorities. • Habitat management: Promote regeneration by avoiding mowing or prolonged or heavy grazing. • Habitat management: Protect habitat by controlling run-off entering the site if it would change water, nutrient or sediment levels or cause erosion. • Habitat management: Weed Control. • Habitat Rehabilitation/Restoration and/or Regeneration. Generally those entities which are listed as unlikely to respond to management (and thus are irreplaceable) tend to include species where the ability to control key threats is negligible and known reproductive characteristics that severely limit their ability to increase the existing population (DPIE 2019). Ecological communities as a whole do not typically align well with these criteria. The response to management practices of Cumberland Plain Woodland has been demonstrated to be based on site specific conditions and therefore it is does not meet SAIL Principle 4.
3. Where the TBDC indicates data is 'unknown' or 'data deficient' for a TEC, the assessor must record this in the BDAR or BCAR.	Not applicable.
4a. The impact on the geographic extent of the TEC, by estimating the total area of the TEC to be impacted by the proposal.	As discussed above, the current extent of Cumberland Plain Woodland within NSW is approximately 22,774 ha. The CEEC is known to occur as small patches within the Cumberland IBRA subregion, with some occurrences extending into neighboring subregions. It is known to occur within the following LGAs: Auburn, Bankstown, Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta, Penrith and Wollondilly (OEH 2019, DoEWHA 2010).

Information required (BAM Section 9.1.1)	Response
	Direct impacts The proposed development will result in the removal of approximately 0.94 ha of the CEEC from non-certified areas within the development footprint. As such the total area of the CEEC assessed within this BDAR to be impacted by the Project equates to 0.004 % of the CEEC within NSW. The vegetation occurs in the following conditions: • DNG: 0.01 hectares – VI score of 11.60 • Low: 0.30 hectares – VI score of 25.70 • Moderate - regrowth: 0.63 hectares – VI score of 37.00. The structure of these patches ranges from patches of woodland with partial structural integrity across all stratum (moderate - regrowth condition), down to patches of derived grassland with a low level of native species in the understorey. These areas occur predominantly as scattered isolated patches in a cleared agricultural/rural landscape. Indirect impacts Indirect impacts to Cumberland Plain Woodland associated with factors such as increased edge effects, fragmentation, altered fire regimes, and transport of weeds and pathogens are not expected to be substantial or significant, largely due to the already degraded and edge effected nature of the CEEC within the development footprint and broader vicinity. All areas of the subject land are proposed for removal. All impacts will be confined to the subject land and will be addressed in a CEMP or similar to ensure no indirect impacts occur to adjacent vegetation outside the subject land.
4b. The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the TEC.	i. 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. Cumberland Plain Woodland present in the wider landscape surrounding the Project area occurs in an already highly fragmented state. GIS was used to determine the range and average size of mapped (OEH 2013, OEH 2016) occurrences of Cumberland Plain Woodland within a 500 m buffer of the development footprint. The results of which are provided below both for those patches intersected by the development footprint (i.e. subject to vegetation removal) and those patches not intersected by the development footprint (i.e. not directly impact by the Project). Mapped areas within 500m not directly impacted: Size range: <0.001ha to 14.66ha Average size: 1.20ha Total no. mapped polygons: 46 Mapped areas within 500m directly impacted: Size range: 0.11 ha Average size: 0.11 ha Total no. mapped polygons: 1 ii. describing the impacts on connectivity and fragmentation of the remaining areas of TEC measured 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, and • estimated maximum dispersal distance for native flora species characteristic of the TEC, and

Information required (BAM Section 9.1.1)	Response
	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 GIS was used to undertake a nearest neighbour analysis of mapped (OEH 2013, OEH 2016, Biosis 2021) occurrences of Cumberland Plain Woodland prior to and post vegetation to determine the distance between impacted areas of the CEEC before and after the proposed vegetating removal. The average distance between mapped occurrences of Cumberland Plain Woodland within a 500 m buffer of the development footprint, include: 21.11 m before development 16.76 m after development. Based on the above there will be an average increase of 4.35 m separation between retained patches of Cumberland Plain Woodland within 500 m of the development footprint. Native flora species characteristic of the TEC include a range trees, shrubs, grasses, forbs and other groundcover species, the majority of which are dispersed via wind or animal vectors, with some species primary method of dispersal likely to be via non-flying insects such as ants. The increase in average separation distance by 4.35 m for mapped Cumberland Plain Woodland within 500 m of the development footprint, is not expected to result in a significant or substantial impediment to the dispersal of native species between retained patches, in an already highly fragmented landscape. Furthermore, the Project will not result in the creation of barrier to movement across the pipeline corridor post-construction and revegetation work will help promote connectivity across the future easement. It is noted in EPBC Act conservation advice documents that allowances can be made for “breaks” of up to 30 metres between areas of MNES habitat, and that such breaks, which may be the result of watercourses, tracks, paths, roads, etc., do not significantly alter the overall functionality of the ecological community, or habitat (CoA 2020). Only 3 polygons were identified as containing a separation distance of greater than 30 metres after impact, as such, breaks in connectivity caused by the Project are not considered to be substantial in nature. Increase in edge effects is unlikely to be significant or substantial to the vegetation immediately adjacent to the development footprint, along the majority of the Project alignment, due to the already disturbed and edge effected nature of the vegetation in the local landscape, occurring generally as fragmented patches. iii. 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. The TEC occurs in three conditions within the subject land: DNG: - Composition condition score: 21.5 - Structure condition score: 33.6 - Function condition score: 2.2 - Presence of hollow-bearing trees: No - VI score: 11.6 Low:

Information required (BAM Section 9.1.1)	Response
	- Composition condition score: 22.9 - Structure condition score: 18.8 - Function condition score: 239.4 - Presence of hollow-bearing trees: Yes - VI score: 25.7 • Moderate: - Composition condition score: 56.4 - Structure condition score: 24.9 - Function condition score: 36.0 - Presence of hollow-bearing trees: Yes - VI score: 37.0 The proposed works will result in the removal of 0.94 ha of the CEEC from non-certified areas of the subject land. This includes 0.01 ha in DNG condition, 0.30 in low condition, and 0.63 ha in moderate – regrowth condition.

Appendix 5 Significant Impact Criteria assessments

Appendix 5.1 Cumberland Plain Shale Woodlands (Critically Endangered Ecological Community)

Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CEEC) is representative of certain occurrences of the coastal plain grassy eucalypt woodlands that are endemic to the shale hills and plains of the Sydney Basin Bioregion in NSW, and which occur primarily in, but not limited to, the Cumberland Sub-region. The ecological community incorporates the grassy eucalypt shale hills and plains woodlands and the shale-gravel transition forests of this region.

Distribution

The *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* ecological community is limited to the Sydney Basin Bioregion with most occurrences in the Cumberland Sub-region. The community typically occurs on flat to undulating or hilly terrain, at elevations up to approximately 350 meters above sea level. Some occurrences may extend onto locally steep sites at slightly higher elevations. Most occurrences are on clay soils derived from Wianamatta Group geology, with limited to rare occurrences on other soil types.

In 2009, the ecological community occupied a maximum area of approximately 12,300 hectares but is highly fragmented into generally small remnants, mostly under 10 hectares in size (Tozer, 2003).

The main and ongoing threats to the Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest ecological community as outlined in the Approved Conservation Advice (TSSC 2009) include clearing for urban, industrial or rural development, the consequent fragmentation of native vegetation remnants, inappropriate grazing and fire regimes, weed invasion and the low level of protection in reserves. Vegetation clearance was, and continues to be, the major contributor to the loss and fragmentation of native vegetation across the Cumberland Plain. The continuing decline is predominately a consequence of dispersed, small scale clearing actions associated with urban development (NSW Scientific Committee and Simpson, 2008).

Survey observation

One patch of PCT 3320 in moderate - regrowth condition in the subject land is associated with Cumberland Plain Shale Woodlands CEEC as identified on Figure 8. This patch was found to be consistent with listing criteria as the patch size, including area in the subject land and extending into the development site to the south, is greater than 0.5 hectares (1.10 ha hectares total), contains at least one tree per hectare that is greater than 80 centimetres DBH, and contains at least 30 percent perennial native understorey vegetation. Of this 1.10 ha patch of PCT 3320 in moderate - regrowth condition, 0.19ha is in the subject land, the remainder exists in the certified land of the development site. All other areas of PCT 3320 were not considered consistent with the EPBC Act CEEC as they were less than 0.5 hectares in size or contained less than 30% perennial native understorey vegetation (DoEWA 2010).

Table A 9 SIC assessment for the Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest CEEC

Significant impact criteria	Likelihood of significant impact	Justification
Reduce the extent of an ecological community	Unlikely	The Project requires the direct removal of 0.19 hectares of Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest within the subject land. An estimated total of 10,726 ha of Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest remains in various conditions (DECCW 2010), within the Cumberland Plain Recovery Plan study area. Which equates broadly to the shale basin referred to as the 'Cumberland Plain' in western Sydney, and ranges from Kurrajong to Cattai in the north, Strathfield down to Campbelltown in the east, Bargo in the south, and Oakdale to Emu Plains on the west, comprising an area of approximately 2,200 kilometre². The Project will result in an overall reduction of approximately 0.005 % of Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest extent of occurrence. Although the removal adds to a cumulative impact to this CEEC, the patch occurs as a small, isolated fragment and is not directly connected to a large area of habitat. As such, it is not likely to be considered an important area within the extent of occurrence for this CEEC. This removal of the isolated 0.19 hectares of this CEEC has been assessed as unlikely to be a significant reduction of the extent of Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest.
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	Unlikely	The Project will require the removal of 0.19 ha of Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest. The patch to be removed is 1.10 ha in size, however only 0.19 ha occurs in the subject land non-certified land. This patch occurs as an isolated patch in the development site. The occurrence of this CEEC is already present in a fragmented state, and as such, its removal will likely lead to minor increases in localised fragmentation impacts, particularly to the patches of retained vegetation immediately north of the development footprint, noting these areas are mapped as Urban Capable land under the CPCP. The increased fragmentation will not substantially reduce connectivity in the local landscape. As the fragmentation impacts expected to occur as a result of the Project, which are localised and relatively minor in nature, are not expected to increase impacts to Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest such that a significant impact to the CEEC is likely to occur.
Adversely affect habitat critical to the survival of an ecological community	Unlikely	The <i>Matters of National Environmental Significance Significant impact guideline</i> (CoA 2013) state the 'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary: • for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the

Significant impact criteria	Likelihood of significant impact	Justification
		survival of the species or ecological community, such as pollinators), - to maintain genetic diversity and long-term evolutionary development, or - for the reintroduction of populations or recovery of the species or ecological community. No such habitat has been identified in a recovery plan for Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest or listed on the Register of Critical Habitat maintained by the minister under the EPBC Act. The Project will directly impact upon 0.19 ha of PCT 3320 which is consistent with the CEEC. This patch, which occurs in a degraded, fragmented and edge effected state. Although the removal adds to a cumulative impact to this CEEC, the patch occurs as a small, isolated fragment and is not directly connected to a large area of habitat. As such, it is not likely to be considered an important area or critical to the survival of this CEEC. Due to the generally low-quality Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest habitat impacted by the Project, the Project is not considered likely to result in impacts that will adversely affect habitat critical to the survival of an ecological community.
Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	Unlikely	Potential indirect impacts to groundwater and GDEs surrounding the impact area (i.e. not directly removed by the Project), associated with the construction and operational phases of the Project will be mitigated through a CEMP or similar, however such impacts are highly unlikely. The Project is not expected to result in impacts that modify or destroy abiotic factors necessary for the survival of the CEEC in the surrounding landscape.
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	Unlikely	The Project will not result in specific impacts to characteristic and functionally important species, as neither the construction or operational impacts will result in alterations to fire or flood regimes that maintain (or would potentially impact upon) the diversity of the CEEC in the land surrounding the proposed development. The Project will not alter management regimes of any retained vegetation, such as increased under-scrubbing or grazing, and there is no likelihood of the Project resulting in an increase in harvesting of flora species within the surrounding landscape. The Project will result in direct impact to a total of a 0.19 ha patch of Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest. The Project is not expected to result in impacts that cause a substantial change in the species composition of an occurrence of the TEC within the adjacent landscape. No areas of this TEC will be retained within the

Significant impact criteria	Likelihood of significant impact	Justification
		subject land assessed by this BDAR.
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: • assisting invasive species, that are harmful to the listed ecological community, to become established, or • causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or	Unlikely	Most locations where this TEC occurs are subject to existing weed invasion, pest animals, erosion and chemical inputs as a result of surrounding agricultural land use. Construction activities can be managed through standard practices to avoid further sedimentation and pollution. The Project will not result in a substantial reduction in the quality or integrity of the occurrence of an ecological community within the surrounding landscape, or land directly adjacent to the proposed development. The Project will result in direct impact to a total of a 0.19 ha patch of Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest. No areas of this TEC will be retained within the subject land assessed by this BDAR.
Interfere with the recovery of an ecological community.	Unlikely	There is no Commonwealth adopted Recovery Plan for Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest. However, the CEEC is included in the Cumberland Plain Recovery Plan (DECCW 2010), a multi-entity recovery plan that has been prepared for 20 threatened species, populations and ecological communities that occur within the 'Cumberland Plain' region in western Sydney. The recovery plan has the following objectives: • To build a protected area network, comprising public and private lands, focused on the priority conservation lands. • To deliver best practice management for threatened biodiversity across the Cumberland Plain, with a specific focus on the priority conservation lands and public lands where the primary management objectives are compatible with biodiversity conservation. • To develop an understanding and enhanced awareness in the community of the Cumberland Plain's threatened biodiversity, the best practice standards for its management, and the recovery program. • To increase knowledge of the threats to the survival of the Cumberland Plain's threatened biodiversity, and thereby improve capacity to manage these in a strategic and effective manner The Project will directly impact upon 0.19 ha of the CEEC. Although the removal adds to a cumulative impact to this CEECPCP area, the patch occurs as a small, isolated fragment and is not directly connected to a large area of habitat. As such, it is not likely to be considered an

Significant impact criteria	Likelihood of significant impact	Justification
		important area or critical to the survival of this CEEC. The Project will not result in impacts likely to be adverse to any of the other objectives of the Cumberland Plain Conservation Plan, nor will it impact upon areas of high quality habitat which could support the CEEC into the future, and as such it is not expected that the Project will interfere with the recovery of an ecological community.

Appendix 5.2 Swift Parrot (Critically Endangered species)

The Swift Parrot is endemic to south-eastern Australia. The species breeds only in Tasmania, migrating during the non-breeding season to mainland Australia where it disperses widely, foraging on flowers and lerps in eucalypt trees (DCCEEW 2024). In New South Wales, Swift parrots forage in forests and woodlands throughout the coastal and western slopes regions each year (Tzaros et al. 2009). Swift Parrots are mainly recoded on and east of the Great Dividing Range, in the Central and Southern Tableland regions, and coastal areas south of the Macleay River (Mowat et al. 2021). They return to Tasmania in August and September, with the largest number of 'returning' records from September (Higgins 1999). Breeding occurs in Tasmania between September and April, with the location of breeding each year determined largely by the distribution and intensity of flowering Blue Gum and Black Gum (Higgins 1999, DCCEEW 2024).

Swift Parrots occur as a single, migratory population that is estimated to be approximately 750 mature individuals in 2020 (range 300 to 1000) (Garnett & Baker 2021). A preliminary study using genetic data has estimated the effective population size of the Swift Parrot to be between 60 and 338 individuals (DCCEEW 2024). Though the current population size is uncertain, it has and continues to undergo dramatic declines due largely to predation by Sugar Gliders while breeding in Tasmania, compounded by other known threats including habitat loss and degradation (DCCEEW 2024). Key factors contributing to the decline of the Swift Parrot population reported in the National Recovery Plan (DCCEEW 2024) include:

- Forestry and land clearing.
- Firewood collection – illegal and legal.
- Fire.
- Residential and industrial development.
- Agricultural tree senescence and dieback.
- Predation by sugar gliders at nests in Tasmania.
- Collision mortality.
- Competition.
- Climate variability and change.
- Illegal wildlife capture and trading.
- Cumulative impacts.

Habitat requirements

Swift Parrots spend the winter on mainland Australia during the non-breeding season, preferentially foraging in eucalypt woodlands and forests containing large, mature trees that provide more reliable foraging resources than younger trees (DCCEEW 2024). Key foraging species include Yellow Gum *Eucalypts leucoxylon*, Red Ironbark *E.tricarpa*, Mugga Ironbark *E. sideroxylon*, Grey Box *E. macrocarpa*) White Box *E. albens*, Yellow Box *E. melliodora*, Swamp Mahogany *E. robusta*, Forest Red Gum *E. tereticornis*, Blackbutt *E. pilularis* and Spotted Gum *Corymbia maculata* (DCCEEW 2024). Lerp (the sugar-rich casings formed by secretions from sap sucking insects commonly associated with eucalypts) are also regularly consumed by Swift Parrots and make up a key component of their diet (DCCEEW 2024, Mowat et al. 2021).

The distribution of Swift Parrots across the landscape varies seasonally depending on the flowering phenology of key foraging species. Priority habitats critical to the species' survival include:

- Breeding and foraging habitat in Tasmania.
- Foraging habitat on the Australian mainland containing preferred foraging species within known and likely foraging habitat.
- Important Areas – important migratory foraging habitat for Swift Parrot (NSW DCCEEW 2025b).

A total of 0.94 hectares of native woodland (PCT 3320) occurs within the subject land, of which 0.93 hectares occurs in moderate - regrowth or low condition and contains mature canopy trees that may provide foraging resources for Swift Parrots on a seasonal or transient basis, particularly due to the presence of a small number of Forest Red Gum trees, a species known to be an important food resources for Swift Parrot. However, given that the species is known to preference large, mature trees for foraging as they typically provide more reliable, greater quantity of quality food resources, this small patch of trees would represent marginal potential habitat in comparison to available resources within the region more broadly, and has not been mapped as important foraging habitat for Swift Parrot in statewide mapping (NSW DCCEEW 2025b).

Survey observation

Swift Parrot was not detected during site surveys in the subject land. The species has been previously recorded on 58 occasions within 10 kilometres of the study area, and has the potential to be an occasional visitor to the impact area during autumn and winter given the presence of preferred foraging trees in the subject land.

Table A 10 SIC assessment for Swift Parrot (CE, EPBC Act)

SIC assessment for critically endangered species
Lead to a long-term decrease in the size of a population.
Due to its migratory movement patterns typified by seasonal migration and local nomadism, the Swift Parrot occurs as a single migratory population (DCCEEW 2024). Factors that may lead to a long-term decrease in the size of the species include direct impacts to locations considered important for the species (i.e. Important Areas – important migratory foraging habitat for Swift Parrot) (NSW DCCEEW 2025b). The subject land is not mapped as an Important Area for Swift Parrot. Further, approximately 32,000 hectares of potential foraging habitat is present within the Cumberland IBRA subregion, comprising similar PCTs to be removed by the Project. Removal of 0.93 hectares of marginal potential habitat within the impact area is unlikely to directly contribute to population decline for the Swift Parrot. Higher quality habitat remains within the locality.
Reduce the area of occupancy of the species.

SIC assessment for critically endangered species

The species' area of occupancy (AOO) ranges from 18.5 km² to 355 km², which is substantially smaller than the full extent of occurrence (EOO) which is estimated at 57,000 km² (DoE 2016). The subject land has not been identified within any Important Areas for Swift Parrot (NSW DCCEEW 2025b). Several Important Areas have been mapped within the Cumberland IBRA subregion for Swift Parrot, with the closest situated approximately 8.5 km west of the subject land, surrounding Mulgoa, and another approximately 9.5 km east of the subject land in the Prospect Nature Reserve. The subject land contains 0.94 hectares of Cumberland Shale Plains Woodland, of which 0.93 hectares contains mature trees capable of supporting foraging resources for Swift Parrots. Given the species preference for mature trees that provide reliable foraging resources, it is unlikely that these trees would represent important resources for the species or be included within modelled areas of occupancy on the mainland. As such, the removal of a small number of 'non-important' potential feed trees is unlikely to impact the overall AOO of the species. The species is highly mobile and will continue to have access to foraging habitat in retained vegetation surrounding the subject land. The development will not represent a barrier to the movement of individuals.

Fragment an existing population into two or more populations.

The Swift Parrot is considered a single migratory population (Saunders & Tzaros 2011). The species is highly mobile, and individuals can move freely through areas of unsuitable and marginal habitat to seek out and exploit favourable habitat patches. The Project will not impact on known priority habitat, or mapped Important Areas for Swift Parrot, and the impact occurs across a small fraction of the species range. As such, the Project will not fragment the population into two or more populations. The species may continue to utilise the vegetation surrounding the impact area.

Adversely affect habitat critical to the survival of a species.

The National Recovery Plan for Swift Parrot outlines habitat critical for survival of the swift parrot as:

- Breeding and foraging habitat in Tasmania.
- Foraging habitat on the Australian mainland containing preferred foraging species within known and likely foraging habitat.

Areas considered most likely foraging habitat for Swift Parrot in NSW have been mapped as Important Areas for Swift Parrot (NSW DCCEEW 2025b). None of these occur within the subject land. Despite the presence of a small number of Forest Red Gum trees, which are preferred foraging species for Swift Parrot, these are considered marginal foraging habitat given the small and isolated nature of the patch, and the preference of the species for mature trees with more reliable resources for foraging.

There are 58 Bionet records of the species (within 10 kilometres of the Project). Given the highly mobile nature of the species and existence of a large amount of potential foraging habitat across the Cumberland and Wollemi IBRA subregions, the Project is considered unlikely to impact on habitat critical to the survival of the Swift Parrot.

Additionally, several Important Areas have been mapped within the Cumberland IBRA subregion for Swift Parrot, with the closest situated approximately 8.5 km west of the subject land, surrounding Mulgoa, and another approximately 9.5 km east of the subject land in the Prospect Nature Reserve. While the Project will result in the removal of known feed tree species for the Swift Parrot, vegetation within the impact area does not constitute known important migratory foraging habitat, as it has not been mapped as an Important Area (NSW DCCEEW 2025b). Thus, it is unlikely that the proposal will adversely affect habitat critical to the survival of the species.

Disrupt the breeding cycle of a population.

The Swift Parrot is seasonally migratory and breeds in Tasmania. No additional breeding sites have been identified on the mainland. The Project's impact are not of a magnitude great enough to impact upon forage resources available to the species, such that disruption to the breeding cycle of the species is likely to occur.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

SIC assessment for critically endangered species

Swift Parrot is assumed to utilise the locality on occasion for foraging, given the number of records within 10 kilometres over a several years, most likely in response to abundant flowering of preferred feed trees. The subject land contains 0.93 hectares of potential foraging habitat, including a small number of potential feed trees (Forest Red Gums). Approximately 32,000 hectares of potential foraging habitat is present within the Cumberland IBRA subregion. The magnitude of the impact from the current Project is unlikely to impact the species to the extent that it would cause a decline. While the Project will result in the removal of marginal potential foraging habitat, the level of loss is not likely to result in the decline of the species, based on the very small proportional impact to the species overall available foraging habitat, and the fact there will be no impact to the species' breeding habitat.

Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.

The Project is unlikely to exacerbate the current level of invasive species threat operating within the impact area to the point that they become harmful to the Swift Parrot. The Project CEMP will include measures to ensure appropriate biosecurity management is undertaken during construction.

Introduce disease that may cause the species to decline.

Psittacine beak and feather disease is listed as a threat to the Swift Parrot, this is a naturally occurring disease that is often fatal. This disease affects growth of feathers and the beak and may persist for long periods in tree hollows; it can be transmitted orally or through faeces and feathers (DoE 2004).

The spread of H5N1, a novel avian flu strain that is highly pathogenic, has spread across multiple continents since 2021 causing high mortality rates in birds as well as some mammal species. H5N1 has so far not been recorded in Australia however, its introduction represents a risk to all birds, including the Swift Parrot.

The Project is unlikely to introduce or increase the spread of this disease to the Swift Parrot. Further, the Project Construction Environmental Management Plan will include measures to ensure appropriate biosecurity management is undertaken during construction.

Interfere with the recovery of the species.

The Approved Conservation Advice for Swift Parrot (DoE 2016) states that the main ongoing threats to the species include nest predation by sugar gliders, habitat loss and alteration, collision mortality (including with cars), competition with other more aggressive honeyeaters, and Psittacine Beak and Feather Disease and illegal wildlife capture and trading.

Although removal of potential foraging habitat may contribute to cumulative effects of habitat loss, the proposal would not lead to any impacts to Swift Parrot breeding habitat (located in Tasmania only) and would not impact any areas mapped as important migratory foraging habitat (Important Areas) (NSW DCCEW 2025b). Several Important Areas have been mapped within the Cumberland IBRA subregion for Swift Parrot, with the closest situated approximately 8.5 km west of the subject land, surrounding Mulgoa, and another approximately 9.5 km east of the subject land in the Prospect Nature Reserve. Collisions impacts are not expected to be substantially increased by the Project.

The Project is unlikely to introduce or increase the spread of this disease to the Swift Parrot. Further, the Project CEMP will include measures to ensure appropriate biosecurity management is undertaken during construction.

Predation by sugar gliders is a threat to the species only while nesting in Tasmania.

Given the proposed action will impact on a small area of marginal potential foraging habitat with significantly larger areas of commensurate and comparable habitat within the locality, it is unlikely that habitat loss and alteration will occur at an extent that will interfere with the species' recovery.

Conclusion.

Based on the assessment provided above, it is concluded that Swift Parrot is unlikely to be significantly impacted by the Project, and as such offsetting in accordance with the EPBC Act Environmental Offsets Policy (DSEWPC 2012) and the EPBC Act is not required.

Appendix 5.3 Australian Painted Snipe (Endangered species)

Distribution

The Australian Painted Snipe is listed as Endangered under the EPBC Act. This species is recorded throughout NSW, with records located in both coastal and inland areas with suitable aquatic habitat. The closest record of this species is approximately 2.8 kilometres northwest of the subject land from 2015 (NSW DCCEEW 2025d).

Habitat requirements

This species typically inhabits shallow terrestrial freshwater wetlands, swamps and claypans, inundated or waterlogged grassland and saltmarsh, dams, rice crops, sewage farms and bore drains. A preference is shown for habitats with emergent vegetation. Breeding habitats for this species are specific, requiring shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby, typically occurring in small or near small islands in freshwater wetlands (Cth DCCEEW 2022). Being capable of long-distance migratory movements, the species will travel to seek out areas of preferred habitat (Murray Wildlife 2023).

Survey observation

The Australian Painted Snipe was not detected within the subject land, however there is a record from 2015 within 10 kilometres. The subject land contains 0.4 hectares of Southern Lower Floodplain Freshwater Wetland (PCT 3975) which represents potential habitat for Australian Painted Snipe.

Table A 11 SIC assessment for Australian Painted Snipe (EN, EPBC Act)

SIC assessment for endangered species
Lead to a long-term decrease in the size of a population. The National Recovery Plan for this species indicate there may be as little as 340 mature individuals left forming the population for this species. The Australian Painted Snipe forms a single, homogenous breeding population across most of Australia (Cth DCCEEW 2022). The population is described as nomadic (movements with no fixed spatial or temporal pattern) (Cth DCCEEW 2022). The subject land occurs within the known distribution of this species, and there are nearby records (within 10 kilometres), the most recent of which was in 2015. The species typically inhabits shallow freshwater and brackish wetlands, especially where inundation is temporary but also permanent wetlands with shallow zones. As a secretive species, they require concealing features such as vegetation or fallen or washed-up timber (NRP). The subject land contains 0.4 hectares of Southern Lower Floodplain Freshwater Wetland. This wetland contains some emergent vegetation however, the cleared surrounding agricultural landscape reduces the amount of sheltering habitat available for breeding or foraging. Although the wetlands represent potential habitat for Australian Painted Snipe, it is likely marginal habitat and although it may have potential to support individuals on a transient basis, it is unlikely that any impacts would result in any impacts to the population at large. Impacts to 0.4 hectares of marginal habitat would not lead to a long-term decrease in the population.
Reduce the area of occupancy of the species. The current extent of occurrence is approximately 7,100,000 km² whilst the area of occupancy is estimated to be 2000km² (DSEWPC 2013). The subject land contains 0.4 hectares of Southern Lower Floodplain Freshwater Wetland in a moderate condition. The disturbed nature of this wetland and the limited available sheltering habitat limits its suitability for Australian Painted Snipe, and it is highly unlikely that Australian Painted Snipe occur in any regular capacity. Therefore, the Project is unlikely to reduce the area of occupancy for this the wide-ranging species.

SIC assessment for endangered species

Fragment an existing population into two or more populations.

The Australian Painted Snipe forms a single, homogenous breeding population across most of Australia except probably the interior western deserts and interior south-west Australia (Cth DCCEEW 2022). They are nomadic and capable of long-distance movements in response to local conditions such as flooding (Cth DCCEEW 2022). The subject land contains marginal potential habitat, unlikely to support more than transient individuals. Impacts to potential habitat is not anticipated to fragment the existing population.

Adversely affect habitat critical to the survival of a species.

Habitat critical to the survival of this species as outlined by the National Recovery Plan is difficult to define into a single description due to variability of habitat used across its range (e.g., coastal and inland), as a guide habitat to be considered as critical can include:

- Any natural wetland habitat where the species is known or likely to occur (especially with suitable breeding habitat) within the species distribution.
- Any location outside the above area that may be periodically occupied by Australian Painted Snipe when wetland conditions are favourable.

The habitat present within the subject land is not considered to constitute critical habitat for this species. There is 0.4 hectares of Southern Lower Floodplain Freshwater Wetland present within the subject land, which is likely to represent marginal potential habitat for Australian Painted Snipe given the absence of suitable sheltering sites for this secretive species. Recent data suggests that grassy habitats in proximity to foraging areas associated with water are important for roosting and protection from predators (Murray Wildlife 2023)

Therefore, habitat considered critical to the survival of this species will not be adversely affected by the Project.

Disrupt the breeding cycle of a population.

The species has mainly been recorded breeding in the Murray-Darling region (Cth DCCEEW 2022). Breeding habitat requirements may be quite specific: shallow wetlands with areas of bare wet mud and mixed heights of low vegetation. Nests are predominantly recorded from or near small islands in freshwater wetlands, with a combination of very shallow water, exposed mud, dense low cover and sometimes some tall dense cover (Cth DCCEEW 2022). The areas of potential habitat within the subject land do not conform to these characteristics and Australian Painted Snipe are unlikely to breed within the subject land. As such, the Project is unlikely to disrupt the breeding cycle of a population.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

There is 0.4 hectares of Southern Lower Floodplain Freshwater Wetland present within the subject land, which is likely to represent marginal potential habitat for Australian Painted Snipe. Although it may have potential to support a small number of individuals on a transient basis, it is unlikely to represent habitat critical to the species survival such that its removal would cause the species to decline.

The removal of potential low quality foraging habitat is unlikely to cause declines in this species.

Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.

The Project is unlikely to exacerbate the current level of invasive species threat operating within the impact area to the point that they become harmful to Australian Painted Snipe. The Project CEMP will include measures to ensure appropriate biosecurity management is undertaken during construction.

Introduce disease that may cause the species to decline.

The spread of H5N1, a novel avian flu strain that is highly pathogenic, has spread across multiple continents since 2021 causing high mortality rates in birds as well as some mammal species. H5N1 has so far not been recorded in Australia

SIC assessment for endangered species

however, its introduction represents a risk to all birds, including the Australian Painted Snipe.

The Project is unlikely to introduce or increase the spread of this disease to the species. Further, the Project CEMP will include measures to ensure appropriate biosecurity management is undertaken during construction.

Interfere with the recovery of the species.

The National Recovery Plan for this species (Cth DCCEEW 2022) outlines the long term vision and recovery objectives are to sustain a positive population trend in number of mature individuals through implementing the following objectives:

- Manage and protect known Australian Painted Snipe habitat at the landscape scale.
- Develop and apply techniques to measure changes in population trajectory in order to measure the success of recovery actions.
- Reduce, or eliminate threats at breeding and non-breeding habitats.
- Undertake research to improve knowledge of the habitat requirements, biology and behaviour of Australian Painted Snipe.
- Engage community stakeholders to improve awareness of the conservation of Australian Painted Snipe.
- Coordinate, review and report on recovery progress.

The proposed action will not interfere with these recovery objectives. Potential habitat impacted is considered low quality and unlikely to support the species with any regularity.

Conclusion.

Based on the assessment provided above, it is concluded that Australian Painted Snipe is unlikely to be significantly impacted by the Project, and as such offsetting in accordance with the EPBC Act Environmental Offsets Policy (DSEWPC 2012) and the EPBC Act is not required.

Appendix 6 Cumberland Ecology fauna survey map
