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9 July 2026



**Biodiversity Development Assessment Report for the additional clearing associated
with the Great Western Highway Upgrade for:
Augusta Estate: SSD 36138263 MOD 2**

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Prepared for:

The Trustee for Huntingwood Property Trust

Document Control

Version	Date	Authors	Details
1.	9 July 2026	Dr AnneMarie Clements, Dr Anne Baumann, Tony Rodd, Caitlyn Birrell, Elena Moskina with field assistance from Richie Aitoa.	BDAR for additional clearing associated with Great Western Highway upgrade.

Photograph on front cover: Looking east along the Great Western Highway with native canopy vegetation protected by exclusion fencing (photograph taken by Elena Moskina on 23 February 2026)

Summary

This Biodiversity Development Assessment Report (BDAR) has been commissioned by The Trustee for Huntingwood Property Trust for the modification of the existing Augusta Estate approval (SSD 36138263) in Huntingwood within the Blacktown Local Government Area. The Augusta Estate is currently under construction.

Access to the Augusta Estate is via the Great Western Highway (GWH). Transport for NSW has specified the requirements for a slip lane and a 4 m wide shared path. To meet these specifications, modification of the existing SSD approval is required.

Proposal description

The proposal is the upgrade of the Flushcombe Road / GWH intersection with the addition of a slip lane and a 4 m wide shared path (the proposed MOD 2 works). The required works result in approximately 1.32 ha of Ground Disturbance Area with 0.54 ha being south of the GWH and east of Flushcombe Road. Of the 0.54 ha, 0.26 ha encroaches the Augusta Estate Conservation Area.

The vegetation and landform within the Augusta Estate Conservation Area are subject to the approved Vegetation Management Plan (VMP). The aims of the VMP include the conservation, enhancement and re-establishment of connected *Cumberland Plain Woodland* (CPW) linking the existing degraded fragments.

The proposed upgrade includes the removal of existing degraded native vegetation on disturbed landform. The earthworks associated with the proposal have been designed to reduce the existing steep and unstable batter slopes. The result is an improved landform for the re-establishment of native canopy species with the existing erosion risk reduced.

Given the recent mapping of Important Habitat for Swift Parrot (*Lathamus discolor*) in Conservation Areas A and B, the expansion of the conservation areas fronting the GWH forms part of the proposal. This involves the replacement of the approved landscaping with conservation works directed to providing Swift Parrot food resources.

Reason why a BDAR has been prepared

The BOS is triggered as the most of the Subject Land is on the Biodiversity Values Map and a BDAR is required under the NSW *Biodiversity Conservation 2016*.

The BAM *Streamlined assessment module – Small area* has been applied to the proposal in accordance with Table 12 of the BAM (DPIE 2020).

Measures to avoid and minimise

There is little scope to modify the location of the proposed slip lane and the adjoining 4 m shared path. These are mostly in the GWH road reserve, with most of the required battering being on the Augusta Estate.

Opportunities to avoid and minimise impacts on Conservation Area A have been adopted in the proposal, with the reduction of the existing steep batter slopes to improve the landform for the re-establishment of CPW, especially food sources for the Swift Parrot.

Plant Community Types (PCTs)

The vegetation of the Subject Land included native canopy trees with an exotic dominated understorey. The best match PCT was *PCT 3319 Cumberland Shale Hills Woodland*. mapped as one zone of 0.15 ha fragmented patches of *PCT 3319 – degraded*.

Threatened ecological communities (TECs) and EPBC Act listed ecological communities (ECs).

The TEC and EC associated with *PCT 3319 Cumberland Shale Hills Woodland* are:

- Listed BC Act: Critically Endangered: Cumberland Plain Woodland in the Sydney Basin Bioregion (Part); and
- Listed EPBC Act: Critically Endangered: Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (Part).

From comparison of the data recorded with the Final Determination for the TEC *Cumberland Plain Woodland in the Sydney Basin Bioregion*, it is determined that the vegetation meets the broad definition of the critically endangered TEC under the BC Act.

Under the Commonwealth EPBC Act, the condition threshold was not met for the community *Cumberland Plain Woodland in the Sydney Basin Bioregion*. Hence a Referral to the Commonwealth is not required.

Threatened species

Of the threatened species generated by the BAM Calculator, there were:

- 27 ecosystem credits species with 25 considered as possible to utilise the site with two species not meeting the listed habitat constraints; and
- six species credit species with two species excluded. Of the four species retained for further assessment, only the Swift Parrot (*Lathamus discolor*) was assumed to be present due to the Important Habitat mapped on the 0.54 ha Subject Land.

A 0.13 ha species polygon for Swift Parrot was mapped within the Subject Land of which 0.06 ha was in vegetation zone *PCT 3319 – degraded*.

Impacts, including direct, indirect, prescribed, and serious and irreversible impacts

The proposal will directly impact highly degraded, fragmented native vegetation adjoining the six lane GWH to the north and Flushcombe Road, with:

- 0.15 ha of *PCT 3319 Cumberland Shale Hills Woodland – degraded* will be directly impacted by land disturbance. Of the 0.15 ha, 0.09 ha will continue to be managed for conservation subject to the approved Augusta Estate VMP; and
- 0.06 ha of *PCT 3319 – degraded* within the 0.13 ha Swift Parrot species polygon will be directly impacted, with most of this area continuing to be managed for conservation.

There are no likely Serious and Irreversible Impacts (SAILs) from the proposal on either of the potential SAIL entities, the TEC *Cumberland Plain Woodland in the Sydney Basin Bioregion* or the threatened Swift Parrot (*Lathamus discolor*).

Mitigation measures

The mitigation measures are described herein and include the continuation of the Augusta Estate conservation works specified in the VMP which is directed to increase the extent and connectivity of Cumberland Plain Woodland (CPW), consistent with the Cumberland Plain Conservation Plan (DPE 2022) and in line with the objectives / controls of the Huntingwood Precinct DCP.

In addition, expansion of the conservation areas in the Augusta Estate fronting the GWH is proposed with replacement of approved landscaping with Swift Parrot food resources including *Eucalyptus moluccana* and *E. tereticornis*.

Final offset requirements

For the proposal, an offset is required for:

- PCT 3319 Cumberland Shale Hills Woodland; and
- the Swift Parrot.

Impacts that require an offset - ecosystem credits

Vegetation zone	TEC	Impact area (ha)	Current VI score	Future VI score	Change in VI score	Biodiversity risk weighting	Number of ecosystem credits required
PCT 3319 – degraded	<i>Cumberland Plain Woodland in the Sydney Basin Bioregion</i>	0.15	28	0	-28	2.5	3

Impacts that require an offset – species credits

Common name	Scientific name	Loss of habitat (ha)	Number of species credits required
Swift Parrot	<i>Lathamus discolor</i>	0.06 ha	1

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- 2f-1. 1% AEP pre-development flood levels and depth (Costin Roe Consulting Pty Ltd, Drawing No. C013904.03-F001. Issue A. Dated 23.06.23)
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- 2. BAM import data and number and cover of exotic species

3. BAM Calculator Reports
4. WILD Conservation Pty Ltd (2026) *Microbat Review Great Western Highway, Huntingwood*. Prepared by Kane Durrant of WILD Conservation Pty Ltd. Dated 20 June 2026.

Shortened forms

AEP	Annual Exceedance Probability
AOO	Area of Occupancy
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BC Act	Biodiversity Conservation Act 2016 (NSW)
BC Regulation	Biodiversity Conservation Regulation 2017 (NSW)
BDAR	Biodiversity Development Assessment Report
BOM	Bureau of Meteorology
BOS	Biodiversity Offsets Scheme
CBD	Central Business District
CEEC	Critically Endangered Ecological Community
CPW	Cumberland Plain Woodland
DBH	Diameter at Breast Height over bark
DCP	Development Control Plan
DPIE	Department of Planning Industry and Environment
EC	Ecological Community listed under the EPBC Act
EOO	Extent of Occurrence
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EEC	Endangered Ecological Community
GPS	Global Positioning System
GWH	Great Western Highway
HBT	Hollow-Bearing Tree
HTW	High Threat Weed
IBRA	Interim Biogeographic Regionalisation for Australia
LEP	Local Environmental Plan
LGA	Local Government Area
MNES	Matters of National Environmental Significance
MOD	Modification
NSW	New South Wales
OEH	Office of Environment and Heritage
PCT	Plant Community Type

SAII	Serious and Irreversible Impact
SEARs	Secretary's Environmental Assessment Requirements
SSD	State significant development
SVTM	State Vegetation Type Map
TBDC	Threatened Biodiversity Data Collection
TEC	Threatened Ecological Community
VI	Vegetation Integrity
VIS	Vegetation Integrity Scores
VMP	Vegetation Management Plan
WM Act	Water Management Act
WSEA	Western Sydney Employment Area

Definitions

Clearing of native vegetation is defined in the BC Act as:

native vegetation and clearing native vegetation have the same meanings as in Part 5A of the Local Land Services Act 2013.

Note—Under that Part of that Act, the clearing of dead or non-native plants on certain vulnerable land is taken to be the clearing of native vegetation.

Local Land Services Act 2013 defines ‘native vegetation’ and ‘clearing’ of native vegetation as follows:

60B Meaning of “native vegetation”

(1) *For the purposes of this Part, native vegetation means any of the following types of plants native to New South Wales—*

- (a) trees (including any sapling or shrub or any scrub),*
- (b) understorey plants,*
- (c) groundcover (being any type of herbaceous vegetation),*
- (d) plants occurring in a wetland.*

(2) *A plant is native to New South Wales if it was established in New South Wales before European settlement. The regulations may authorise conclusive presumptions to be made of the species of plants native to New South Wales by adopting any relevant classification in an official database of plants that is publicly accessible.*

(3) *For the purposes of this Part, native vegetation extends to a plant that is dead or that is not native to New South Wales if—*

- (a) the plant is situated on land that is shown on the native vegetation regulatory map as category 2-vulnerable regulated land, and*
- (b) it would be native vegetation for the purposes of this Part if it were native to New South Wales.*

(4) *For the purposes of this Part, native vegetation does not extend to marine vegetation (being mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water). A declaration under section 14.7 of the Biodiversity Conservation Act 2016 that specified vegetation is or is not marine vegetation also has effect for the purposes of this Part.*

60C Meaning of “clearing” native vegetation

For the purposes of this Part, clearing native vegetation means any one or more of the following—

- (a) cutting down, felling, uprooting, thinning or otherwise removing native vegetation,*
- (b) killing, destroying, poisoning, ringbarking or burning native vegetation.*

Declarations

i. Certification under clause 6.15 *Biodiversity Conservation Act 2016*

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

Signature: 

Date: 9 July 2026

Dr AnneMarie Clements

BAM Assessor Accreditation no: BAAS17088

BAM Assessor number: 0129

Ecology Specialists Certified Environmental Practitioner under the Environmental Institute of Australia and New Zealand CEnvP Program.

CEnvP Registration Number E200001.

This Biodiversity Development Assessment Report (BDAR) has been prepared to meet the requirements of the Biodiversity Assessment Method (BAM) (DPIE 2020).

ii Details and experience of author/s and contributors

Name	Position	Tasks performed include	Relevant qualifications
Dr AnneMarie Clements	Ecologist	- field survey, including BAM Plots - report preparation - data checking - supervising survey - checking figures - review of data, - cross-checking specimens - cross-checking photo records and data recorded - BAM-C analysis	MSc, PhD, Ecology Specialists Certified Environmental Practitioner under the EIANZ: CEnvP Registration Number E200001.
Dr Anne Baumann	Ecologist	- reviewing existing data - report preparation - document review - checking figures	PhD, BScAg, Cert IV Conservation and Land Management. Dip. Arboriculture
Tony Rodd	Botanist	- field survey, including BAM Plots - detail observations - report preparation - data review - double checking mapping	BSc, Specialist botanist with many years of experience
Caitlyn Birrell	Ecologist	- field survey, including BAM Plots - data entry - report preparation - mapping / figure preparation	Bachelor of Marine Biology with a Postgraduate Certificate in Marine Science and Management, Diploma in Life Sciences.
Elena Moskina	Ecologist	- field survey, including BAM Plots - data entry - report preparation - mapping / figure preparation	Master degree in Soil science

iii. Conflict of interest

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

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

Signature:  **Date:** 9 July 2026

Dr AnneMarie Clements

BAM Assessor Accreditation no: BAAS17088

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Ecology Specialists Certified Environmental Practitioner under the Environmental Institute of Australia and New Zealand CEnvP Program.

CEnvP Registration Number E200001.

Part A Overview

1.0 Introduction

This Biodiversity Development Assessment Report (BDAR) has been commissioned by The Trustee for Huntingwood Property Trust for the modification of the existing Augusta Estate approval (SSD 36138263) in Huntingwood within the Blacktown Local Government Area. The Augusta Estate is currently under construction (Figures 1a-1 to 1c-2).

Access to the Augusta Estate is via the Great Western Highway (GWH). Transport for NSW has specified the requirements for a slip lane and a 4 m wide shared path. To meet these specifications, modification of the existing SSD approval is required.

2.0 Proposed Modification of SSD 36138263 (MOD 2)

The proposal is the upgrade of the Flushcombe Road / GWH intersection with the addition of a slip lane and a 4 m wide shared path (the proposed MOD 2 works). The required works result in approximately 1.32 ha of Ground Disturbance Area, with 0.54 ha being south of the GWH and east of Flushcombe Road. Of the 0.54 ha, 0.26 ha encroaches the Augusta Estate Conservation Area (Figures 1a-3, 1a-6).

The vegetation and landform within the Augusta Estate Conservation Area are subject to the approved Vegetation Management Plan (VMP). The aims of the VMP include the conservation, enhancement and re-establishment of connected *Cumberland Plain Woodland* (CPW) linking the existing degraded fragments.

The proposed upgrade includes the removal of existing degraded native vegetation on disturbed landform. The earthworks associated with the proposal have been designed to reduce the existing steep and unstable batter slopes. The result is an improved landform for the re-establishment of native canopy species with the existing erosion risk reduced (Figure 1a-7).

Given the recent mapping of Important Habitat for Swift Parrot (*Lathamus discolor*) in Conservation Areas A and B, the expansion of the conservation areas fronting the GWH forms part of the proposal. This involves the replacement of the approved landscaping with conservation works directed to providing Swift Parrot food resources. (recent Important Habitat mapping in Figure 5f).

3.0 Biodiversity related legislation

3.1 Blacktown Local Environment Plan (LEP) 2015

Zoning – The Augusta Estate is zoned *E4– General Industrial* and bounded to the north by the GWH zoned *SP2 – Infrastructure* (Figures 1a-2, 2a). The biodiversity objectives associated with the zonings on adjoining land are the following:

Land use and location	Zoning	Biodiversity related objectives
The site	E4 – General Industrial	To minimise adverse impacts on the natural environment. <i>Permitted without consent</i> <i>Nil</i>

Land use and location	Zoning	Biodiversity related objectives
Major highway to the north	SP2 – Infrastructure	No biodiversity related objectives. Objectives include: <i>to prevent development that is not compatible with or that may detract from the provision of infrastructure.</i> <i>to ensure that development does not have an adverse impact on the form and scale of the surrounding neighbourhood.</i> <i>Permitted without consent</i> <i>Environmental protection works; Flood mitigation works</i>

Minimum Lot Size – There is no minimum lot size mapped for the Augusta Estate nor the GWH road reserve. The actual lot size of the smallest lot on the Augusta Estate (Lot 22 in DP1321597) is approximately 560 m² (0.06 ha) (Figures 1a-2, 2b).

[Note: Lot size is used to determine the Biodiversity Offset Scheme (BOS) clearing threshold under the *Biodiversity Conservation Act 2016* (BC Act)].

Terrestrial Biodiversity – There is no Terrestrial Biodiversity mapped on the site nor the adjoining GWH. The nearest mapping to the site is in Timbertop Reserve to the north of the GWH (Figure 2c). Clause 7.2 of the LEP applies to Timbertop Reserve, with the objectives of:

7.2 Terrestrial biodiversity

(1) *The objective of this clause is to maintain terrestrial biodiversity by—*

- (a) protecting native fauna and flora, and*
- (b) protecting the ecological processes necessary for their continued existence, and*
- (c) encouraging the conservation and recovery of native fauna and flora and their habitats.*

3.2 Blacktown Development Control Plan (DCP) 2015

The approved Augusta Estate (SSD 36138263) has been designed to address the controls within the Blacktown Development Control Plan (DCP).

Part A is the Introduction and General Guidelines. It includes definition of terms, including:

Adjoining land means land which abuts an Application site or is separated from it only by a pathway, driveway or similar thoroughfare.

Section 3.5 points out “What types of impacts are of concern”, namely:

- (a) The views to and the view from the land*
- (b) Overshadowing*
- (c) Privacy*
- (d) Noise, odour or any other potential polluting emission*
- (e) The visual quality of the development in relation to the streetscape*
- (f) The scale or bulk of the proposed development*
- (g) The siting of the proposed development in relation to site boundaries*
- (h) The proposed hours of use for the development*
- (i) Light spillage or reflection*
- (j) Means of access to or provision of parking on the proposed development site*

- (k) The amount of traffic likely to be generated by the proposed development*
- (l) Drainage*
- (m) The social and economic impacts of the proposal.*

Section 4 relates to *Environmental protection*, pointing out:

Council, as well as developers, has a responsibility to ensure that development is undertaken in a manner which will enhance the existing environment or at least minimise any likely adverse environmental impacts.

Section 5 relates to Biodiversity, vegetation and tree preservation, with:

Biodiversity is defined as the variety of living animal and plant life from all sources. It includes diversity within and between species as well as the diversity of ecosystems and life it supports.

Section 6 deals with Roads, including:

- arterial roads, such as the GWH;
- pedestrian pathways linking destinations such as open space, schools, shops and bus stops;
- land adjoining arterial and sub-arterial roads zoned SP2 Infrastructure (Classified Road) and SP2 (Local Road).

Part E of the DCP is *Development in the Industrial Zones*.

In Section 4.2 Landscaping, it states:

Objectives in respect to landscaping in the industrial and B5 zones are as follows:

- (a) To encourage a high standard of environmental quality of individual developments, whilst enhancing the general streetscape and amenity of the area by providing high standard landscaping*
- (b) To minimise loss of vegetation during the land development process by incorporating as many existing trees as possible within landscaped setbacks*
- (c) To ensure that vegetation removed as part of the land development process is replaced by suitable indigenous species.*

3.3 Huntingwood Precinct Development Control Plan 2011 (amended 2020)

The approved SSD 36138263 has been designed to address the controls under the Huntingwood Precinct DCP. This plan is informed by Chapter 2 Western Sydney Employment Area (WSEA) of the SEPP (Industry and Employment) 2021.

In the Huntingwood Precinct DCP, it is stated that:

The aim of the WSEA SEPP is to protect and enhance the Western Sydney Employment Area (WSEA) for employment purposes, with reference to the following particular aims: including [emphasis added for biodiversity related aims]:

- *To promote economic development and the creation of employment in the WSEA by providing for development including major warehousing, distribution, freight transport, industrial, high technology and research facilities.*
- *To rezone land for employment or **environmental conservation purposes**.*
- ***To conserve and rehabilitate areas that have a high biodiversity or heritage or cultural value, in particular areas of remnant vegetation.***

Section 6.1 Biodiversity of the Huntingwood Precinct DCP includes biodiversity related objectives and controls (pages 39, 40). The objectives are:

- (a) *Conserve and improve areas of high biological value, in particular to protect:*
- (i) *the 2 critically endangered ecological communities – Cumberland Plain Woodland and River-Flat Eucalypt Forest on Coastal Flood Plains;*
 - (ii) *potential habitats for the threatened Cumberland Plain Land Snail;*
 - (iii) *habitat for 3 threatened species of microchiropteran bats and potentially 3 additional threatened species;*
 - (iv) *potential habitat for the threatened plant Pimelea spicata; and*
 - (v) *riparian zones that contribute maintaining ecological functions and connectivity in the locality.*
- (b) *Retain, and where possible, enhance connectivity along riparian corridors between conservation areas and adjacent remnant vegetation.*
- (c) *Promote ecologically sustainable development of the Precinct and ensure adequate protection of the conservation areas through the use of appropriate buffer zones.*

The **biodiversity related controls** include (a), (d), (e) and (i):

Control (a) refers to conservation mapping.

- (a) *Conservation areas shown in Figure 4 [Figure 2d of this BDAR] are designated to protect and maintain the biodiversity values of the Precinct which is informed by Figure 13 and Figure 14 [shown in Appendix 4 of the BDAR for SSD 36138263 (Clements et al. 2024)].*

...

3.4 NSW Environment Planning and Assessment Act 1979

The development is a Part 4 Development under the *EP&A Act 1979*.

3.5 NSW Biodiversity Conservation Act 2016

The Biodiversity Offset Scheme (BOS) is administered under the *BC Act*. The *Biodiversity Conservation Regulation 2017* sets out threshold levels for when the BOS will be triggered. The threshold has two elements:

- whether the amount of native vegetation being cleared exceeds an area threshold; and
- whether the impacts occur on an area mapped on the Biodiversity Values Map.

As the Minimum Lot size is not mapped on the site nor on the road reserve under the LEP, the smallest lot size on the site (0.06 ha) is used to assess the BOS clearing threshold. From Clause 7.2 of the *Biodiversity Conservation Regulation 2017*, the trigger for clearing is 0.25 ha, namely:

Minimum lot size of land	Area above which the BOS applies
Less than 1 hectare	0.25 ha or more

The proposed clearing does not exceed the threshold.

The BOS is triggered as most of the Subject Land is on the Biodiversity Values Map (Figure 2e).

A BDAR is required for the proposal under the NSW *Biodiversity Conservation 2016*.

The BAM *Streamlined assessment module – Small area* has been applied to the proposal in accordance with Table 12 of the BAM (DPIE 2020), as:

- the minimum lot size associated with the property is less than 1 ha; and
- the maximum area clearing limit is less than 1 ha.

The definitions of native vegetation and clearing are provided in the Glossary to this report.

3.6 Rural Fires Act 1997

The area of the proposed MOD 2 is not on the Bush Fire Prone Lands Map.

3.7 NSW Water Management Act 2000 (WM Act)

There is no mapped watercourse in the MOD 2 affected area under the WM Act, but rather a cut drainage line within a swale. The stormwater in this drainage swale flows north via twin culverts under the GWH (Figures 1b-1, 1b-2).

3.8 Flood mapping

The 1% AEP pre-development flood levels and depth have been modelled by Costin Roe Consulting, with flooding (Figure 2f-1):

- adjoining the batter slope of the GWH west of the existing culverts;
- in the drainage swale in Conservation Areas A, B on the Augusta Estate; and
- to the north of the GWH.

Post the proposed MOD 2 works, flood calculations have been undertaken by Costin Roe, with for 1% AEP post-MOD 2 (Figures 2f-2, 2f-3, 2f-4):

- no flooding adjoining the GWH;
- no change in pre-development flooding to the north of the GWH; and
- additional flooding depth and changes in extent upstream and downstream of Augusta Road in Conservation Areas A, B on the Augusta Estate.

3.9 Biosecurity Act 2015 and High Threat Weeds

The *Biosecurity Act 2015* replaced the *Noxious Weeds Act 1993*. Existing local control authorities continue to have functions in relation to weed control. A list of the Priority weeds for the Greater Sydney Region (including Blacktown) is given on NSW WeedWise website (<https://weeds.dpi.nsw.gov.au/WeedBiosecurities?Areald=3>).

For the proposed MOD 2 affected area (sampled in Plots 10, 11) with area to the east (sampled in Plot 16), there were 59 species recorded with 38 exotic species and 2 non-local native species. Of the 38 exotic species, 21 are listed High Threat Weeds (HTW) under the BC Act, and eight are listed as priority weeds under the *Biosecurity Act 2015*, namely:

Species	Common name	Priority weeds	HTW	Recorded in
<i>Anredera cordifolia</i>	Madeira vine	Yes	Yes.	Plot 16
<i>Araujia sericifera</i>	Moth Vine	No	Yes.	Plot 10
<i>Asparagus aethiopicus</i>	Asparagus 'Fern'	Yes	Yes.	Plots 11, 16
<i>Asparagus asparagoides</i>	Bridal Creeper	Yes	Yes.	Plot 11
<i>Bidens pilosa</i>	Cobblers Pegs	No	Yes.	Plots 10
<i>Chloris gayana</i>	Rhodes Grass	No	Yes.	Plots 10, 11, 16
<i>Cotoneaster glaucophyllus</i>	Glaucous Cotoneaster	No	Yes.	Plot 11
<i>Ehrharta erecta</i>	Panic Veldtgrass	No	Yes.	Plots 10, 16
<i>Eragrostis curvula</i>	African Lovegrass	No	Yes.	Plot 10
<i>Genista monspessulana</i>	Montpellier Broom	Yes	Yes.	Plot 11
<i>Hyparrhenia hirta</i>	Coolatai Grass	No	Yes.	Plot 11
<i>Lantana camara</i>	Lantana	Yes	Yes.	Plots 10, 11, 16
<i>Ligustrum lucidum</i>	Large-leaved Privet	No	Yes.	Plots 11, 16
<i>Ligustrum sinense</i>	Small-leaved Privet	No	Yes.	Plots 11, 16
<i>Megathyrsus maximus</i>	Guinea Grass	No	Yes.	Plot 11
<i>Olea europaea</i> subsp. <i>africana</i>	African Olive	Yes	Yes.	Plots 10, 16
<i>Opuntia monacantha</i>	Drooping Prickly Pear	Yes	Yes.	Plot 16
<i>Paspalum dilatatum</i>	Paspalum	No	Yes.	Plot 10
<i>Paspalum notatum</i>	Bahia Grass	No	Yes.	Plot 10
<i>Senecio madagascariensis</i>	Fireweed	Yes	Yes.	Plot 10
<i>Tradescantia fluminensis</i>	Wandering Trad	No	Yes.	Plot 16

3.10 State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 2 (Vegetation in non-rural areas) aims to protect the biodiversity values and preserve the amenity of trees and other vegetation in non-rural areas of the State. This SEPP applies to the Blacktown LGA and land Zoned IN1 (now E4) General Industrial.

Chapter 3 - Koala Habitat Protection 2020

Koala SEPP 2020 does not apply to the site as it only applies to land zoned RU1, RU2 and RU3 in specified LGAs of which Blacktown is not listed.

Chapter 4 - Koala Habitat Protection 2021

This chapter does not apply to Blacktown LGA.

Part B Stage 1 Biodiversity Assessment

4.0 Site location

The Augusta Estate (SSD 36138263) is located in Huntingwood within the Blacktown LGA approximately 34 km west of the Sydney CBD. The Estate is approximately 1 km north of Prospect Nature Reserve and approximately 3.3 km south of the Blacktown commercial centre.

The proposed SSD 36138263 MOD 2 works area is in the north west of the Augusta Estate (Lot 11 DP1321460 and Lot 23 DP1321597) and in the adjoining Great Western Highway road reserve. It is in the Cumberland IBRA subregion of the Sydney Basin Bioregion (Figures 1a-1 to 1c-2).

4.1 The Proposal and the Subject Land

The proposal is the upgrade of the Flushcombe Road / Great Western Highway intersection with the addition of a slip lane and a 4 m wide shared path. The upgrade includes the removal of existing degraded native vegetation on disturbed landform (additional proposal details in Section 2.0).

Subject Land is defined in the Biodiversity Assessment Method (BAM) (DPIE 2020) as:

land subject to a development, activity, clearing, biodiversity certification or a biodiversity stewardship proposal.

The Ground Disturbance Area of the entire proposed MOD 2 works is approximately 1.32 ha in size, with 0.5 ha being south of the GWH and east of Flushcombe Road (the Subject Land) (Figures 1a-3, 1a-6).

Of the 0.5 ha Subject Land:

- 0.24 ha is on the GWH road reserve; and
- 0.26 ha is on Conservation Area A of the approved Augusta Estate.

5.0 Site context

5.1 Landscape features

Landscape features were assessed for the Subject Land using:

- Topographic maps, and aerial photographs from the SEED Portal – NSW Government website;
- Geology from Minview;
- Soil landscape mapping from the SEED Portal – NSW Government website; and
- Field inspections, onsite surveys and photographic records.

Landscape features	For the proposal
IBRA bioregion and subregions	The site is in the Cumberland subregion of the Sydney Basin Bioregion (Figure 1c-1).
Rivers and streams	The Subject Land is not crossed by a mapped watercourse under the WM Act, but by a cut drainage line within a swale which flows north through twin culverts beneath the GWH (Figures 1a-1, 1a-2, 1b-1, 1b-2, 2f).

Landscape features	For the proposal
Wetlands within, adjacent to and downstream of the site	Prospect Dam is located approximately 1 km south of the Subject Land (Figures 1a-1, 1a-2, 1b-1, 1b-2).
Connectivity of different areas of habitat.	Connectivity (less than 100 m separation) is shown on Figure 1a-5. Culverts under the M4 Motorway and the GWH provide potential connectivity for native fauna, but also for movement of feral pests such as cats, foxes and rats (details in Clements <i>et al.</i> 2024).
Karst, caves, crevices, cliffs, rocks and other geological features of significance and for vegetation clearing proposals, soil hazard features	Karst, caves, crevices, cliffs are not features of soil landscapes on Wianamata Shale geology. The soil hazards associated with Blacktown soil landscape are moderately reactive highly plastic subsoil, low soil fertility and poor soil drainage (Figures 3a, 3b).
Areas of outstanding biodiversity value occurring on the subject land and assessment area	There are no areas of outstanding Biodiversity Value occurring on the Subject Land.
Any additional landscape features identified in any SEARs for the proposal	Secretary's Environmental Assessment Requirements (SEARs) were issued for the approved SSD 36138263. No additional landscape features have been identified in these SEARs.
NSW (Mitchell) landscape on which the subject land occurs	The Subject Land is on Cumberland Plain Mitchell Landscape (Figure 1c-2).

5.2 Climate

The nearest meteorological station is Prospect Reservoir (Station #67019, Opened 1887, Now: Open, Elevation: 61 m), located approximately 4 km south of the site. The mean annual rainfall recorded is 877 mm, with monthly rainfall varying from 0 mm to over 556 mm (BOM online data, accessed on 17 June 2026).

Summary statistics for all years at Prospect Reservoir

Statistic	J	F	M	A	M	J	J	A	S	O	N	D	Annual
Mean	96	99	102	76	70	75	58	51	46	59	73	75	877
Lowest	4	3	5	2	1	1	0	0	0	0	1	0	395
Highest	427	519	513	425	556	531	356	459	186	269	391	338	1900

At the time of surveys on 23 February, 13, 22 May, 10 June 2026, the recorded monthly rainfall was as follows:

Time of survey	Recorded rainfall in month of survey (monthly mean in brackets)	Recorded rainfall in month prior to survey (monthly mean in brackets)
23 February 2026	112 mm (99 mm)	162 mm (96 mm)
13 May 2026, 22 May 2026	104 mm (70 mm)	7 mm (76 mm)
10 June 2026	4 mm up to 17 June 2026 (75 mm)	104 mm (70 mm)

The vegetation at time of surveys did not appear to be water stressed and there was no standing water at time of the surveys.

5.3 Geology and soils

5.3.1 Geology

The geology of the site is mapped as Bringelly Shale Formation (map unit *Twib*) of the Wianamatta shale group (Figure 3a). It is described as:

Shale, carbonaceous claystone, laminite, lithic sandstone, rare coal.

5.3.2 Soil landscape

The site on the soil landscape of the Penrith 1:100 000 map is mapped as Blacktown (Figure 3b), which is described in Bannerman and Hazelton (1990) as:

	Blacktown
Landscape	<i>Gently undulating rises on the Wianamatta Group shales; Local relief to 30 m; Slopes <5%; Broad rounded crests and ridges with gently inclined slopes.</i>
Soils	<i>Shallow to moderately deep (<100 cm) hardsetting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines.</i>
Limitations	<i>Moderately reactive highly plastic subsoil; Low soil fertility; poor soil drainage.</i>

5.3.3 Soil Observations

The soils on the site are red coloured clays, typical of soils derived from Wianamatta Shale.

The landform of most of the Subject Land has been modified especially the steep batter slopes adjoining the GWH and within the drainage swale including constructed bunds, basins and a cut channel (Figure 1b-3).

5.4 Extent of native vegetation cover

In accordance with the BAM, native vegetation cover on the site is assessed in relation to native vegetation cover within the Assessment Area (a 1.5 km buffer of the site) (Section 3.2 of the BAM (DPIE 2020)).

Native vegetation cover in the Assessment Area has been calculated using the recent Nearmap aerial photograph and the NSW State Vegetation Type Map (DCCEE 2025) (Figures 1a-5, 4a, 4b):

Assessment Area	813 ha
Total area of native vegetation cover	185 ha
Percentage of native vegetation cover	22%
Class (0-10, >10-30, >30-70 or >70%)	Class >10-30%

6.0 Native vegetation, TECs and vegetation integrity methods

6.1 Changes to mapped native vegetation extent

The Augusta Estate has a long history of agricultural land use post European settlement. Historic aerial photographs show a progressive decline in agricultural activities with urban expansion. In the 1970s the GWH was built. By 1986 market gardens ceased completely onsite.

6.2 Existing vegetation mapping

NSW State Vegetation Type Map (DCCEE 2025) mapped *PCT 3320 – Cumberland Shale Plains Woodland* within the Subject Land (Figures 4a, 4b).

The area mapped as PCT 3320 is similar to the area mapped on the BV map (Figures 2e, 4b).

6.3 Biodiversity survey

The vegetation along the GWH was sampled in seven BAM Plots (Plots 10 to 16) and two patches (O, P) on 23 February, 3, 22 May and 10 June 2026 by Tony Rodd, Caitlyn Birrell and Elena Moskina with field assistance from Richie Aitua (sampling locations on Figure 6a).

The vegetation of the Subject Land was sampled in Plots 10, 11 and 16 (sampling locations on Figure 6b).

6.3.1.1 Methods

The vegetation was sampled using the BAM techniques (details in DPIE 2020). In addition to the BAM techniques:

- the species cover in each of the 0.04 ha floristic quadrats was the average of the cover recorded in four 10 m x 10 m contiguous subquadrats. The average was rounded and entered in Table 1, with covers:
 - in decimals if less than 1% (e.g. 0.1, 0.2);
 - in whole numbers up to 5% (e.g. 1, 2, 3); and
 - to the nearest 5% if >5% cover (e.g. 5, 10, 15, 20, 25).
- vegetation structure in the floristic quadrat was entered into a separate table as the numbers of individuals and maximum heights for species ≥ 2 m tall in each of the four 10 m x 10 m subquadrats (Table 2); and
- supplementary data was recorded in Patches O and P, with species present.

Vegetation integrity (VI) is calculated using the BAM Calculator. It is a quantitative measure of the composition, structure and function of the vegetation; as well as the presence of High Threat Weeds (HTW) and Hollow Bearing Trees (HBT). The input data for the BAM Calculator is given in Appendix 2.

All sampling locations were photographed with additional general photographs also taken (Appendix 1). GPS coordinates were recorded using the mobile phone app *Grid Ref UTM* at the time of survey. The GPS coordinates (given in Appendix 2), in conjunction with ground features, were used to plot the sampling locations.

Nomenclature is consistent with the Royal Botanic Gardens' PlantNET website (plantnet.rbgsyd.nsw.gov.au) incorporating Flora Online.

6.3.3 Limitations to survey

DEC (2004) points out that:

Potential constraints to a threatened biodiversity study that should always be considered including:

Potential constraint to a threatened biodiversity study	Limitation to survey?	Comments
<i>restrictive budget and timeframe;</i>	No.	Survey adequately funded.
<i>availability and reliability of information;</i>	No.	Data sources included BioNet data, SEED website, Historic aerial photographic, literature and research.
<i>disturbances prior to or during the survey, such as bushfire;</i>	No.	No bushfires, nor other disturbances prior to or during survey.
<i>access to lands;</i>	Partially.	Access was limited to parts of the roadside.
<i>seasonal or vagrant species;</i>	No.	Seasonal and vagrant species considered in terms of potential habitat.
<i>obtaining appropriate survey personnel;</i>	No.	Appropriately trained and experienced personnel.
<i>achieving an adequate survey effort;</i>	No.	Adequate surveys were undertaken.
<i>species that are difficult to survey (cryptic species); and</i>	No.	Experienced personnel and intensive and extensive surveys undertaken.
<i>changing weather conditions.</i>	No.	Surveys undertaken in suitable climatic conditions, despite the rainfall prior to survey being high.

6.3.4 Findings

A total of 59 species (19 local native, 2 non-local native, 38 exotic including 21 High Threat Weeds) were recorded in Plots 10, 11 and 16 along the GWH (sampling locations on Figure 6b, data in Tables 1, 2, photographs in Appendix 1).

Exotic species formed a major component of the vegetation recorded in the plots, with percentage of number of native to total species (33% for Plot 10, 14% for Plot 11, 30% for Plot 16) and native to total cover (24.3% for Plot 10, 25.5% for Plot 11, 36.0% for Plot 16) recorded being low in all of the plots. All Plots had native canopy trees present.

Summary of species composition and cover data recorded in Plots 10, 11, 16

Plot	Location	Number of species (% cover) recorded					
		Total	Native	Native trees	Non-local natives	Exotic	% native to total (% cover of native to total)
Plot 10	In the NW corner of the Subject Land	36 (128.5%)	12 (31.2%)	1 (30%)	0 (0%)	24 (97.3%)	33% (24.3%)
Plot 11	In the centre of the length of the Subject Land	21 (78.9%)	3 (20.1%)	1 (15%)	2 (0.6%)	16 (58.2%)	14% (25.5%)
Plot 16	To the east of the Subject Land	20 (194.4%)	6 (72.1%)	3 (70%)	0 (0.0%)	14 (122.3%)	30% (36.0%)

6.3.5 Observations

In each of the BAM Plots at least one native tree was present. Most of the Subject Land was dominated by exotic species.

BAM Plot 10 was located across the north-western boundary of the Augusta Estate site, inside the junction of Flushcombe Road and the GWH. It sampled a scattered group of remnant trees on a gentle grassy slope rising to the southwest from the highway kerb. At least some parts of this slope had the appearance of preserving the historic land surface. At the time of survey the trees were enclosed by construction fencing to minimise the risk of damage from construction activity. Outside the fences the grass had been slashed. Within the fenced areas, the grass was taller, with minor occurrence of native forbs and climbing plants.

In the 20 m x 20 m floristic quadrat:

Native canopy trees - three *Eucalyptus moluccana* recorded with the tallest being 20 m in height and other trees up to 12 m. The canopy cover in the 10 m x 10 m subquadrats varied from 15% to 50% with average cover of 30% in the florist quadrat.

Native understorey trees or shrubs – none recorded.

Native forbs – the total cover was less than 1% and consisted of *Dianella longifolia*, *Dichondra repens*, *Einadia nutans* subsp. *linifolia*, *E. polygonoides*, *Oxalis exilis* and *Phyllanthus virgatus* – also *Glycine tabacina*, technically a climber but here behaving as a prostrate forb.

Native grasses or graminoids – the only species recorded were *Bothriochloa macra*, *Cynodon dactylon* and *Cyperus gracilis*, with less than 0.5% total covers.

Exotic species

Exotic grasses dominated the groundlayer the most abundant being *Eragrostis curvula* and *Paspalum notatum* which together accounted for 80% of the grass cover. Somewhat less abundant was *Chloris gayana* and even smaller cover was provided by *Bromus catharticus*, *Ehrharta erecta* and *Paspalum dilatatum*.

Broadleaved exotic weeds were scattered through the quadrat but hardly dominating; they included *Araujia sericifera*, *Bidens pilosa*, *Cirsium vulgare*, *Conyza sumatrensis*, *Cyclospermum leptophyllum*, *Foeniculum vulgare*, *Hypochaeris microcephala*, *Modiola*

caroliniana, *Plantago lanceolata*, *Sida rhombifolium*, *Solanum sisymbriifolium* and *Verbena quadrangularis*. Two taller woody weeds, present in very small numbers, were *Lantana camara* and *Olea europaea* subsp. *africana*.

BAM Plot 11 sampled a narrow strip of vegetation on the verge of the GWH approximately 150 m east of Flushcombe Road. Due to the small width of the vegetation a floristic quadrat of 40 m x 10 m was chosen, with the remainder of the plot extending to the west. The northern side of the quadrat was only 1 m away from the road kerb, on the levelled top of a steep embankment that fell away less than 2 m from the kerb, close to which was a steel crash barrier. The steep batter had been colonised by mainly exotic shrubs and small trees, the canopies of which extended over the level crest in parts, obstructing access on foot.

In the 20 m x 20 m floristic quadrat:

Native canopy trees - Two native trees had colonised the embankment, *Eucalyptus tereticornis* (2 individuals, 16 m and 18 m tall, with 15% cover).

Native understorey trees or shrubs – *Acacia implexa* (2 individuals up to 8 m in height with 5% cover).

Native groundcover – one native creeper *Convolvulus erubescens* (0.1% cover) recorded.

Lower canopy vegetation - The more extensive though lower canopy of woody exotic and non-local native trees made up another 50%. The main exotics, forming a dense scrub, were *Cotoneaster glaucophyllus* (2 individuals up to 7 m tall), *Lantana camara*, *Ligustrum lucidum* (up to 8 m tall), *L. sinense* and *Olea europaea* subsp. *africana* (up to 6 m tall), while the non-local natives were *Acacia saligna* and *Grevillea robusta*. All of these trees would have colonised the embankment by either bird-dropped or wind-blown seed.

Exotic ground cover - Due to the heavy shading of the embankment by the woody exotics, there was an almost complete absence of smaller plants beneath their canopy, the main exceptions being a scattering of the two *Asparagus* species, *A. aethiopicus* and *A. asparagoides*. At the top close to the kerb the greater access to light allowed growth of additional exotics, namely *Chloris gayana*, *Conyza sumatrensis*, *Euphorbia prostrata*, *Foeniculum vulgare*, *Genista monspessulana*, *Hyparrhenia hirta*, *Megathyrsus maximus*, *Senna pendula* and *Sonchus oleraceus*.

In summary, the only native species in this Plot that can be regarded as originating from remnant native vegetation were the *Acacia implexa* and *Eucalyptus tereticornis*.

BAM Plot 16 sampled the group of tall native trees in the north of Conservation Area A and in the road reserve. It is located on the east side of the gully containing the drainage line that flows under Augusta Street and exits the Augusta Estate through twin culverts beneath the GWH approximately 200 m east of Flushcombe Road.

The 20 m x 20 m floristic quadrat had its northern edge on the top of the Highway embankment. The height of the embankment diminishes rapidly from west to east as the gully slope rises. The eastern end of the quadrat is approximately 3 m higher than the western end. The western end of the quadrat was approximately 10 m east and upslope of an old excavated channel that parallels the drainage line on its east.

The vegetation of the florist quadrat was dominated by:

Native canopy trees - with two very tall (close to 30 m) *Eucalyptus moluccana*. The canopies of these two tall trees are readily visible in the Nearmap images with the one on the west with its trunk just within the quadrat the one to the east with only a portion of its

canopy included.

Natural regeneration of native canopy trees - There was eucalypt colonisation of the embankment slope and crest, with tall, slender trees of both *E. moluccana* and *E. tereticornis* rising out of thickets of *Ligustrum* spp.

Native understorey trees - At the south-west corner of the quadrat was a mature but not very tall *Melaleuca linariifolia* (8 m tall, 5% cover), this being the only remnant native tree apart from the two *Eucalyptus* species.

Native shrubs - The only native shrubs were several *Bursaria spinosa* near the south edge, contributing small cover (total of 1% cover).

Exotics - The understorey was almost entirely exotic, consisting mainly of *Ligustrum sinense* (20% cover) and *Olea europaea* subsp. *africana* (20% cover) with a lesser amount of *Ligustrum lucidum* (5% cover). Toward the bottom (western) end of the quadrat, there had proliferated the spiny prickly-pear cactus *Opuntia monacantha* up to 2 m tall (5% cover). In the east of the quadrat, there was a stand of *Lantana camara* (5% cover). The groundlayer was dominated by *Tradescantia fluminensis* (50% cover) with lesser cover of *Anredera cordifolia* (10% cover) in all the shaded parts, though nearer the east edge where more light penetrated there were small amounts of other weeds such as *Ehrharta erecta* (2% cover), *Cirsium vulgare* (0.1% cover), *Chloris gayana* (0.1% cover).

6.4 Plant Community Types (PCTs)

In the BDAR for Augusta Estate (SSD 36138263), the online Plot to PCT Assignment Tool was used to determine the most likely PCTs for the vegetation recorded. It was found that for the plots on upper sections of the site on rolling hills, the best match is PCT 3319 Cumberland Shale Hills Woodland.

PCT 3319 Cumberland Shale Hills Woodland is described as:

PCT	Description (BioNet PCT Profile)
PCT 3319 Cumberland Shale Hills Woodland	A tall to very tall sclerophyll woodland to open forest with a mid-stratum of soft-leaved shrubs and small trees with a grassy ground cover that is extensive on rises and upper slopes of hills south from Cecil Hills, in the south-western part of the Cumberland Plain to the west of Sydney. It is most extensive in Campbelltown, Camden and Wollondilly local government areas. The canopy commonly includes <i>Eucalyptus moluccana</i> and <i>Eucalyptus tereticornis</i> , with a sparse shrub to small tree layer which very frequently includes <i>Bursaria spinosa</i> and at least one species of Acacia, of which <i>Acacia implexa</i> is most frequent. The presence of <i>Acacia implexa</i> helps distinguish this PCT from PCT 3320 , which has a similar assemblage and structure. The mid-dense ground layer typically includes forbs, grasses and twiners. <i>Dichondra repens</i> is almost always present and <i>Microlaena stipoides</i> , <i>Desmodium varians</i> , <i>Brunoniella australis</i> and <i>Aristida ramosa</i> are very frequent. This PCT typically occurs in a warm, moist climate between 90-300 metres asl. It has been heavily cleared and now occurs in small remnants with varying levels of disturbance within a rural landscape. The canopy in these remnants often comprises immature cohorts of trees that have regenerated after thinning or clearing. The distribution of this PCT overlaps with PCT 3320 between Cecil Hills and the Nepean River, in which area of overlap PCT 3319 typically occurs on higher elevation hills and ridges. This PCT grades into PCT 3318 on lower protected slopes in the more dissected hills around Cecil Hills and the Razorback Range, and into PCT 3321 near the interface with the sandstone plateaus on the edge of the Cumberland Plain. PCT 3318 includes shrubs, ferns and vines typical of sheltered habitats that are rare in this PCT. Ironbark eucalypts are very frequent and <i>Eucalyptus punctata</i> is common in the canopy of PCT 3321, and <i>Eucalyptus moluccana</i> and <i>Eucalyptus tereticornis</i> are both rare.

The vegetation onsite and nearby is mapped on the State Vegetation Type Map (DCCEE 2025) as PCT 3320 - Cumberland Shale Plains Woodland, described as (Figures 4a, 4b):

PCT	Description (BioNet PCT Profile)
PCT 3320 - Cumberland Shale Plains Woodland	A tall sclerophyll open forest or woodland with a sparse mid-stratum of soft-leaved shrubs and small trees with a grassy ground cover on the undulating Wianamatta Group shale plains of western Sydney. The canopy very frequently includes <i>Eucalyptus tereticornis</i> and <i>Eucalyptus moluccana</i> , with ironbarks (<i>Eucalyptus crebra</i> and <i>Eucalyptus fibrosa</i>) occasionally present and sometimes prominent in localised areas. The sparse shrub to small tree layer very frequently includes <i>Bursaria spinosa</i> and one or more species of <i>Acacia</i> , of which <i>Acacia parramattensis</i>, <i>Acacia decurrens</i> and <i>Acacia falcata</i> are the most frequent and abundant. Presence of these <i>Acacia</i> species helps to distinguish this PCT from the related PCT 3319 on rises of the southern Cumberland Plain which typically includes <i>Acacia implexa</i> . The mid-dense ground layer typically includes grasses, forbs, twiners and hardy small ferns. <i>Microlaena stipoides</i> is almost always present and <i>Themeda triandra</i> , <i>Dichondra repens</i> , <i>Brunoniella australis</i> , <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> , <i>Desmodium varians</i> , <i>Aristida vagans</i> and <i>Glycine tabacina</i> are very frequent. This is the most widespread PCT on the Cumberland Plain, occupying much of the plain between Bankstown and the Hawkesbury and Nepean rivers. It typically occurs in a warm, moist climate below 120 metres asl however can occur up to 200 metres asl on the undulating terrain between Douglas Park and Campbelltown to the east of the Nepean River. A northern outlier occurs near Maroota on a small remnant on a narrow shale ridge. While widespread on the main part of the plain, this PCT primarily occurs in small, often disturbed patches within a rural or urban matrix. In the hilly country to the west of the Nepean River, this PCT is replaced by PCT 3319. On thinner shales above sandstone around the periphery of the Cumberland Plain, it grades into PCT 3321. Ironbarks are very frequent and <i>Eucalyptus punctata</i> is common in the canopy of PCT 3321, and <i>Eucalyptus moluccana</i> and <i>Eucalyptus tereticornis</i> are both rare.

PCT 3320 occurs on undulating Wianamatta Group shale plains. In terms of topographic location, the vegetation of the Subject Land is more likely to have originally been PCT 3319 Cumberland Shale Hills Woodland as it is on a slope and not on a plain. PCT 3319 is likely to be the best match for the vegetation in the Subject Land.

6.4.1 PCT Overview

The PCT identified on the Subject Land is *PCT 3319 Cumberland Shale Hills Woodland* (Figure 7a). Note for the BAM *Streamlined Assessment Module - Small Area*, the dominant PCT is assessed as:

PCT 3319 - Cumberland Shale Hills Woodland

PCT ID	3319
PCT Name	Cumberland Shale Hills Woodland
Vegetation formation	Grassy Woodlands
Vegetation Class	Coastal Valley Grassy Woodlands
Percent Cleared value (%)	81.74
Extent within Subject Land (ha)	0.15 ha within the 0.54 ha Subject Land

6.5 Threatened Ecological Communities (TECs)

PCT	Associated TEC
PCT 3319 - Cumberland Shale Hills Woodland	Listed BC Act, CE: Cumberland Plain Woodland in the Sydney Basin Bioregion (Part); Listed EPBC Act, CE: Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (Part);

State listed TEC

From comparison of the data recorded in Plots 10, 16 with the final determination for the TEC *Cumberland Plain Woodland in the Sydney Basin Bioregion*, it is determined that the vegetation meets the broad definition of the critically endangered TEC under the BC Act.

Commonwealth listed Ecological Community

For the critically endangered ecological community *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* under the EPBC Act, the description, key diagnostic characteristics and condition thresholds in the listing advice provide the definitive source of information for identifying the nationally threatened ecological community. The flowchart of key diagnostic features and condition thresholds provided in the Commonwealth guide (Policy Statement 3.31) have been applied, namely:

Are native tree species present¹ with a minimum projected foliage cover² of 10%?

1 = The typical dominant tree species are grey box, forest red gum and red ironbark. Dominant means that one or more of these species comprises 50 per cent or more of the tree cover. Other tree canopy species may occur in association with the typical dominant species and may be locally dominant within the patch at some sites (see Key species on page 17).

2 = Projected foliage cover excludes gaps between branches and leaves—for example, the amount of shadow that would be cast on the ground if there were a light source directly overhead.

YES

Native tree cover recorded in Plots 10, 11, 16 has a projected foliage cover in excess of 10%, namely:

Plot	Native canopy cover	Total native cover	Native understorey cover	Exotic cover	% native to total understorey cover
10	30%	31.2%	1.2%	97.3%	1%
11	15%	20.1%	0.1%	58.8	<1%
16	70%	72.1%	1.1%	98.1%	1%



Is the patch³ of the ecological community 0.5 ha or greater in size?

3 = A patch is defined as a discrete and continuous area that comprises the ecological community.

YES



Of the perennial understorey vegetative cover present, is 50% made up of native species⁴?

4 = This determines how much of the understorey is native versus exotic.

NO

The perennial understorey vegetative cover recorded in Plots 10, 11, 16 did not comprise of 50% native species (see data in Table 1, summary data in Appendix 2).



Is the patch 5 ha or greater in size?

YES



Of the perennial understorey vegetative cover present, is 30% made up of native species⁴?

⁴= This determines how much of the understorey is native versus exotic.

The perennial understorey vegetative cover recorded in Plots 10, 11, 16 did not comprise of 30% native species. The % native to total understorey cover for Plots varies from <1% to 1%.

NO



Not the listed Ecological Community

Hence, the vegetation on the site is not currently part of the Commonwealth listed community under the EPBC Act. A Commonwealth referral for a Controlled Action is not required. [Note, the VMP is directed to conserve, enhance and re-establish CPW].

6.6 Vegetation Zones

6.6.1 Vegetation Zones identified

The Vegetation Integrity Scores (VIS) of the native vegetation recorded in individual Plots 10, 11, 16 were calculated, namely:

VIS Score of individual Plots:

Sampled in	Best match PCT	Composition condition score	Structure condition score	Function condition score	Current vegetation integrity score
Plot 10	3319	24.5	26.9	38.4	29.4
Plot 11	3319	2.7	10.4	44.5	10.8
Plot 16	3319	10.4	37.2	58.3	28.2

In accordance with the BAM, the minimum number of plots required to sample a vegetation zone < 2 ha is one. Additional plots were completed to ensure a representative sample was taken of the vegetation. The Subject Land is on modified landform. The more intact vegetation was sampled in Plots 10 and 16 (Figure 6b).

The more intact vegetation consisted of three discontinuous patches, and was assigned to one zone, *PCT 3319 – degraded*. This 0.15 ha zone has 0.09 ha in Conservation Area A subject to the approved VMP (Figures 6b, 7b).

Vegetation Zone ID	PCT ID number and name	Condition	Area (ha)	Patch size class	No of VI plots required	No of VI plots completed	No of VI plots used in the Assessment
PCT 3319 - degraded	PCT 3319 Cumberland Shale Hills Woodland	Degraded with almost complete absence of native shrub and groundlayer.	0.15	>100 ha	1	3	2 (Plots 10, 16)

6.6.2 Assessing patch size

Section 4.3.2 of the BAM defines patch size as:

A patch is an area of native vegetation that occurs on the subject land and includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or ≤ 30 m for non-woody ecosystems). A patch may extend onto adjoining land.

For each vegetation zone, the assessor must determine the patch size in hectares and assign it to one of the following classes:

- a. <5 ha
- b. 5–<25 ha
- c. 25–<100 ha
- d. ≥ 100 ha.

The patch size was assessed in the the BDAR for Augusta Estate (SSD 36138263) as >100 ha, being connected to native vegetation in Conservation Areas A, B and to Prospect Nature Reserve (Figure 1a-5).

6.7 Vegetation Integrity (vegetation condition)

VIS Score of Vegetation Zone:

Vegetation Zone	Sampled in	Composition score	Structure score	Function score	Current VIS
PCT 3319 – degraded	Plots 10, 16	11.8	37	50.4	28

Section 9.2.1 of the BAM (DPIE 2020) states that offsetting is not required for vegetation zones with a VIS of less than 15, namely:

9.2.1 Impacts on native vegetation and TECs (ecosystem credits)

1. 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:

- a. ≥ 15 , where the PCT is representative of an EEC or a CEEC.

The vegetation sampled in Zone PCT 3319 - degraded had a VIS of >15 (28). An offset for this vegetation is required.

7.0 Habitat suitability for threatened species

7.1 Review of existing information

Ecosystem credit species and Species credit species were generated from the on-line BAM Calculator (BAM-C). In the BAM (DPIE 2020), the difference between Ecosystem credit species and Species credit species are described:

In Section 5.1.1 *Species that can be predicted by habitat surrogates (ecosystem credit species)*

Ecosystem credit species are 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. The TBDC identifies the threatened species assessed for ecosystem credits. A targeted survey is not required to identify or confirm the presence of ecosystem credit species.

In Section 5.1.2 *Species that cannot be predicted by habitat surrogates (species credit 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 species are identified in the TBDC [Threatened Biodiversity Data Collection]. A targeted survey or an expert report is required to confirm the presence of these species on the subject land. Alternatively, for a development, activity, clearing or biodiversity certification proposal only, the proponent may elect to assume the species is present.

An assessment of habitat suitability for threatened species known or predicted to occur on the Subject Land has been conducted through the use of the BAM Calculator and supported by Threatened species profile information provided in BioNet and in the Threatened Biodiversity Data Collection (TBDC), as well as recorded habitat features.

The BioNet records of threatened species in a 10 km x 10 km grid of the Subject Land were also used to inform which species and their likely habitats may be present on the MOD 2 affected area (Figures 5a to 5e). The records in the search undertaken on 17 June 2026 are for the past 20 years and are similar to those in the search presented in the BDAR for SSD 36138263.

7.2 Habitat constraints assessment

Potential habitat was systematically assessed on the Subject Land as follows:

Habitat component	Site values recorded
Coarse woody debris	There was no fallen timber recorded.
Rock outcrops and bush rock	None recorded nor expected as it was clay soil.
Caves, crevices and overhangs	Absent.
Culverts, bridges, mine shafts, or abandoned structures	Culverts under the GWH.
Nectar/lerp-bearing Trees	Nectar-bearing trees were recorded on the site including <i>Eucalyptus</i> species.
Nectar-bearing shrubs	<i>Acacia implexa</i> and <i>Melaleuca linariifolia</i> recorded.

Habitat component	Site values recorded
Koala Feed Trees	Of the feed tree species listed in Schedule 1 of the <i>SEPP (Biodiversity Conservation) 2021</i> , <i>Eucalyptus tereticornis</i> was recorded on the Subject Land. Of the Koala use tree species in Schedule 3 of the <i>SEPP (Biodiversity Conservation) 2021</i> , <i>Eucalyptus moluccana</i> and <i>E. tereticornis</i> were recorded on the Subject Land.
Large stick nests	No large stick nests observed onsite on or near the Subject Land.
Sap and gum sources	Native sap and gum source trees were recorded onsite including <i>Acacia implexa</i> and <i>Eucalyptus</i> spp.
She-oak fruit (Glossy Black Cockatoo feed)	Not recorded.
Seed-bearing trees and shrubs	Several present including <i>Eucalyptus</i> spp. and <i>Acacia implexa</i> .
Soft-fruit-bearing trees	Dense fruit bearing weed species recorded.
Dense shrubbery and leaf litter	Native shrubs on the site were largely absent. No dense shrub vegetation observed. Leaf litter cover was present amongst the weedy understorey.
Tree hollows	No hollows were recorded in the area of the Subject Land.
Decorticating bark	<i>Eucalyptus</i> spp. with decorticating bark recorded. - <i>Eucalyptus moluccana</i> - <i>Eucalyptus tereticornis</i>
Wetlands, soaks and streams	None on the Subject Land
Open water bodies	Absent.
Estuarine, beach, mudflats, and rocky foreshores	Absent.

7.3 Identification of threatened species for assessments

7.3.1 Ecosystem credit species

Ecosystem Credit Species are threatened species reliably predicted to utilise PCT 3319 ecosystem. No surveys are required for these species. Ecosystem credits apply to these species.

In terms of the ecosystem credits species likely to occur on or use the Subject Land:

- 27 threatened species were generated by the BAM Calculator (Appendix 3);
- 25 are considered as possible to utilise the Subject Land; and
- 2 species were excluded from further assessment for the following reasons:

Species	Reason for exclusion
<i>Ephippiorhynchus asiaticus</i>	Habitat constraint not present:

Species	Reason for exclusion
Black-necked Stork	- Swamps; shallow, open freshwater or saline wetlands or shallow edges of deeper wetland within 300 m of these swamps - Waterbodies; shallow lakes, lake margins and estuaries within 300 m of these waterbodies
<i>Calyptorhynchus lathami lathami</i> South Eastern Glossy Black-Cockatoo	Habitat constraint not present: Presence of <i>Allocasuarina</i> and <i>Casuarina</i> species,

7.3.2 Species credit species

Of the six species credit species generated by the BAM Calculator (Appendix 3), two species were excluded from further assessment, namely:

Threatened species	Reason for exclusion
<i>Anthochaera phrygia</i> Regent Honeyeater (Breeding)	Not on the important Habitat Map for the Regent Honeyeater.
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	Habitat constraint not present: <i>Cliffs; Within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels</i>

Four species were retained for further assessment:

Threatened species	Species retained for further assessment
<i>Lathamus discolor</i> Swift Parrot (Breeding)	Habitat constraint present: Important habitat mapped in the eastern portion of the Subject Land (Figure 5f).
<i>Eucalyptus benthamii</i> Camden White Gum	Surveyed for and not recorded, nor considered likely (occurs on the alluvial flats of the Nepean River and its tributaries).
<i>Miniopterus australis</i> Little Bent-winged Bat (Breeding)	Absence of microhabitat. Surveyed for with none recorded nor considered likely (see report by WILD Conservation Pty Ltd (2026) in Appendix 4).
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat (Breeding)	Absence of microhabitat. Surveyed for with none recorded nor considered likely (see report by WILD Conservation Pty Ltd (2026) in Appendix 4).

7.4 Presence of candidate species credit species

Threatened species	Listing status		Method used to determine presence	Present?	Further Assessment required? (BAM Subsections 5.2.5 and 5.2.6)
	BC Act	EPBC Act			
<i>Lathamus discolor</i> Swift Parrot (Breeding)	Endangered	Critically endangered	Within Important habitat mapped area (Figure 5f).	Assumed present	Yes
<i>Eucalyptus benthamii</i>	Critically endangered	Critically endangered	Targeted threatened species	No	No

Threatened species	Listing status		Method used to determine presence	Present?	Further Assessment required? (BAM Subsections 5.2.5 and
	BC Act	EPBC Act			
Camden White Gum			survey		
<i>Miniopterus australis</i> Little Bent-winged Bat (Breeding)	Vulnerable	Not listed	Targeted threatened species survey (see report by WILD Conservation Pty Ltd (2026) in Appendix 4).	No	No
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat (Breeding)	Vulnerable	Not listed	Targeted threatened species survey (see report by WILD Conservation Pty Ltd (2026) in Appendix 4).	No	No

The Swift parrot is assumed present and no survey is required, as stated in the TBDC:

*The species is a dual credit species, assessed for species credits (important habitat map) and ecosystem credits (all other areas the species is likely to occur). **No survey is required if the subject land is on an important habitat map** for a species unless the species profile in the TBDC states otherwise. The species is considered present and the part of the subject land that is within the important habitat map forms the species polygon used to generate species credits (BAM section 5.2.5 Box 2).*

7.5 Area or count, and location of suitable habitat for a species credit species (species polygon)

Section 5.2.4 (2d) of the BAM states:

for candidate species including dual credit species, where the TBDC indicates that an important habitat map identifies the species credit component, the assessor must confirm whether the subject land is within an area identified on the important habitat map.

The Subject Land is within an area identified on the Important Habitat Map for the Swift Parrot (Figure 5f, 7c).

Section 5.2.5 (1) of the BAM states:

A species polygon must be prepared in accordance with Box 2 for each species credit species if:

- a. a survey, expert report or important habitat map confirms that the species is present or is likely to use suitable habitat on the subject land, or*
- b. the species is assumed to be present (except for a proposed biodiversity stewardship site).*

Section 5.2.5 (5) of the BAM states:

The species polygon for a species identified in section 5.2.4(2.d.), must include the entire area mapped on the important habitat map that occurs within the subject land.

Box 2 Requirements for the species polygon

The species polygon must:

- use the unit of measurement identified for that species in the TBDC to show the locations of individual flora species (see section 5.2.5(3.)), or the area of suitable fauna/flora species habitat
- contain the habitat constraints or other suitable microhabitats or features associated with that species, and any buffer area identified for species in the TBDC •include additional areas where management actions are proposed to be used to restore or create new areas of suitable habitat for a threatened species at a biodiversity stewardship site
- take into consideration information within the TBDC for the species in regard to any requirements on the size or shape of the species polygon, including the buffer area around breeding habitat features such as nest trees or caves
- be established by adding a 30 m buffer around the individuals or groups of individuals for flora species assessed by count on the subject land
- **include the entire area of the subject land that is identified by an important habitat map for a species**
- use GPS to confirm the location of the species polygon on the best available ortho- rectified aerial image of the subject land.

The species polygon for the Swift Parrot is the 0.13 ha eastern portion of the 0.54 ha Subject Land (Figure 5g).

The extent of suitable habitat present onsite within the polygon is 0.06 ha of PCT 3319 – degraded (Figure 7c).

Results for species identified as being present in the Subject Land

Common name (Scientific name)	Biodiversity Risk Weighting	SAIL Entity	Habitat constraints / microhabitats present on the subject land / vegetation zone	Extent (ha) of suitable habitat present on site (flora or fauna with unit of measure of area)	TBDC species specific recommenda tions e.g. buffers, general comments (where relevant)	Habitat condition (vegetation integrity score for each vegetation zone in the polygon – area species only)
Swift parrot <i>Lathamus discolor</i>	3	Potential	Important Habitat Map	0.06 ha	As per Box 2 above	PCT 3319 – degraded VIS = 28

8.0 Identifying prescribed impacts

The likely features relevant to prescribed impacts onsite are the following:

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature.
Karst, caves, crevices, cliffs, rocks or other geological features of significance	☐ Yes / X No	N/A	N/A
Human-made structures	X Yes / ☐ No	Drainage culverts under the GWH.	None. Culverts were searched and no

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature.
			evidence of microbat use found. Culverts currently obscured by dense weed growth and occupied by predators.
Non-local native vegetation	X Yes / ☐ No	Exotic species recorded within the Subject Land include <i>Ligustrum</i> spp., <i>Olea europaea</i> subsp. <i>africana</i> , <i>Opuntia monacantha</i> , <i>Rubus anglocandicans</i> , and environmental weeds such as <i>Grevillea robusta</i> .	There are no threatened entities that are likely to use, or are part of the non-native vegetation habitat feature, apart from highly mobile species.
Habitat connectivity	X Yes / ☐ No	Connectivity with surrounding vegetation is currently fragmented and limited by the GWH to the north. Conservation Area A is subject to a VMP to increase its connectivity (Clements <i>et al.</i> 2024a).	Connectivity to the north is currently limited to flyovers above ground due to 6-lane GWH. Culverts currently obscured by dense weed growth and occupied by predators. There is no evidence of utilisation by native fauna species.
Waterbodies, water quality and hydrological processes	☐ Yes / X No	Limited to the drainage line in the swale which is dominated by dense woody and groundcover weeds with emergent eucalypts surviving.	N/A. No threatened Frog species were recorded during surveys for the Augusta Estate BDAR. Frog habitat construction along Blacktown Creek forms part of the Augusta Estate VMP.
Wind turbine strikes (wind farm development only)	☐ Yes / X No	N/A	N/A
Vehicle strikes	☐ Yes / X No	N/A	N/A

None of the prescribed impact features identified are likely to be exacerbated by the proposal.

Part C Stage 2 Impact Assessment

9.0 Avoid and minimise impacts

9.1 Project location and design

There is little scope to modify the location of the proposed slip lane and the adjoining 4 m shared path. These are mostly in the GWH road reserve, with most of the required battering being on the Augusta Estate.

Opportunities to avoid and minimise impacts on Conservation Area A have been adopted in the proposal, with the reduction of the existing steep batter slopes (to 1 in 3 and 1 in 4 slopes). This results in the improved landform for the re-establishment of CPW, especially the native canopy trees of *Eucalyptus moluccana* and *E. tereticornis*, known winter food resources for the listed Swift Parrot (Figures 1a-7, 5f).

9.2 Avoid and minimise prescribed impacts

There are no likely residual prescribed impacts.

10.0 Impact assessment

10.1 Direct Impacts

10.1.1 Residual Direct Impacts

The extent of clearing within the 0.5 ha Subject Land for the proposed MOD 2 works is 0.15 ha of *PCT 3319 – degraded* (Figure 7b).

Location	Proposed MOD 2 works	Area	Area identified as <i>PCT 3319 Cumberland Shale Hills Woodland</i> - degraded
GWH reserve road	Cleared for slipway and shared path	0.24 ha	0.06 ha
Conservation Area A in Augusta Estate	Subject to land disturbance and re-contouring	0.26 ha	0.09 ha
Total (Subject Land)		0.5 ha	0.15 ha

Residual Direct Impact

Direct impact	BC Act status	EPBC Act status	SAIL entity	Project phase/timing of impact	Extent (ha)
Clearing of PCT 3319 - degraded	CE	N/A	Yes	During construction	0.15

10.1.2 Change in Vegetation Integrity Score

Vegetation Zone	PCT ID	Management Zone	Area (ha)	Before Development				After Development				Change
				Composition	Structure	Function	VIS	Composition	Structure	Function	VIS	Change in VIS
PCT 3319 - degraded	<i>PCT 3319 Cumberland Shale Hills Woodland</i>	Cleared	0.15	11.8	37	50.4	28	0	0	0	0	-28

10.2 Indirect impacts

In Section 8.2 of the BAM, it is specified:

*The assessor must describe and assess the indirect impacts of the proposal on TECs/PCTs and/or threatened species and their habitat, **beyond the development footprint**, including but not limited to:*

Potential Indirect impacts include:	Likelihood and consequences
<i>a. inadvertent impacts on adjacent habitat or vegetation</i>	Unlikely. During construction , the minimisation measures include sediment and erosion control, and no-go zones for construction workers and their vehicles to the south and west of the proposal; Post construction , conservation works.
<i>b. reduced viability of adjacent habitat due to edge effects</i>	Unlikely. Edge effects are to be addressed onsite by the minimisation and mitigation measures.
<i>c. reduced viability of adjacent habitat due to noise, dust or light spill</i>	Unlikely. Noise impacts during construction are restricted to working hours. Post construction, noise is likely from the industrial development in both the construction and its operation phases. There are existing major noise issues currently from the 6 lane GWH and possible high frequency noise impacts from the mobile phone tower. Dust impacts during construction are minimised by construction standards. Post construction, dust impacts are unlikely to impact adjacent habitat due to its separation by the GWH. Light spillage during construction is unlikely due to construction working hours. Post construction, increased light spillage from the industrial development poses a risk to native nocturnal fauna in the approved Conservation Areas.
<i>d. transport of weeds and pathogens from the site to adjacent vegetation</i>	Unlikely. Weeds: The weeds in Conservation Area A are being actively mown as part of the VMP works. Pathogens: There were no obvious signs of pathogen infections onsite and the likelihood of transport of pathogens from the Subject Land is low.
<i>e. increased risk of starvation or exposure,</i>	Unlikely. The Subject Land adjoins a major highway GWH to the north.

Potential Indirect impacts include:	Likelihood and consequences
and loss of shade or shelter	
f. loss of breeding habitat	Possible. In the east of the Subject Land, the stand of winter flowering eucalypts (<i>E. moluccana</i> - flowers February–March, June–July, variable and <i>E. tereticornis</i> – flowers September–November, Benson and McDougall 1998) has been mapped on the Important Habitat Map for Swift Parrot (Figure 5f). The food resource is important for the breeding cycle (in Tasmania) of this migratory species. There are no known or suspected breeding habitats for other species, with no tree hollows nor nests observed on the Subject Land.
g. trampling of threatened flora species	Unlikely. No threatened flora species recorded nor likely to occur on the site.
h. inhibition of nitrogen fixation and increased soil salinity	Unlikely. The proposal is not likely to increase soil salinity nor inhibit nitrogen fixing.
i. fertiliser drift	Unlikely. No fertiliser application is required for the proposal, hence no likely risk of fertiliser drift.
j. rubbish dumping	Unlikely. There are rubbish controls associated with construction standards and post construction operation of the industrial site.
k. wood collection	Unlikely.
l. removal and disturbance of rocks, including bush rock	Unlikely.
m. increase in predators	Unlikely.
n. increase in pest animal populations	Unlikely.
o. changed fire regimes	Unlikely.
p. disturbance to specialist breeding and foraging habitat (e.g. beach nesting for shorebirds).	Unlikely.

Summary of residual indirect impacts

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase / timing of impact	Likelihood and consequences
Loss of breeding habitat	Swift Parrot identified Important Habitat	The eastern portion of the Subject Land (0.06 ha of <i>PCT 3319</i> – <i>degraded</i> within the 0.13 ha species polygon)	During construction	Ongoing with the loss of winter flowering canopy.	During construction	Possible. The stand of winter flowering eucalypts / food resources for the Swift Parrot is important for the breeding success in Tasmania of this migratory species.

10.3 Prescribed impacts

There are no likely residual prescribed impacts.

11.0 Mitigating residual impacts

The mitigation and management measures are the continued implementation of the Augusta Estate VMP. The most viable mitigation measure is ongoing weed control and maintenance of dense planting and re-establishment of native trees and shrubs including winter flowering eucalypts and *Bursaria spinosa*.

Given that Important Habitat for the Swift Parrot has been identified along the drainage swale on the Augusta Estate, conservation areas are proposed to be expanded to incorporate all areas fronting the GWH. This involves replacing the approved landscaping with Swift Parrot food resources.

Summary of proposed mitigation and management measures for residual impacts

Minimisation and Mitigation measures	Method technique	Timing	Frequency	Responsibility	Performance criteria	Likely efficacy (including risk of failure)	MNES (where relevant)
Continued implementation of the Augusta Estate VMP	As specified in the VMP (Clements et al. 2024a).	Ongoing	Ongoing	Environmental Manager	Specified in the VMP In addition, native canopy trees at 4 m centres adjoining the shared path where practicable.	Good. Risk of failure unlikely.	N/A
Clearly identify No-Go areas.	Clearly identified with orange mesh fence or similar and sign post as a No Go Area for onsite workers. Discuss at the site's Toolbox Talks.	During construction.	Installed prior to works and maintained during works.	Construction Manager.	Fencing and signage to be maintained during works.	Good. Risk of failure unlikely, provided that there is adherence to No-Go Areas.	N/A
Waste management.	Standard construction measures to be implemented and enforced.	During construction.	Daily or as appropriate.	Construction Manager.	Bins emptied regularly and minimal waste	Good. Risk of failure unlikely as this is standard	N/A

Minimisation and Mitigation measures	Method technique	Timing	Frequency	Responsibility	Performance criteria	Likely efficacy (including risk of failure)	MNES (where relevant)
					onsite.	practice for well-managed construction sites.	
Ensure hygiene protocols adhered to.	Continuation of the construction measures related to cleaning and rubbish controls, and the operation of the industrial estate.	Life of the project	N/A	Operation Manager.	Best practice hygiene protocols followed.	Good. Risk of failure unlikely, provided adequate supervision and compliance with hygiene protocols by all persons onsite.	N/A
Weed risk management	Cleanliness of vehicles entering and exiting works areas.	During the construction period.	N/A	Construction manager.	No dirt being transported to the public roads from construction vehicles.	Moderate. The performance criteria of no dirt transported to public roads ensures the risk of weed and pathogen movements is minimised.	N/A
Mitigate indirect impacts to adjacent habitat and vegetation.	Erosion and sediment controls in place.	Prior to and during construction works.	N/A	Construction manager.	In accordance with standard construction procedures.		N/A
	Limit construction works to daylight hours to reduce impacts from light and noise.	During the construction works	N/A	Construction manager.	Works and light cease between dusk and dawn	Good.	N/A
	Pre-clearance survey and	Prior to	Once,	Experienced wildlife	In accordance with	Good. Risk of losses	N/A

Minimisation and Mitigation measures	Method technique	Timing	Frequency	Responsibility	Performance criteria	Likely efficacy (including risk of failure)	MNES (where relevant)
	relocation of native fauna to areas of retained vegetation.	commencement of any clearing / earthworks.	unless required by the spotter / catcher.	spotter / catcher in consultation with the Construction Manager.	ethics approval.	significantly reduced.	
Expansion of conservation areas fronting the GWH.	Replacing the approved landscaping fronting the GWH with Swift Parrot food resources.	Post batter formation adjoining GWH works.	Once.	Environmental Manager and Construction Manager.	In accordance with the VMP.	Good.	N/A

12.0 Serious and Irreversible impacts

Section 9.1 of the BAM specifies that:

1. *The determination of a serious and irreversible impact on biodiversity values is to be made by the decision-maker in accordance with the principles set out in the BC Regulation.*
2. *To assist the decision-maker, the document Guidance to assist a decision-maker to determine a serious and irreversible impact includes criteria that enable the application of the four principles set out in clause 6.7 of the BC Regulation to identify the species, populations and ecological communities that are likely to be at risk of SALLs.*
3. *The assessor must identify every threatened entity at risk of an SALL that would be impacted by the proposal.*
- ...

The four Principles are given in Clause 6.7 of the *BC Regulation*, namely:

(2) An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species (including endangered populations) or an ecological community becoming extinct because:

- Principle 1 *(a) 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, or*
- Principle 2 *(b) 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, or*
- Principle 3 *(c) 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, or*
- Principle 4 *(d) 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.*

12.1 Assessment for Serious and irreversible impacts on biodiversity values

In the BAM Credit Summary Report, the following were flagged as threatened entities at risk of potential Serious and Irreversible Impact (SAIL) (Appendix 3). The Department of Environment and Heritage (<https://www.environment.nsw.gov.au>, accessed 19 June 2026) points out the principles met for listed threatened entities at risk of SAIL, namely:

Threatened entity at risk of an SAIL	Principles			
Ecological community (TEC)	1	2	3	4
<i>Cumberland Plain Woodland in the Sydney Basin Bioregion</i> [CPW].	X	X	-	-
Species: Fauna				
<i>Lathamos discolor</i> (Swift Parrot)	X	-	-	-

Impact of the proposal on these entities has been compared with the criteria listed in:

- Section 9.1.1 of the BAM, Additional impact assessment provisions for threatened ecological communities at risk of an SAIL; and
- Section 9.1.2 Additional impact assessment provisions for threatened species at risk of an SAIL.

12.1.1 Additional impact assessment provisions for TEC at risk of an SAIL

Cumberland Plain Woodland

Section 9.1.1 (1) states:

The assessor is required to provide further information in the BDAR or BCAR regarding the impacts on each TEC at risk of an SAIL. This must include the action and measures taken to avoid the direct and indirect impact on the TEC at risk of an SAIL. Where these have been addressed elsewhere the assessor can refer to the relevant sections of the BDAR and BCAR.

Direct impacts are the clearing of 0.15 ha of the TEC *Cumberland Plain Woodland in the Sydney Basin Bioregion* for the proposed MOD 2 works.

Measures to avoid the direct and indirect impact on the TEC are discussed in Part C Section 9.0.

Section 9.1.1 (2) of the BAM states:

The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including:

- a. *evidence of reduction in geographic distribution (**Principle 1**, clause 6.7(2) (a) BC Regulation) as the current total geographic extent of the TEC in NSW AND the estimated reduction in geographic extent of the TEC **since 1970** (not including impacts of the proposal)*

Note for Principle 1. These are impacts that will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in rapid rate of decline.

The current total geographic extent of the TEC in NSW and the estimated reduction in geographic extent of the TEC since 1970 are not specified on the TBDC database.

The relevance of year 1970 may be related to the widespread vegetation mapping based on the 1970s and 1980s aerial photographs, including:

Author	Mapped native vegetation	Mapping used aerial photographs
Benson (1992)	Penrith 1:100 000 map sheet	Taken in September 1979, late 1988, early 1989.
Benson and Howell (1994)	Sydney 1:100 000 map sheet	1982

The map unit “Cleared” on the Penrith sheet (Benson 1992) is described as:

These areas are generally on better agricultural soil along the river alluvial flats or on the Wianamatta Shale country. Small remnant of vegetation too small to map occur here.

To assist in determining whether there has been a reduction in geographic distribution of CPW since 1970, the data sources examined were:

- the 1997 and 2009 NSW Scientific Committee's listings (Final Determinations), the Cumberland Plain Recovery Plan (DECCW 2011), Cumberland Plain Assessment Report Summary Report (Biosis 2021) and National Parks and Wildlife Service (2002) and Tozer (2003). The reduction described is that of the current distribution compared with the modelled pre-European extent and generally with that in Table 3 of NPWS (2002), namely:
 - the proportion of Cumberland Plain Woodland community (CPW) remaining with canopy cover >10% is shown as 8.8% (11054.5 ha) of the 125,446.3 ha modelled Pre-1750 extent.*

Comparison with the modelled pre-European CPW extent is expected as the vegetation on the more fertile soils of the Cumberland Plains was cleared for agriculture to feed the Sydney town colony, resulting in major reduction of extent of this community.

- In the 2009 Final Determination, it is pointed out that there has been a reduction in the extent of Cumberland Plain Woodland in 9 years, namely:
13. ... An update of Tozer's (2003) map, based on interpretation of imagery flown in January-March 2007 shows that the extent of Cumberland Plain Woodland east of the Hawkesbury – Nepean River had declined by 442±46 ha, a reduction of 5.2±0.6% in 9 years (NSW Scientific Committee & Simpson 2008). ...
- The NSW State Vegetation Type Map Technical Notes (Roff *et al.* 2022) states that:
*The NSW vegetation classification hierarchy and the SVTM are part of the Integrated BioNet Vegetation Data program. ... Integrated BioNet Vegetation Data includes:
 ...estimates of clearing loss (%) for PCTs*

From comparing NPWS 2002 / Tozer 2003 mapping and the current extent reported in the PCT profile in BioNet (based on SVTM mapping), there appears to be little or no difference in the extent over the past 20 years, namely:

NPWS (2002)

CPW	Pre-European Extent	Extent	PCT Percent cleared
Calculated by NPWS 2002	125,446.3	11,054.5 ha	91.2% (100 - 8.8)

From BioNet (accessed 19 June 2026)

PCTs of the CPW	Pre-European Extent	Current Extent	PCT Percent cleared
PCT 3319 Cumberland Shale Hills Woodland	18,141 ha	3,312 ha	81.74%
PCT 3320 Cumberland Shale Plains Woodland	112,464 ha	7,841 ha	93.03%
Total	130,605 ha	11,153 ha	91.46%

It is likely that there has been an increase in the extent of Cumberland Plain Woodland with >10% Canopy Cover (see Cumberland Plain Conservation Plan (DPE 2022). This may be a consequence of the conservation work that is occurring on the Cumberland Plain as stated in the 2009 Final Determination, paragraph 14:

Some areas of Cumberland Plain Woodland subjected to a history of partial clearing and grazing have undergone a change in management to conserve the community. Examples include ..., Western Sydney Regional Park [approximately 5 km to the south], ...

From the data, there is no evidence of reduction in extent of CPW over the past 20 years, but there may have been a reduction in the extent since 1970.

The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including:

b. extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes (Principle 2, clause 6.7(2)(b) BC Regulation) indicated by:

- i. change in community structure*
- ii. change in species composition*
- iii. disruption of ecological processes*
- iv. invasion and establishment of exotic species*
- v. degradation of habitat, and*
- vi. fragmentation of habitat*

Note: for Principle 2, These are impacts that will further reduce the population size of the species that is currently observed, estimated, inferred or reasonably suspected to have a very small population size, or will further degrade or disrupt an ecological community that is already observed, inferred or reasonably suspected to be severely degraded or disturbed

From the TBDC database the extent of reduction in ecological function has not been specified.

Clause 27 of the 2009 Final determination states that the community has undergone a large reduction in ecological function, namely:

The ecological community has undergone, is observed, estimated, inferred or reasonably suspected to have undergone or is likely to undergo within a time span appropriate to the life cycle and habitat characteristics of its component species:

- (a) a very large reduction in ecological function, as indicated by any of the following:*
- (d) a change in community structure*
- (e) a change in species composition*
- (f) disruption of ecological processes*
- (g) invasion and establishment of exotic species*
- (h) degradation of habitat*
- (i) fragmentation of habitat.*

The weed and urban heat threats listed in the species profile have been observed onsite, namely:

Listed threats (from the <i>Cumberland Plain Woodland in the Sydney Basin Bioregion – profile</i> , accessed June 2026)	Threats observed onsite
Weed and foreign plant invasion, particularly African Olive and exotic grasses.	Yes. Especially, <i>Ligustrum</i> spp., African Olive, <i>Lantana camara</i> and <i>Eragrostis curvula</i> .
Death of trees caused by fungus, following borers.	Unlikely. Not observed within the Subject

Listed threats (from the <i>Cumberland Plain Woodland in the Sydney Basin Bioregion – profile</i> , accessed June 2026)	Threats observed onsite
	Land.
<i>Bell miner associated dieback.</i>	No. Not observed onsite.
<i>Urban heat island effect and persistent dry/low rainfall conditions.</i>	Yes. Western Sydney is being adversely impacted by urban heat island effects.
<i>Lack of awareness and appreciation of Cumberland Plain Woodland, with the perception that the community is unattractive.</i>	No comment.
<i>Inappropriate fire regimes, which have altered the appropriate floristic and structural diversity.</i>	No. The floristic and structural diversity have been altered by historic agricultural use of the site, not by fire regimes.
<i>Disturbance and damage by recreational users being litter, arson, trail & motorbikes, 4WDs, firewood collection, and removal of woody debris.</i>	No. Not observed onsite
<i>Threat of further clearing for urban or rural development, and the subsequent impacts from fragmentation including increased roadkill of fauna.</i>	No.
<i>Inappropriate water run-off, which leads to increased nutrients and sedimentation.</i>	Unlikely.
<i>Predation of native fauna by cats and foxes.</i>	Yes. Feral pest species abundant including “domestic” cats.
<i>Grazing and mowing, which stops regrowth of the community.</i>	No. The floristic and structural diversity onsite have been altered by historic agricultural land use.

The MOD 2 proposal, with the mitigation measures applied, is not likely to further degrade or disrupt CPW. The continuation of the conservation works specified in the VMP is likely to reduce the risk of any potential Serious and Irreversible Impacts.

The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including:

- c. evidence of restricted geographic distribution (**Principle 3**, clause 6.7(2)(c) BC Regulation), based on the TEC’s geographic range in NSW according to the:*
 - i. extent of occurrence*
 - ii. area of occupancy, and*
 - iii. number of threat-defined locations*

Note for Principle 3, These are impacts that impact on the habitat of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution

From the TBDC database, the area of occupancy and extent of occurrence has not been specified.

CPW does not have a very limited geographic distribution. It is distributed in the Sydney Basin Bioregion (*sensu* Thackway and Cresswell) and is currently known to occur within the local government areas of Auburn, Bankstown, Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta, Penrith and Wollondilly, but may occur elsewhere within the bioregion (paragraph 11 of the Final Determination). The map of its distribution is shown in *Cumberland Plain Woodland in the Sydney Basin Bioregion – OEH profile*.

Indicative distribution



The areas shown in pink and/purple are the sub-regions where the species or community is known or predicted to occur. They may not occur throughout the sub-region but may be restricted to certain areas ... The information presented in this map is only indicative and may contain errors and omissions.

The assessor must consult the TBDC and/or other sources to report on the current status of the TEC including:

- d. evidence that the TEC is unlikely to respond to management (**Principle 4**, clause 6.7(2)(d) BC Regulation).

Note for Principle 4, These are impacts that impact on a species or ecological community that is unlikely to respond to measures to improve habitat and vegetation integrity and is therefore irreplaceable.

CPW is known to respond to management conservation measures to improve habitat and vegetation integrity, such as allowing natural regeneration.

From page 75 of the Cumberland Plain Conservation Plan (DPE 2022), it states:

Ecological restoration

Historically, vegetation in Western Sydney has been cleared for agriculture and more intensive land uses. This has resulted in extensive fragmentation of the remaining native vegetation, reduced connectivity and overall loss of ecological resilience.

Ecological restoration can play a critical role in improving connectivity between remnant habitat patches, expanding the remnants and replacing some areas of over-cleared vegetation communities. This is particularly important for a fragmented landscape such as the CPCP Area and for over-cleared vegetation types such as Cumberland Plain Woodland.

The department commissioned a trend analysis as part of the Cumberland Plain Impact Assessment Report. This involved a process to gather ecological information from recognised experts on how one of the plant communities that makes up Cumberland Plain Woodland responds to management. The analysis indicated high intensity management of conservation land, such as active restoration, had significant potential to improve Cumberland Plain Woodland even when the ecological community is in poor condition. It also demonstrated that high intensity management, combined with early implementation of offsets, would not only compensate for the impacts of development on Cumberland Plain Woodland, but

would greatly help to reverse the long-term decline in extent and condition of Cumberland Plain Woodland in the subregion from landscape scale threats. The trend analysis has been published as part of the Cumberland Plain Assessment Report (Part 8: Supporting documents – Supporting Document D).

The MOD 2 proposal will not impact an ecological community that is unlikely to respond to measures to improve habitat and vegetation integrity and is therefore irreplaceable.

Section 9.1.1 (4) of the BAM states: *In relation to the impacts from the proposal on the TEC at risk of an SAIL, the assessor must include data and information on:*

- a. the impact on the geographic extent of the TEC (**Principles 1 and 3**) by estimating the total area of the TEC to be impacted by the proposal:*
 - i. in hectares, and*
 - ii. as a percentage of the current geographic extent of the TEC in NSW.*

The extent of clearing of the TEC for the proposal is 0.15 ha. Assuming the current extent of CPW to be **11,153 ha** (from BioNet) then the impact from the proposal on the extent of the TEC is calculated to be negligible.

In relation to the impacts from the proposal on the TEC at risk of an SAIL, the assessor must include data and information on:

- b. The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes (**Principle 2**) of the TEC by:*
 - i. estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500 m of the development footprint or equivalent area for other types of proposals*
 - 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*
 - *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*
 - 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.*

In relation to b(i), the MOD 2 proposal is not likely to further isolate, degrade or disrupt biotic processes of the remaining areas of the TEC.

In relation to b(ii), with continuation of the conservation works specified in the VMP, connectivity will be enhanced.

In relation to b(iii), the BDAR describes the Vegetation condition of the TEC using the data recorded in BAM Plots 10, 16, namely:

TEC	Vegetation Zone	Sampled in	Composition score	Structure score	Function score	Current VIS
CPW	PCT 3319 – degraded	Plots 10, 16	11.8	37	50.4	28

Section 9.1.1 (5) of the BAM states:

5. The assessor may also provide new information that demonstrates that the principle identifying that the TEC is at risk of an SAIL is not accurate.

No additional information is being provided.

12.1.2 Additional impact assessment provisions for threatened species at risk of an SAI

Swift Parrot (*Lathamus discolor*)

1. Actions to avoid and minimise direct and indirect impacts (BAM Section 9.1.2 (1))

Direct impacts are habitat clearing of 0.06 ha of *PCT 3319 – degraded* within the 0.13 ha Swift Parrot species polygon.

2. Swift Parrot Current Status (BAM section 9.1.2(2))

(3. Details of data deficiencies provided in the table as per BAM section 9.1.2(3))

Criteria	Data / information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information
a. Evidence of rapid decline (Principle 1...) presented by an estimate of the:			
Change in population size in NSW in the past 10 years or 3 generations (indicate whether as a direct estimate of the population or if indicated by an index or surrogate)	'Population reduction of $\geq 80\%$ in 10 years or three generations'. The species has an observed, estimated, inferred, suspected or projected population reduction of $\geq 80\%$ in 10 years or three generations (whichever is longer).	TBDC	N/A
b. Evidence of small population size (Principle 2...) presented by:			
Current population size in NSW	No data available. From the TBDC database, Principle 2 is not applicable with 'none' displayed.		Not specified in the TBDC.
Decline in species' population size in 3 years or one generation	No data available		Not specified in the TBDC.
Number or percentage of mature individuals in each subpopulation	No data available		Not specified in the TBDC.

Criteria	Data / information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information
or whether the species is likely to undergo extreme fluctuations			
c. Evidence of limited geographic range (Principle 3...) presented by:			
Extent of occurrence (ha)	Swift Parrot Breeding habitat Swift parrot breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia. Swift Parrot Foraging habitat On the mainland Swift Parrot occur in areas where eucalypts are flowering profusely or where there are abundant lerp infestations. Favoured feed trees include winter flowering species such as <i>Eucalyptus robusta</i>, <i>Corymbia maculata</i>, <i>C. gummifera</i>, <i>E. tereticornis</i>, <i>E. sideroxylon</i>, and <i>E. albens</i>. Commonly used lerp infested trees include <i>E. microcarpa</i>, <i>E. moluccana</i>, <i>E. pilularis</i>, and <i>E. melliodora</i>	BioNet TBDC	Extent of occurrence in hectares is not specified in the TBDC.
Area of occupancy (ha)	No data available		Not specified in the TBDC.
Number of threat-defined locations	No data available		Not specified in the TBDC.
Whether the species' population is likely to undergo extreme fluctuations	No data available		Not specified in the TBDC.

4. Swift Parrot - Impact assessment (BAM section 9.1.2(4))

Criteria	Data / information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information
a. the impact on the species' population (Principles 1 and 2) presented by:			
i. Number of individuals (mature and immature) present in the subpopulation on the subject land, AND	Number of individuals on the Subject Land has not been surveyed. No survey is required as the Subject Land is on an important habitat map.		N/A
ii. Number of individuals (mature and immature) present as a percentage of total NSW population (%) OR	N/A		N/A
iii. if the species' unit of measure is area, provide data on the number of individuals on the site, and the estimated number that will be impacted, along with the area of habitat to be impacted by the proposal	The species' unit of measure is 'area'. No survey for the Swift Parrot is required as the area is measured from the Important Habitat Map. The area of habitat impacted is 0.06 ha of <i>PCT 3319 – degraded</i> of the 0.13 ha Swift Parrot species polygon.		N/A
b. impact on geographic range (Principles 1 and 3) presented by:			
i. Area of the species' geographic range to be impacted by the proposal (ha) and as a percentage of the total area or extent of occupancy (%)	0.06 ha of <i>PCT 3319 – degraded</i> of the 0.13 ha Swift Parrot species polygon is impacted by the MOD 2 proposal.		The percentage is not able to be calculated as a percentage of the total AOO, or EOO within NSW as the area is not specified in the TBDC.

Criteria	Data / information	Data sources	Details of data deficiency, assumptions, reasons for low confidence in information
ii. the impact on the subpopulation as either: all individuals will be impacted (subpopulation eliminated); OR impact will affect some individuals and habitat; OR impact will affect some habitat, but no individuals of the species will be directly impacted		BioNet and TBDC	N/A
iii. Viability of a fragmented persisting population	N/A. The species' population is unlikely to become fragmented as a result of the MOD 2 proposal.		N/A
iv. Changes in threats affecting remaining subpopulations and habitat if the proposed impact proceeds	N/A. Disturbance to any potential adjacent foraging habitat is not considered likely as the mapped important habitat area is on the Augusta Estate Conservation Area subject to conservation works.		N/A

In conclusion, the current MOD 2 proposal is not likely to have a serious and irreversible impact on the following potential SAI entities:

Ecological community (TEC)
<i>Cumberland Plain Woodland in the Sydney Basin Bioregion</i> [CPW].
Species: Fauna
<i>Lathamos discolor</i> (Swift Parrot)

13.0 Impact Summary

13.1 Determine an offset requirement for impacts

13.1.1 Impacts on native vegetation and TECs or ECs (ecosystem credits)

From Section 9.2.1 of the BAM (DPIE 2020) an offset is not needed for impacts on native vegetation if the vegetation integrity score is below:

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

For the proposal an offset is required for clearing of 0.15 ha of PCT 3319 – Cumberland Shale Hills Woodland with the number of ecosystem credits required as follows:

Vegetation zone	TEC	Impact area (ha)	Current VI score	Change in VI score	Biodiversity risk weighting	Number of ecosystem credits required
<i>PCT 3319 – degraded</i>	Cumberland Plain Woodland in the Sydney Basin Bioregion	0.15	28	-28	2.5	3

13.1.2 Impacts on threatened species and their habitat (species credits)

One Candidate species / credit species was identified, as part of the Subject Land was on the Important Habitat Map for the Swift Parrot.

The species credits required to offset the impacts are the following:

Common name	Scientific name	BC Act status	EPBC Act status	Loss of habitat (ha)	Biodiversity risk weighting	Number of species credits required
Swift Parrot	<i>Lathamos discolor</i>	E	CE	0.06	3	1

14.0 Biodiversity credit report

The NSW Department of Planning and Environment *Template – Biodiversity Development Assessment Report* (www.environment.nsw.gov.au, accessed 18 June 2026) states that:

*The BAM-C credit report must identify the numbers and classes of biodiversity credits required to be retired in accordance with the like-for-like requirements of the offset rules and those that could be retired in accordance with the variation rules. **The BDAR must be submitted to the decision-maker within 14 days of the date the BAM-C credit report was finalised.***

The BAM Calculator credit reports are in Appendix 3.

14.1 Ecosystem credits

Ecosystem credit class and matching credit profile

	Attribute shared with matching credits						
Ecosystem Credits	PCT name	PCT Vegetation Class	PCT vegetation formation	Associated TEC or EC	Offset trading group (BAM Section 10.2, Tables 4 & 5)	Hollow bearing trees (HBT) present?	IBRA subregion (in which proposal is located)
3	3319-Cumberland Shale Hills Woodland	Coastal Valley Grassy Woodlands	Grassy Woodlands	YES, CPW	Cumberland Plain Woodland in the Sydney Basin Bioregion. This includes PCT's: 3319, 3320	No	Cumberland

14.2 Species credits

Species credit class and matching credit profile

Species credits	Attributes shared with matching credits				
	Name of threatened species	Kingdom	BC Act status	EPBC Act status	IBRA region
1	<i>Lathamus discolor</i> / Swift Parrot	Animalia	Endangered	Critically Endangered	Any in NSW

References

Reports related to the proposal

For the approved SSD 36138263

Clements A, Baumann A, Rodd T, Dever P and Harding T (2024) *Biodiversity Development Assessment Report for the proposed Augusta Street warehouse and distribution centre in Huntingwood*. Prepared for The Trustee for Huntingwood Property Trust. Dated 6 August 2024.

Clements A, Baumann A, Rodd T and Harding T (2024a) *Vegetation Management Plan for Conservation Areas associated with the proposed Augusta Street warehouse and distribution centre in Huntingwood*. Prepared for The Trustee for Huntingwood Property Trust. Dated 5 August 2024.

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Thackway R. & Cresswell I. (1995) (eds.) *An Interim Biogeographic Regionalisation of Australia*. Version 6, Australian Nature Conservation Agency: Canberra

Tozer M. (2003) / NPWS (2002) *The native vegetation of the Cumberland Plain, western Sydney: systematic classification and field identification of communities*. *Cunninghamia* 8(1) 1-75

Online Maps and data:

BOM - Bureau of Meteorology

Elvis - Elevation and Depth - Foundation Spatial Data

Historical, Aerial and Satellite Imagery - Spatial Services

Topographic Map Sheets - Spatial Services

DCCEEW Website including BioNet

NSW Planning Portal

Blacktown City Council's website

MinView - NSW Resources web map application

NSW FloraOnline - PlantNET

SEED Portal – NSW Government

NSW WeedWise website

Figures



Date created: 18-06-2026

- Augusta Estate boundary
- MOD 2 ground disturbance area

0 0.75 1.5 km
Geocentric Datum of Australia
1994

Figure 1a-1.
Augusta Estate boundary and MOD 2 ground disturbance area
overlaid on the Nearmap aerial photograph dated 17 March 2026



ANNE CLEMENTS & ASSOCIATES PTY. LIMITED
Environmental and Botanical Consultants

Date created: 07-07-2026

- Augusta Estate boundary
- MOD 2 ground disturbance area
- Lot boundaries

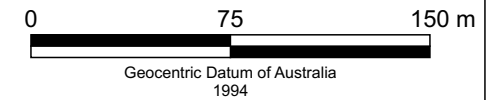
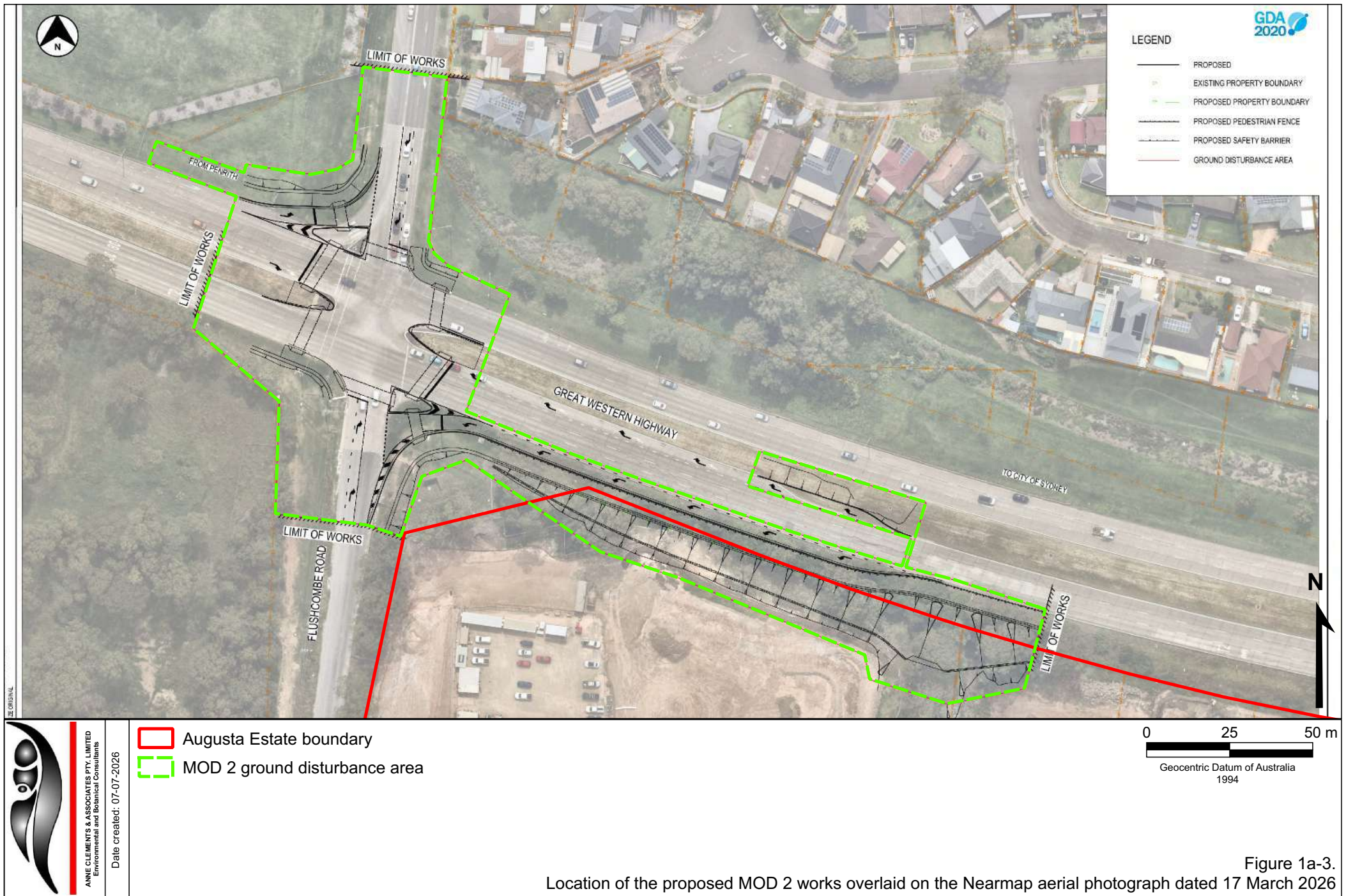
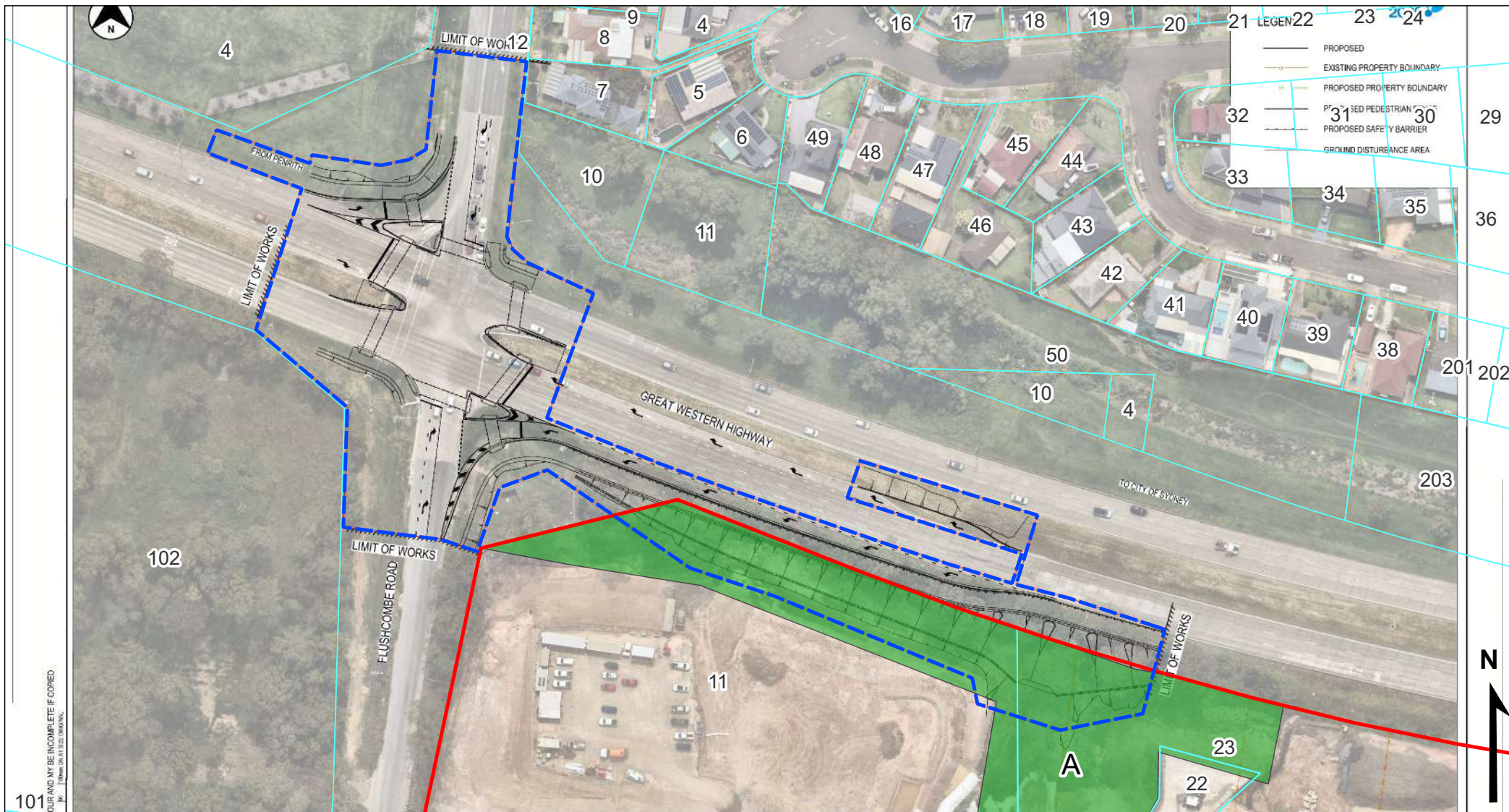


Figure 1a-2.
Augusta Estate boundary, MOD 2 ground disturbance area and lot
boundaries overlaid on the Nearmap aerial photograph dated 17 March 2026 – close up





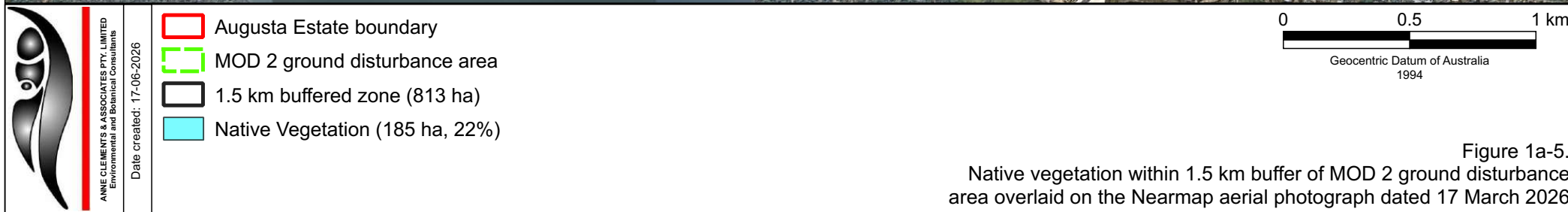
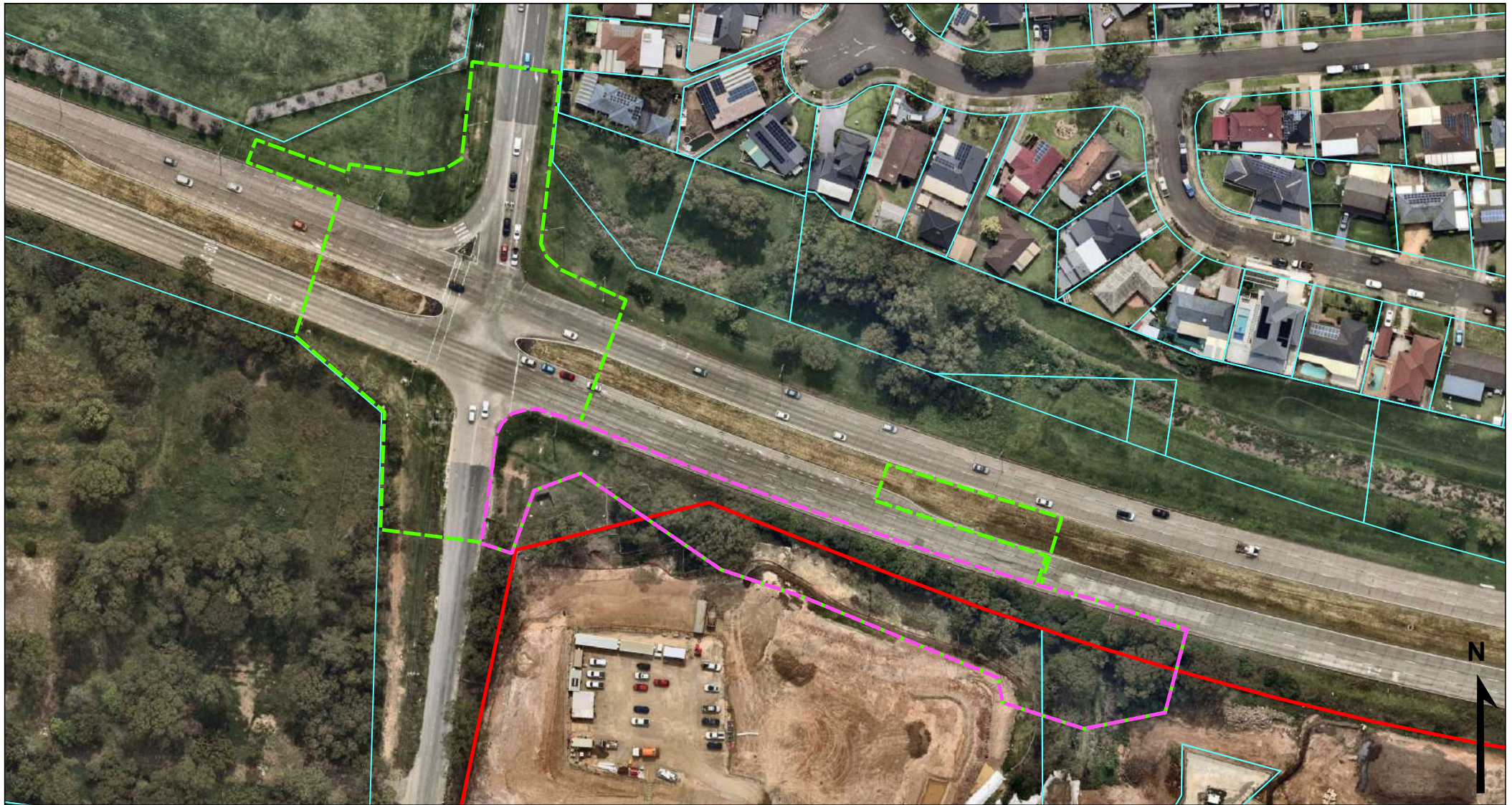


Figure 1a-5.
Native vegetation within 1.5 km buffer of MOD 2 ground disturbance area overlaid on the Nearmap aerial photograph dated 17 March 2026

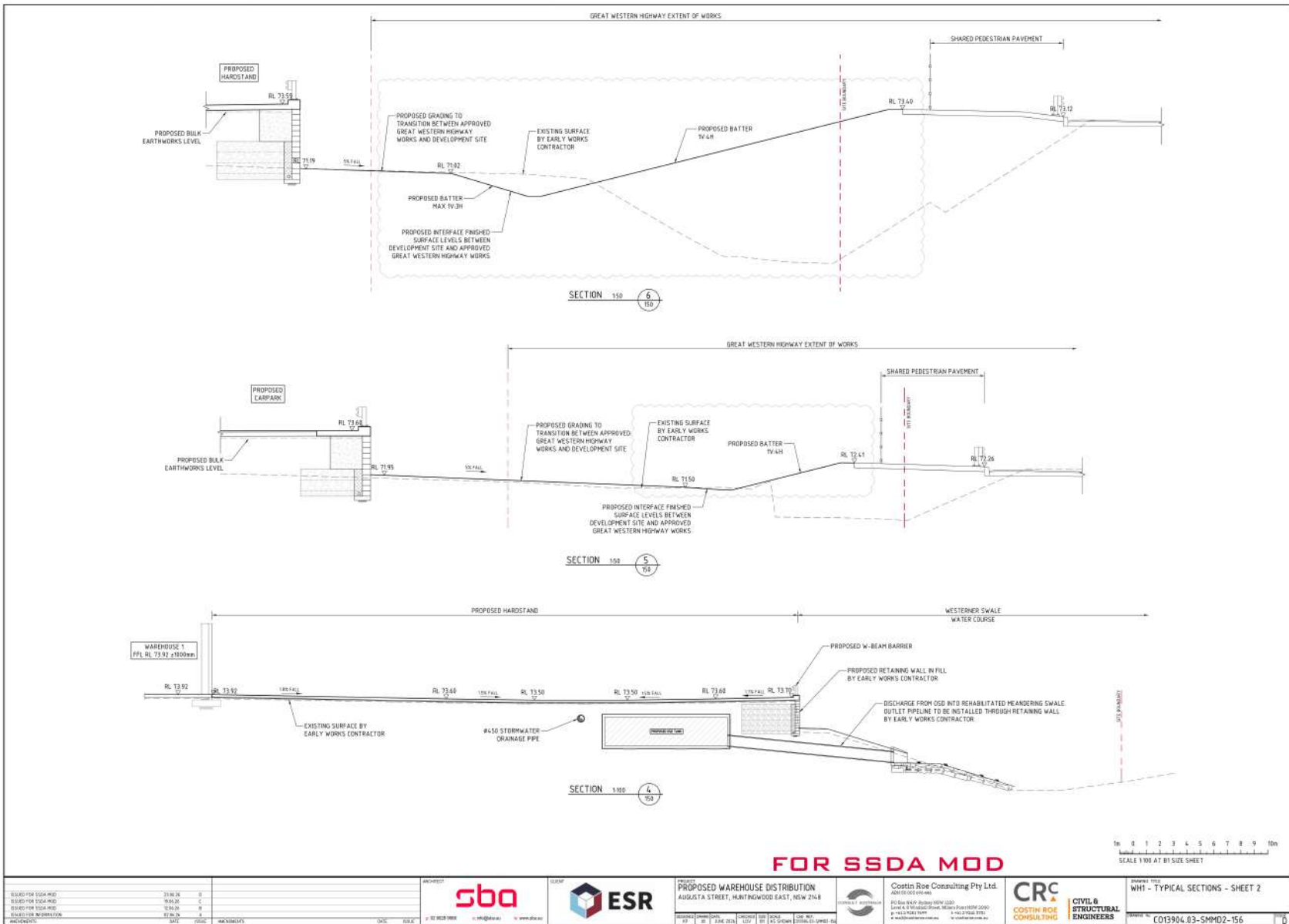


Date created: 07-07-2026

- Augusta Estate boundary
- MOD 2 ground disturbance area
- Subject Land
- Lot boundaries

0 25 50 m
Geocentric Datum of Australia
1994

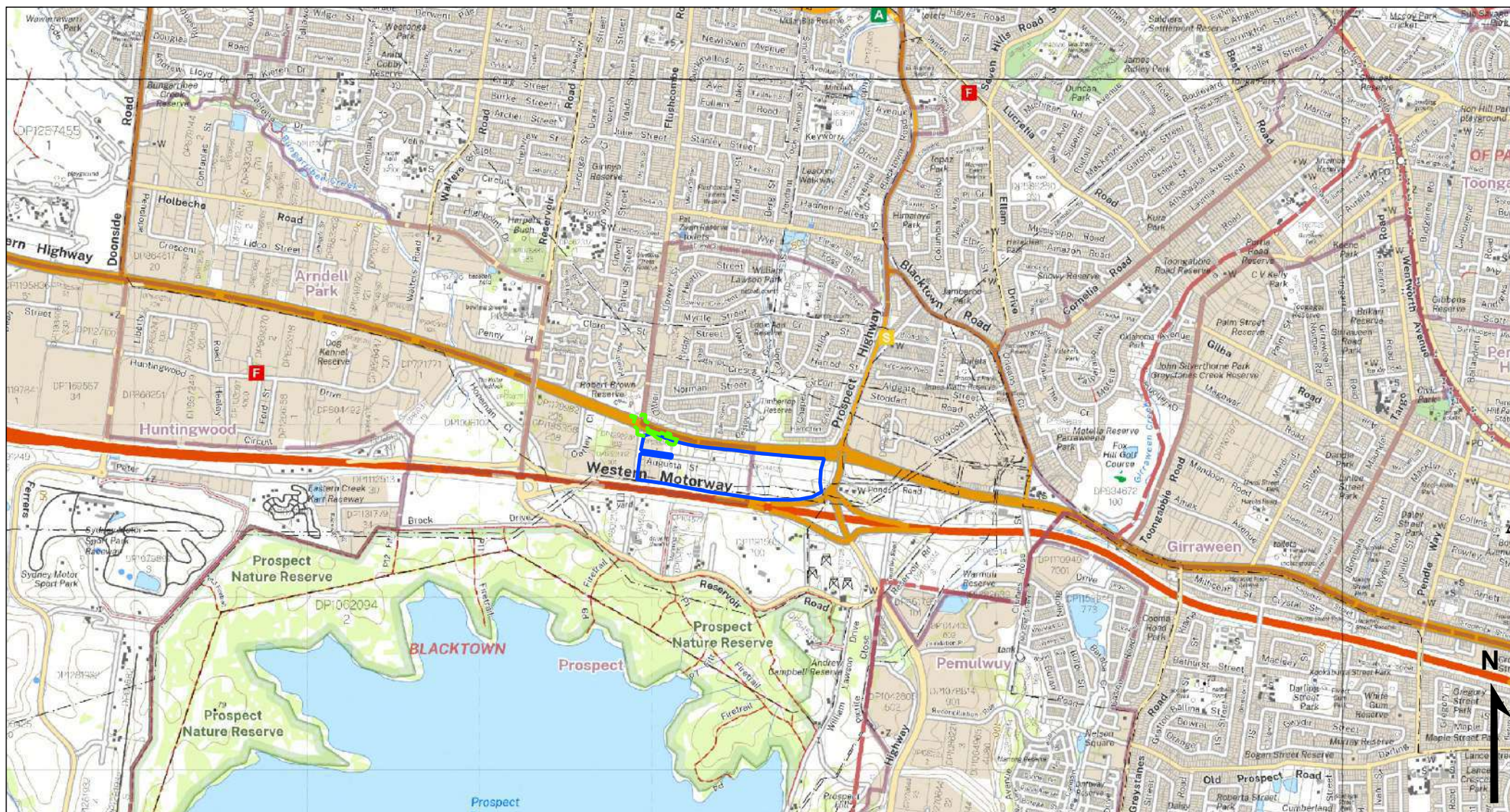
Figure 1a-6.
The Subject Land overlaid on the Nearmap aerial photograph dated 17 March 2026

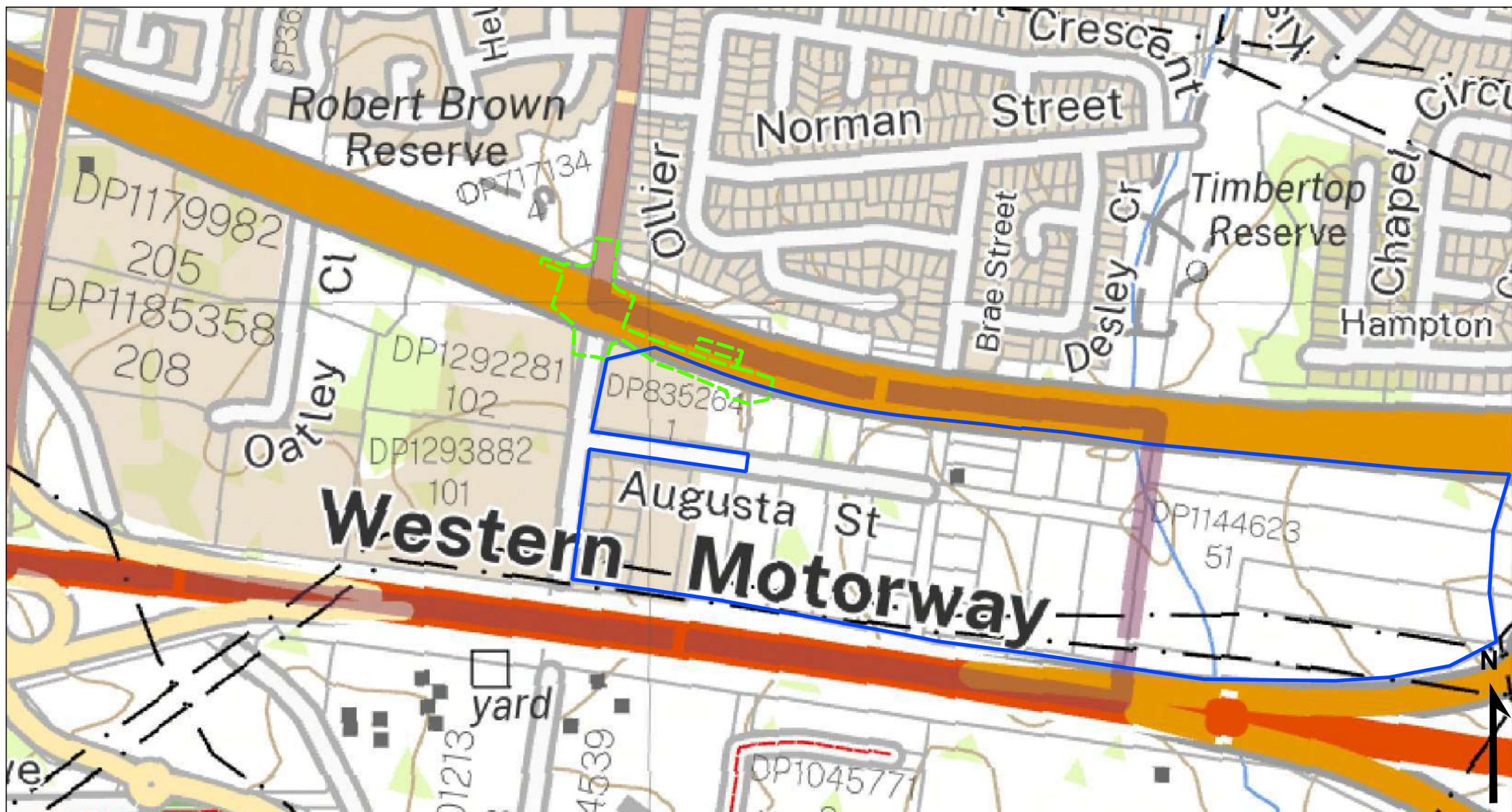


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Date created:
09-07-2026

Figure 1a-7.
Typical sections
(Costin Roe Consulting, Drawing No.C13904.03-SMMD2-156, Rev D dated 23.06.26)





Date created: 07-07-2026

- Augusta Estate boundary
- MOD 2 ground disturbance area

0 100 200 m
Geocentric Datum of Australia
1994

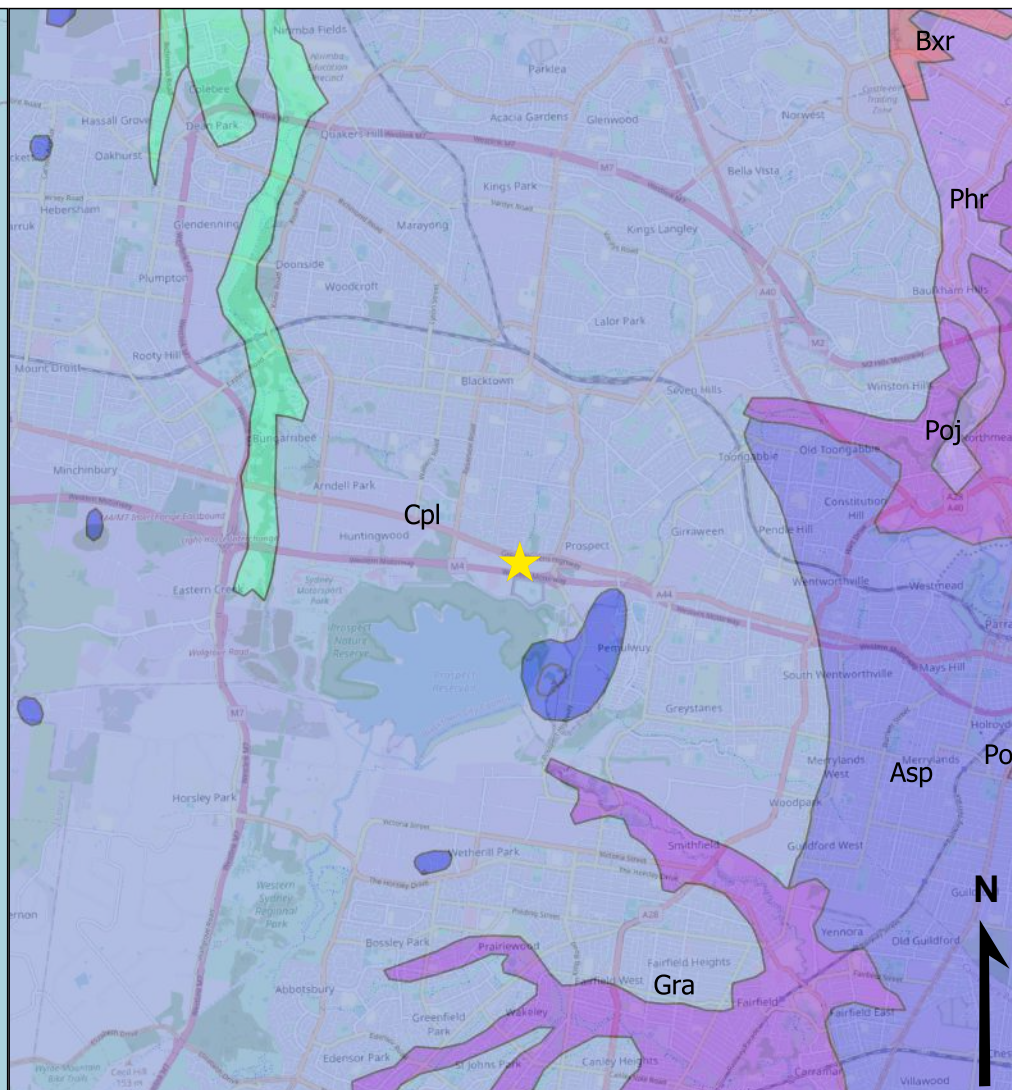
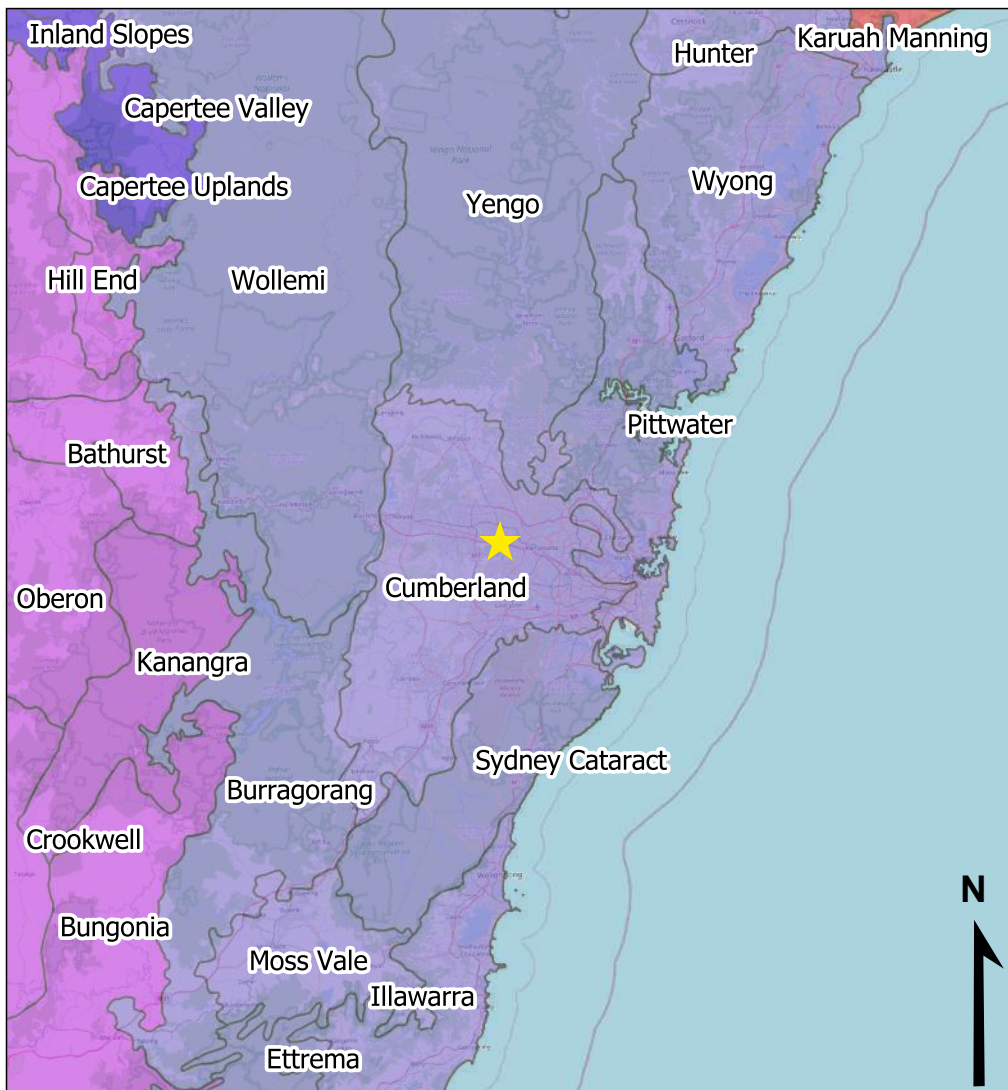
Figure 1b-2.
Augusta Estate boundary and MOD 2 ground disturbance area overlaid
on the Prospect topographic map sheet 9030-2N (Spatial Services) – close up



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24-06-2026

Figure 1b-3.
Excerpt from the LiDAR Figure 1d-2 in the approved SSD 36138263 BDAR,
showing modified landform on the Subject Land



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Date created: 17-03-2022

- ★ Site Location
- NSW North Coast
- NSW South Western Slopes
- South Eastern Highlands
- Sydney Basin

0 20 40 km
Geocentric Datum of Australia

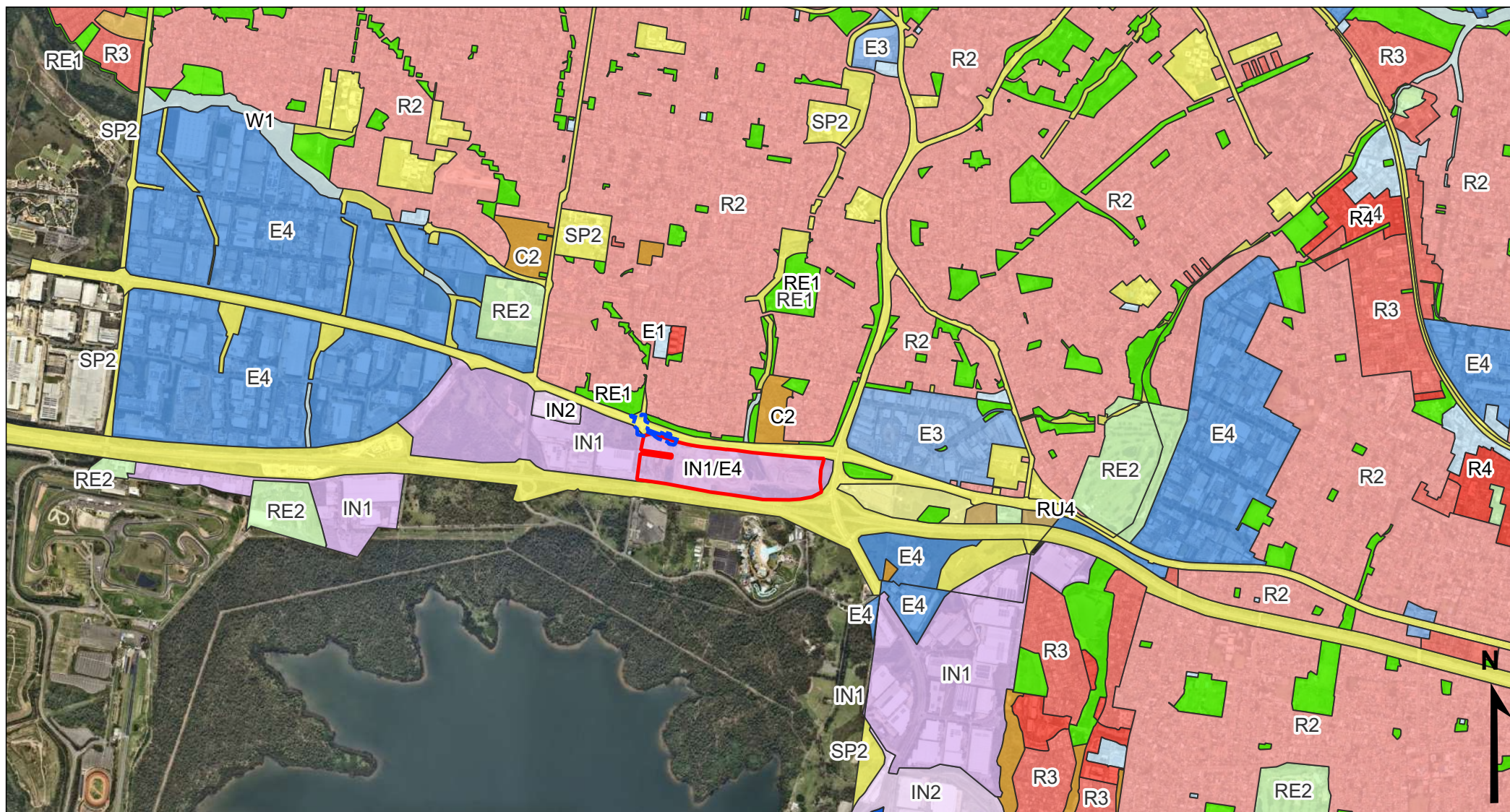
Figure 1c-1.

Site location overlaid on the IBRA subregions map - version 7

- ★ Site Location
- Asp Ashfield Plains
- Bxr Blaxlands Ridge
- Cpl Cumberland Plain
- Gra Georges River Alluvial Plain
- Hac Hawkesbury - Nepean Channels and Floodpl
- Phr Pennant Hills Ridges
- Poj Port Jackson Basin
- Dia Sydney Basin Diatremes

0 2.5 5 km
Geocentric Datum of Australia

Figure 1c-2.
Site location overlaid on the NSW
Mitchell Landscapes - version 3.1



Date created: 18-06-2026

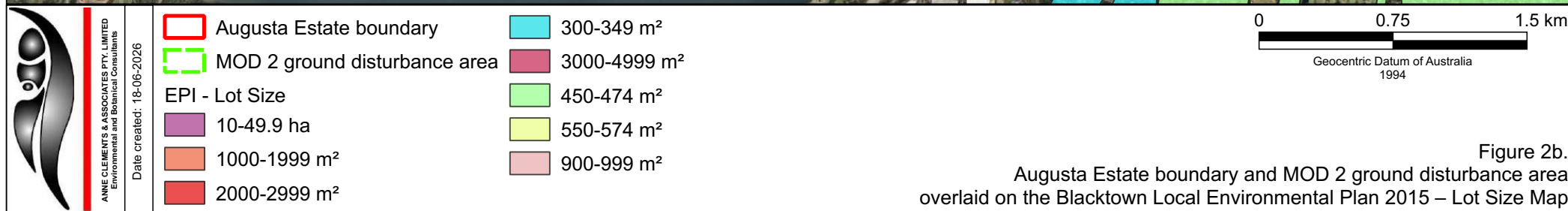
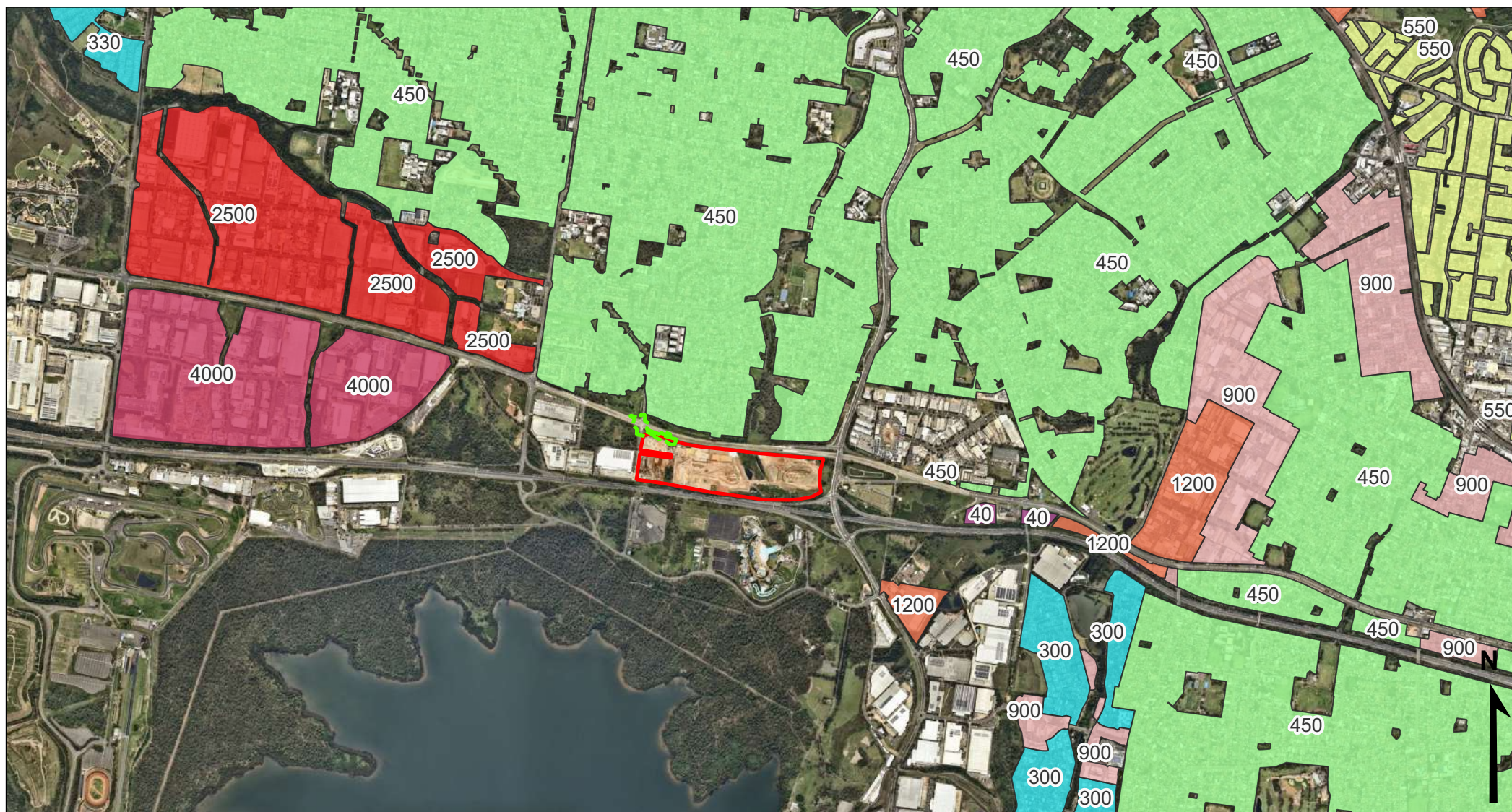
MOD 2 ground disturbance area
Augusta Estate boundary
EPI - Land Zoning
 C2 - Environmental Conservation
 C3 - Environmental Management
 E1 - Local Centre
 E3 - Productivity Support

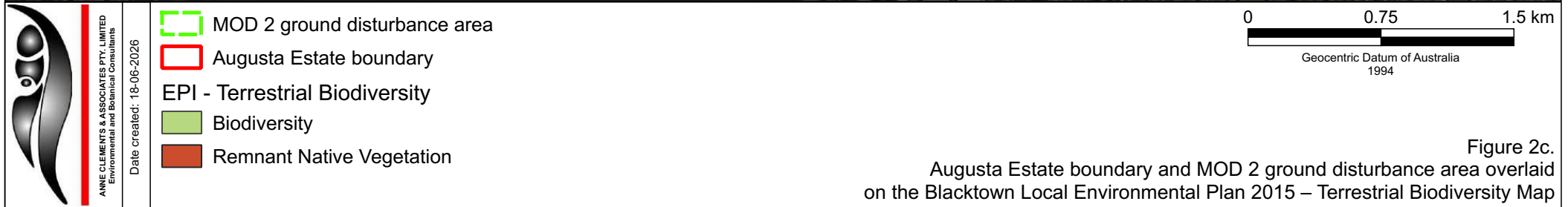
E4 - General Industrial
 IN1 - General Industrial
 IN2 - Light Industrial
 R2 - Low Density Residential
 R3 - Medium Density Residential
 R4 - High Density Residential
 RE1 - Public Recreation

RE2 - Private Recreation
 RU4 - Primary Production Small Lots
 SP1 - Special Activities
 SP2 - Infrastructure
 W1 - Natural Waterways

0 0.75 1.5 km
 Geocentric Datum of Australia
 1994

Figure 2a.
Augusta Estate boundary and MOD 2 ground disturbance area overlaid on the Blacktown Local Environmental Plan 2015 – Land Zoning Map



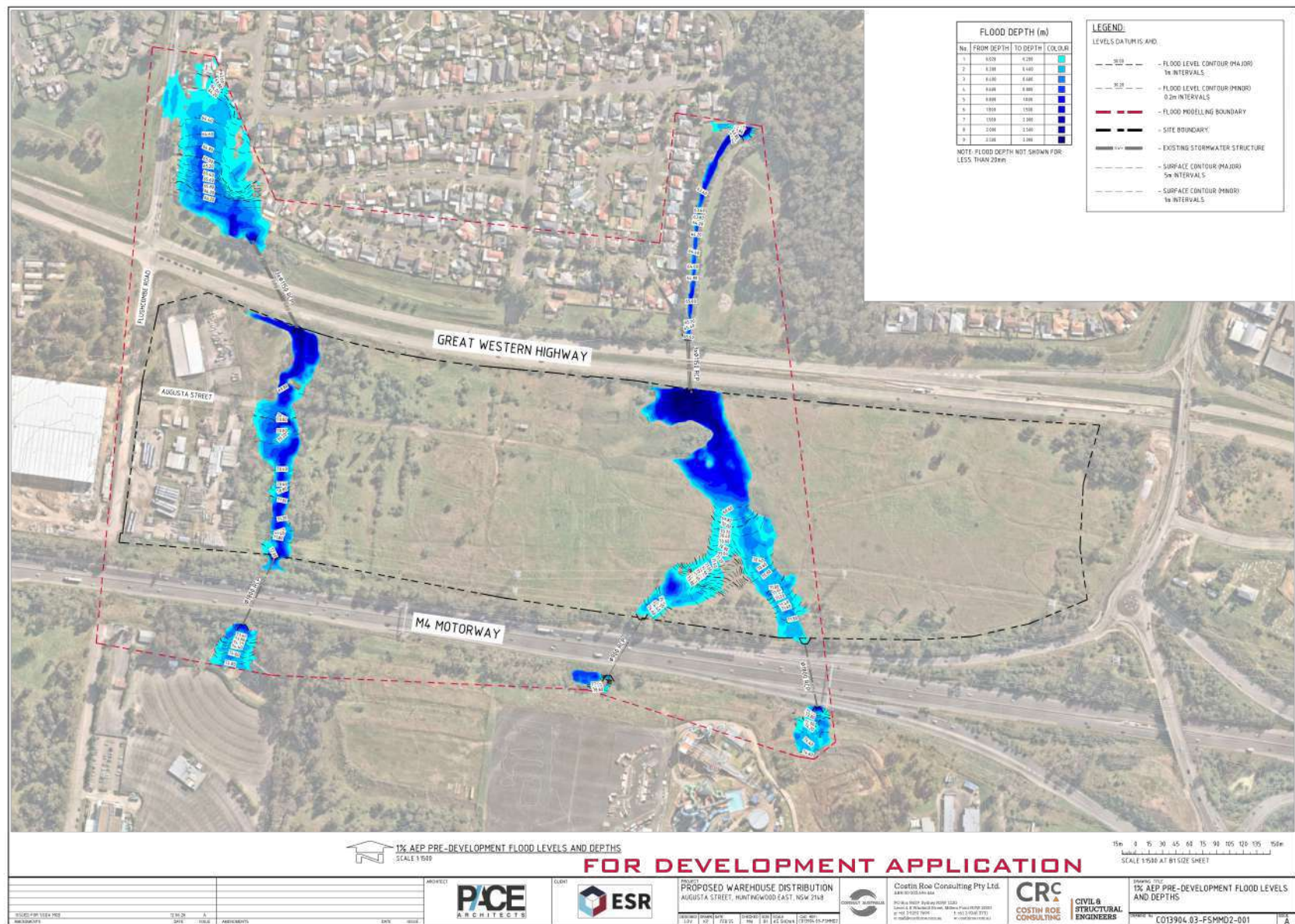




- ▭ Augusta Estate boundary
- ▭ MOD 2 ground disturbance area

Figure 2d.
Augusta Estate boundary and MOD 2 ground disturbance area overlaid on Huntingwood
Precinct Development Framework (from Figure 4, page 7 of the Huntingwood Precinct DCP)

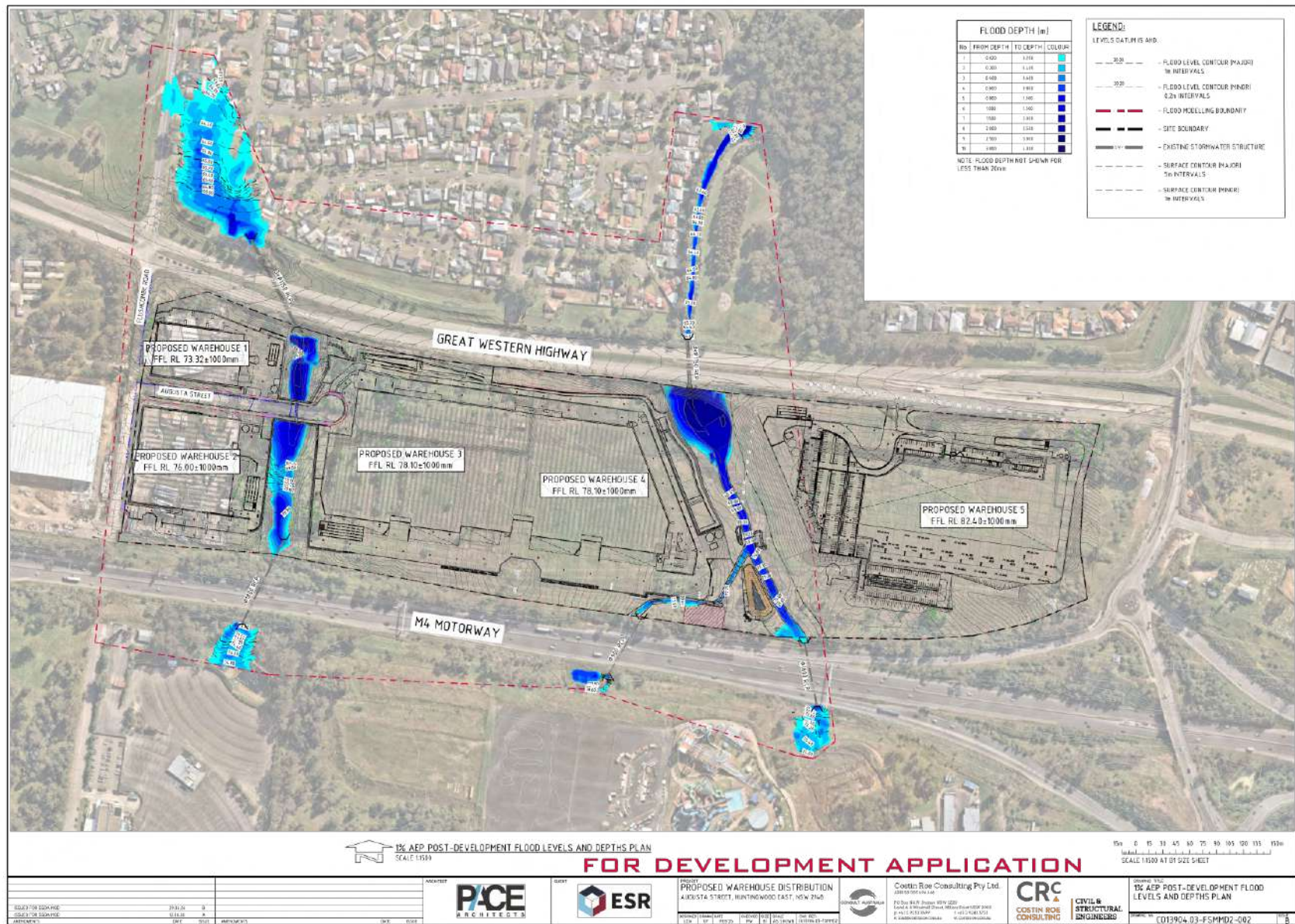




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Date created:
08-07-2026

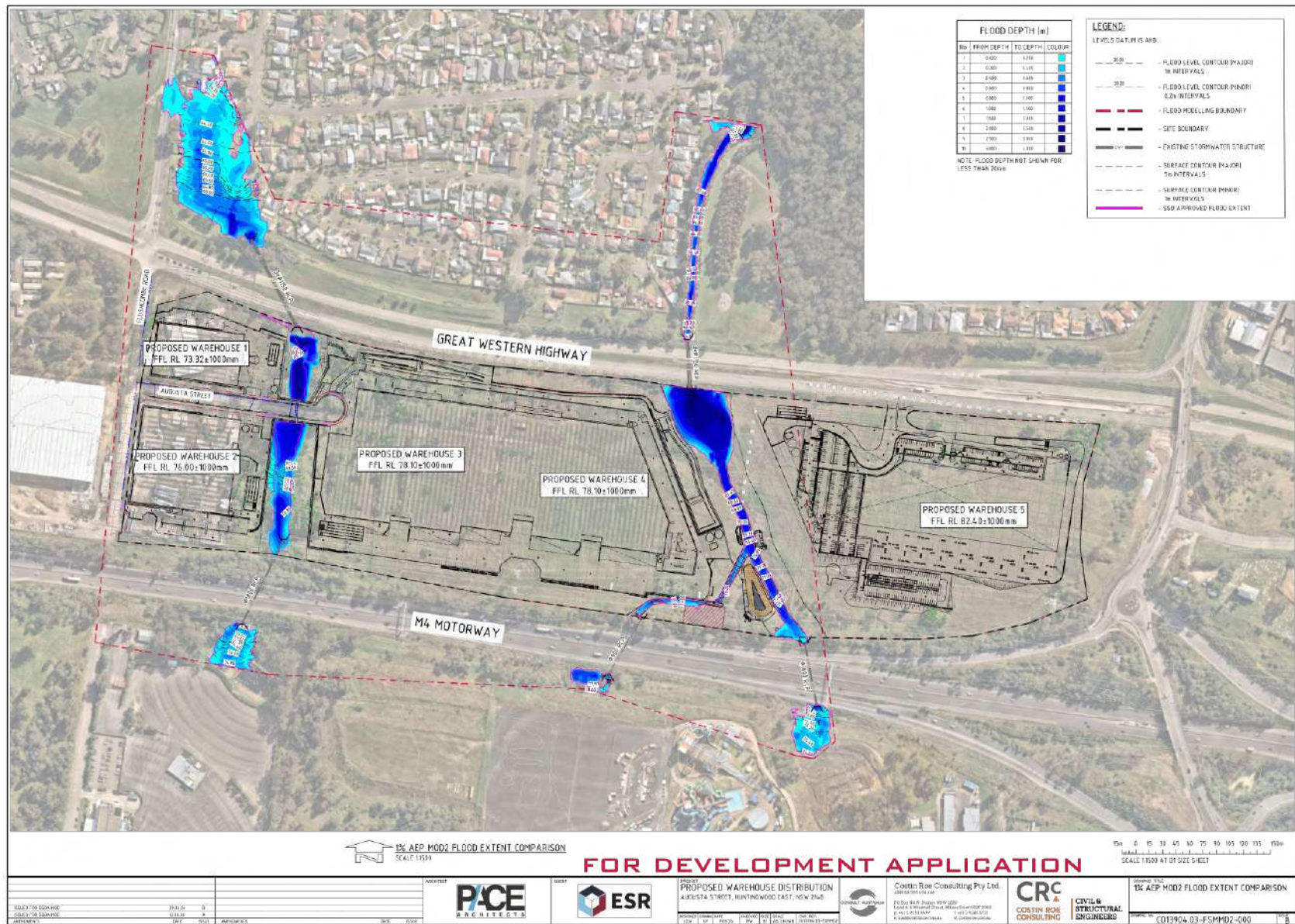
Figure 2f-1.
1% AEP pre-development flood levels and depth (Costin Roe Consulting Pty Ltd, Drawing No. C013904.03-F001. Issue A. Dated 23.06.23)



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Figure 2f-2.
1% AEP post-development flood levels and depths plan (Costin Roe Consulting Pty Ltd, Drawing No. C013904.03-FSMMD2-002. Issue B. Dated 29.06.26)



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Date created:
08-07-2026

Figure 2f-3.
1% AEP MOD 2 Flood Extent Comparison (Costin Roe Consulting Pty Ltd, Drawing No. C013904.03-FSMMD2-000. Issue B. Dated 29.06.26)

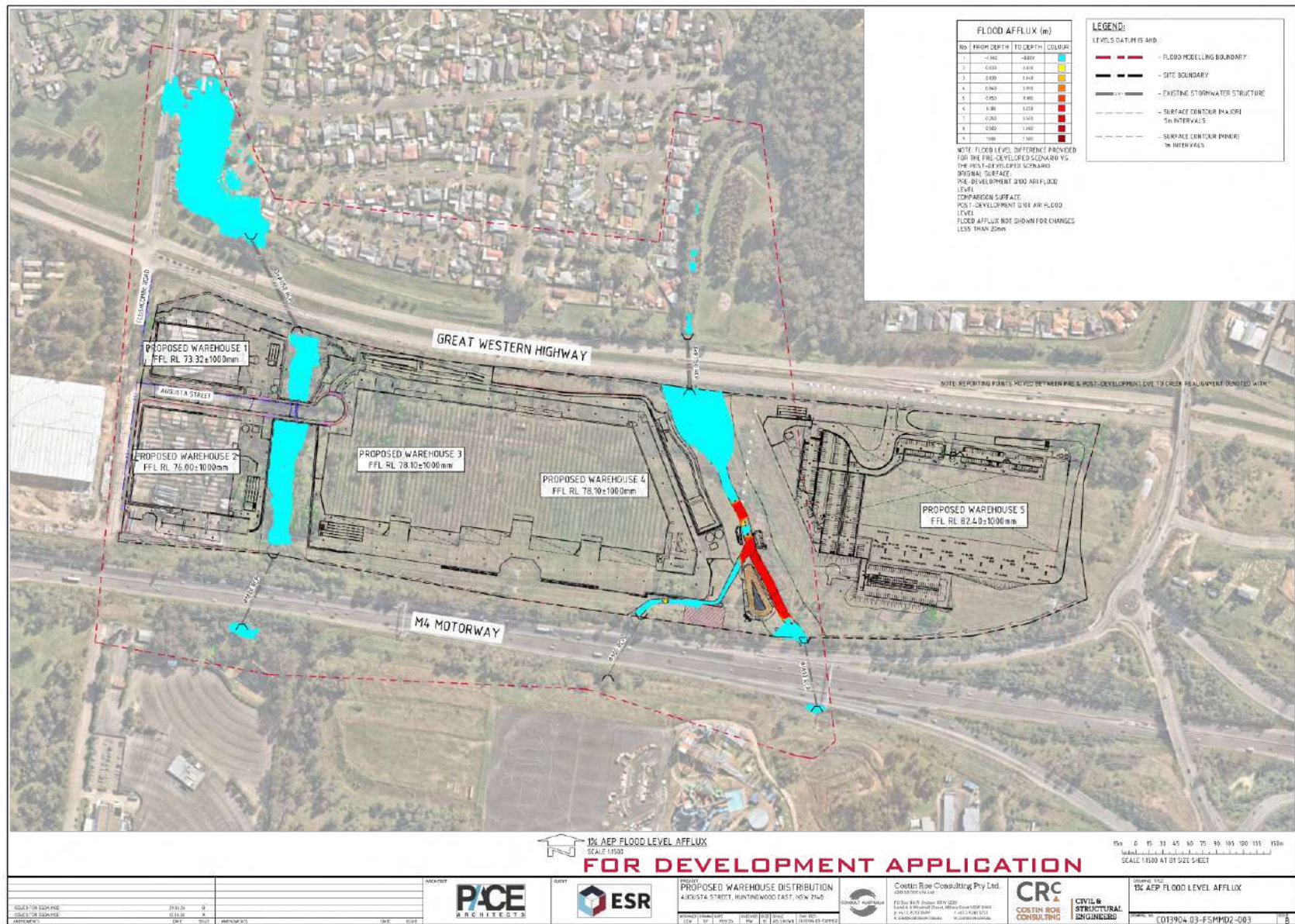
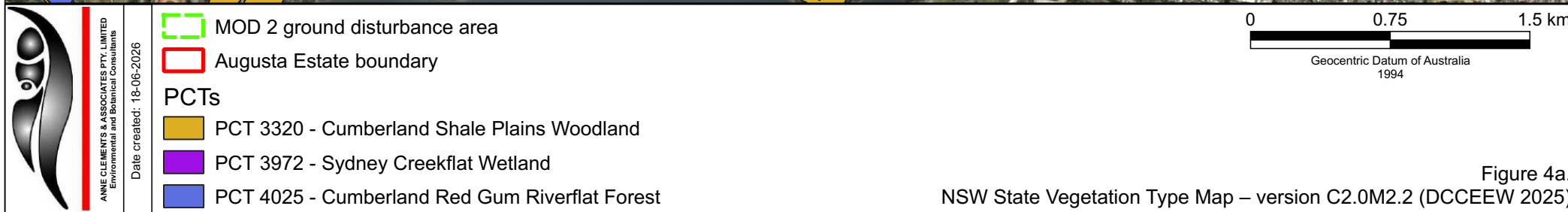
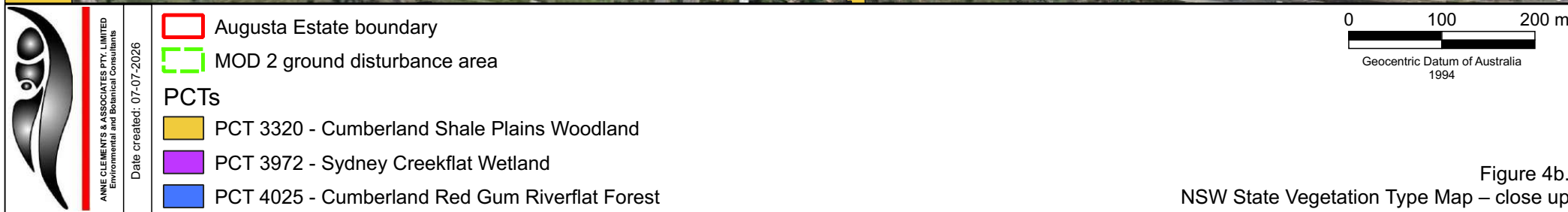
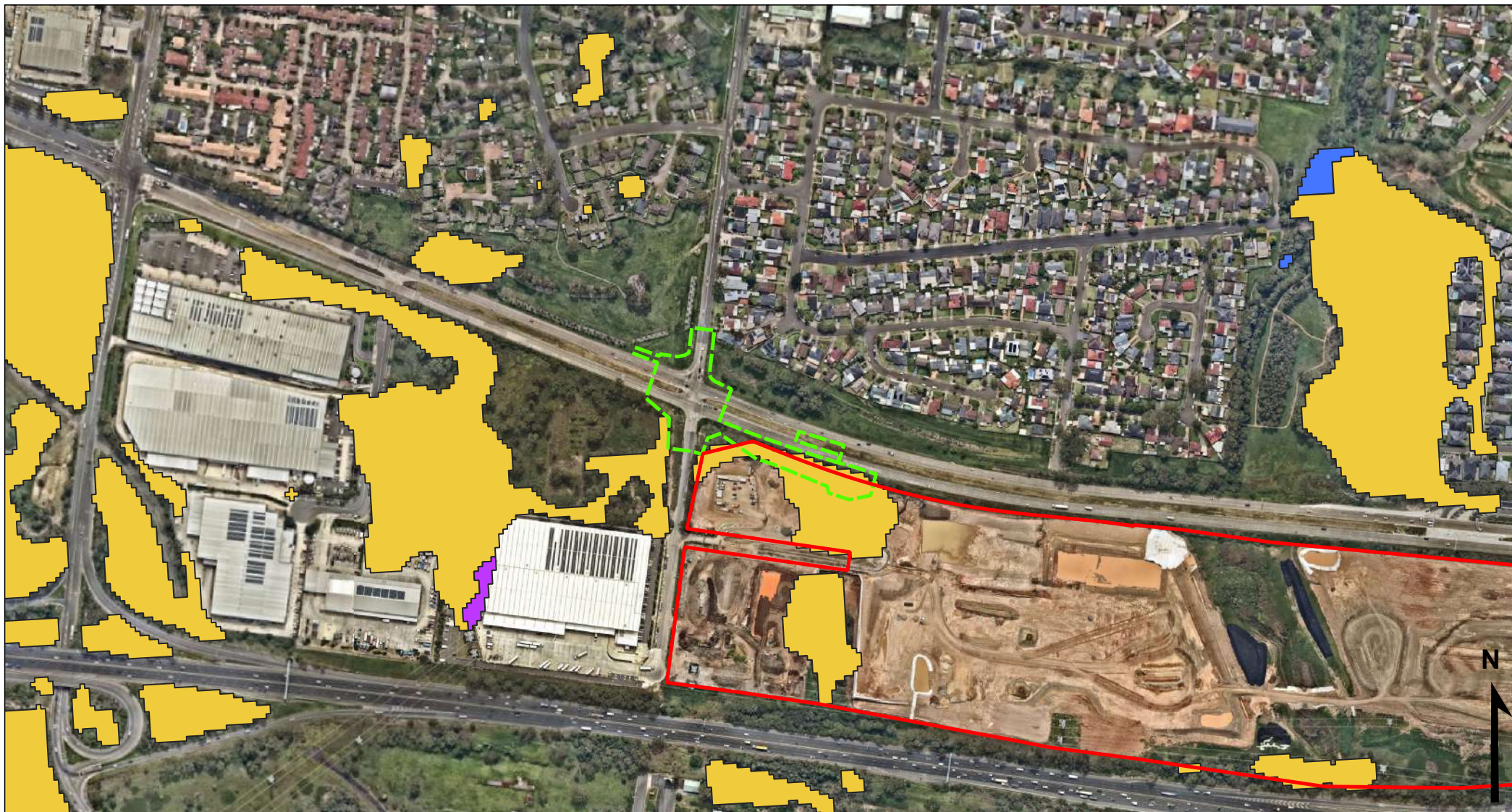
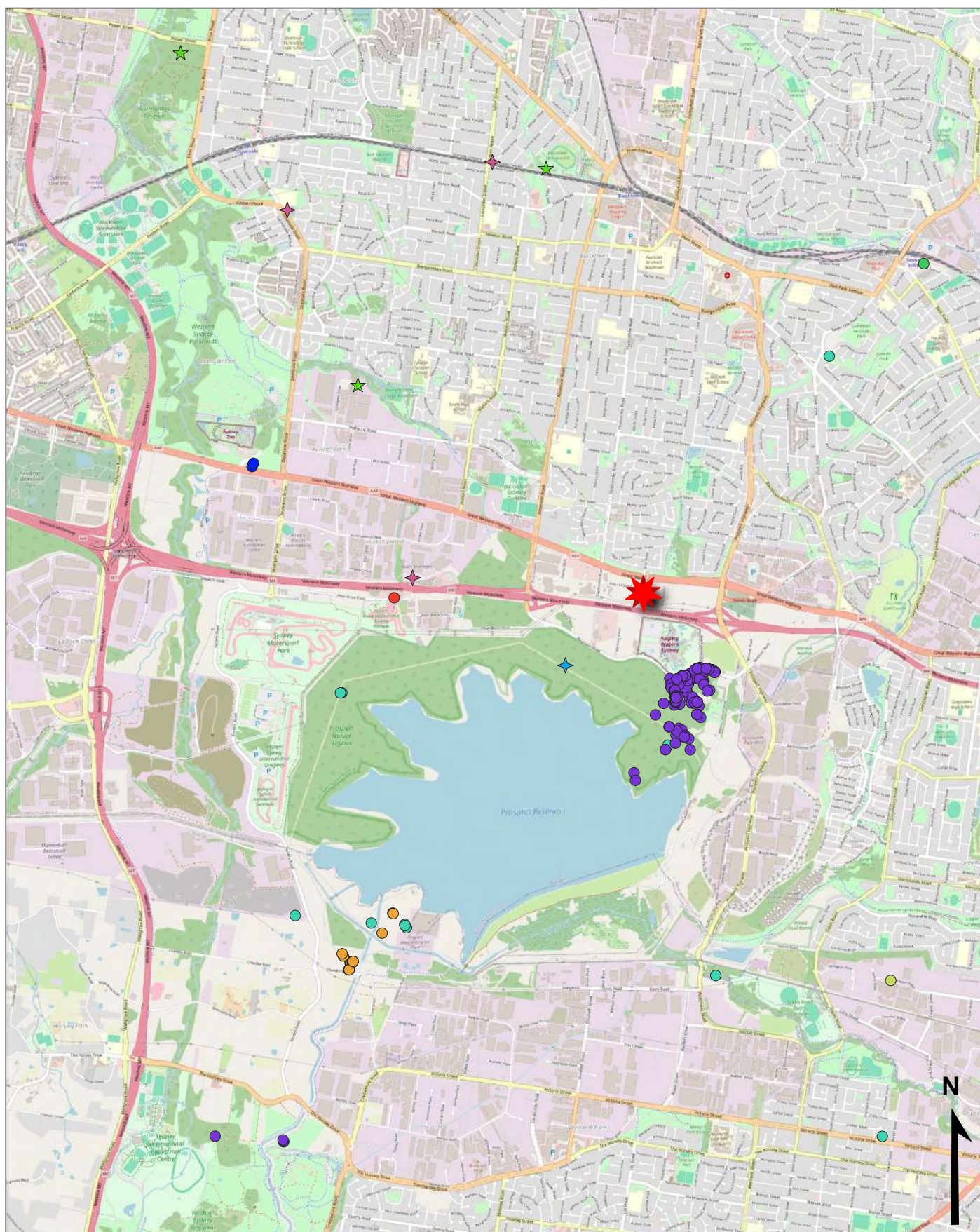


Figure 2f-4.
1% AEP Flood Level Afflux (Costin Roe Consulting Pty Ltd, Drawing No. C013904.03-FSMMD2-003. Issue B. Dated 29.06.26)







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Date created: 17-06-2026



Site location

BioNet Flora Records

- *Acacia pubescens*
- ◆ *Eucalyptus nicholii*
- *Eucalyptus scoparia*
- ★ *Grevillea juniperina* subsp. *juniperina*

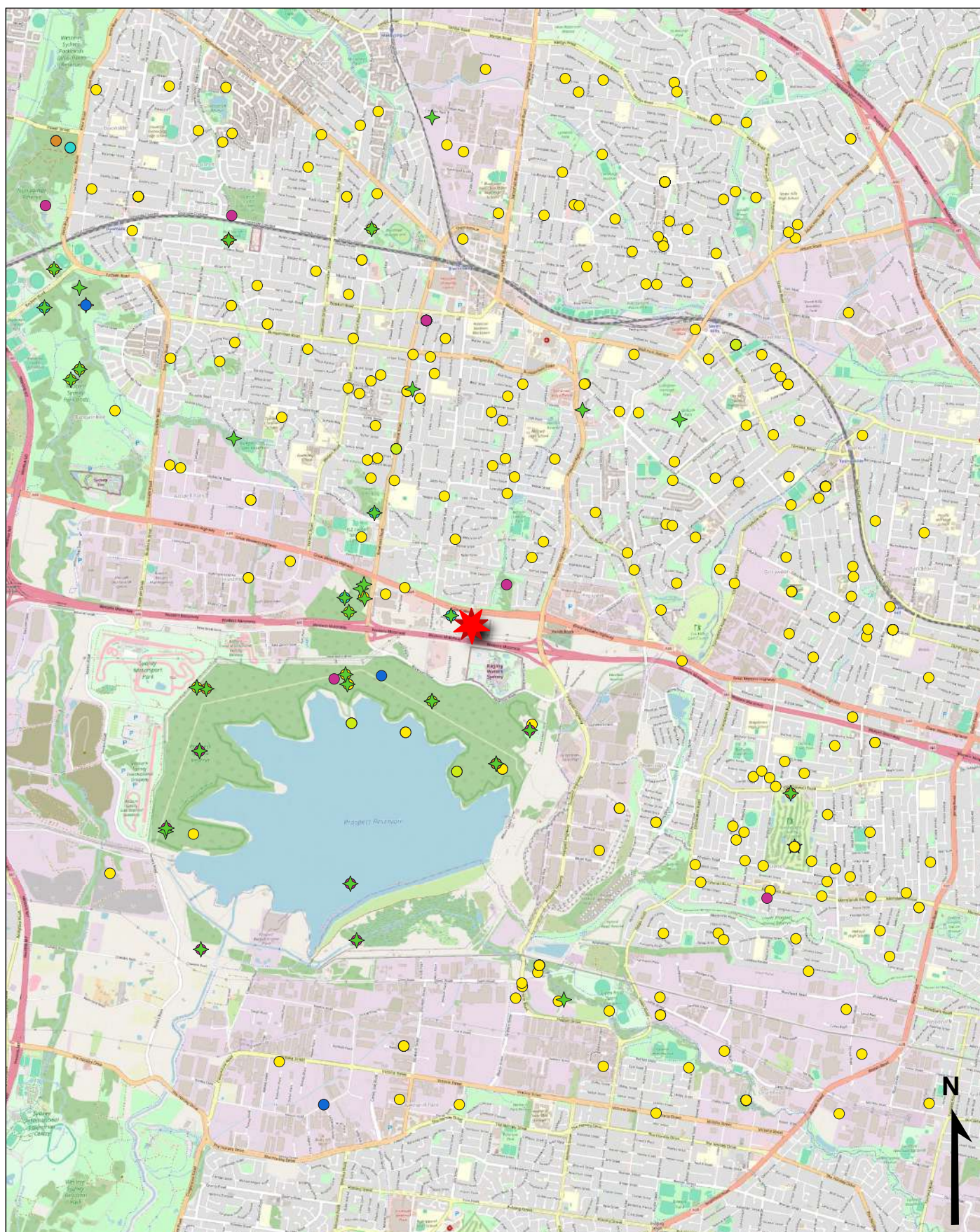
- *Marsdenia viridiflora* subsp. *viridiflora*
- *Persicaria elatior*
- *Pimelea curviflora* var. *curviflora*
- *Pimelea spicata*
- ◆ *Pultenaea parviflora*
- *Syzygium paniculatum*

0 0.75 1.5 km

Geocentric Datum of Australia
1994

Figure 5a.

Site location and BioNet records of threatened flora species overlaid on the OpenStreetMap imagery



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Date created: 17-06-2026



Site location

BioNet Mammal Records

- Eastern Coastal Free-tailed Bat
- Eastern False Pipistrelle
- Greater Broad-nosed Bat



Grey-headed Flying-fox



Large Bent-winged Bat



Little Bent-winged Bat



Southern Myotis



Spotted-tailed Quoll

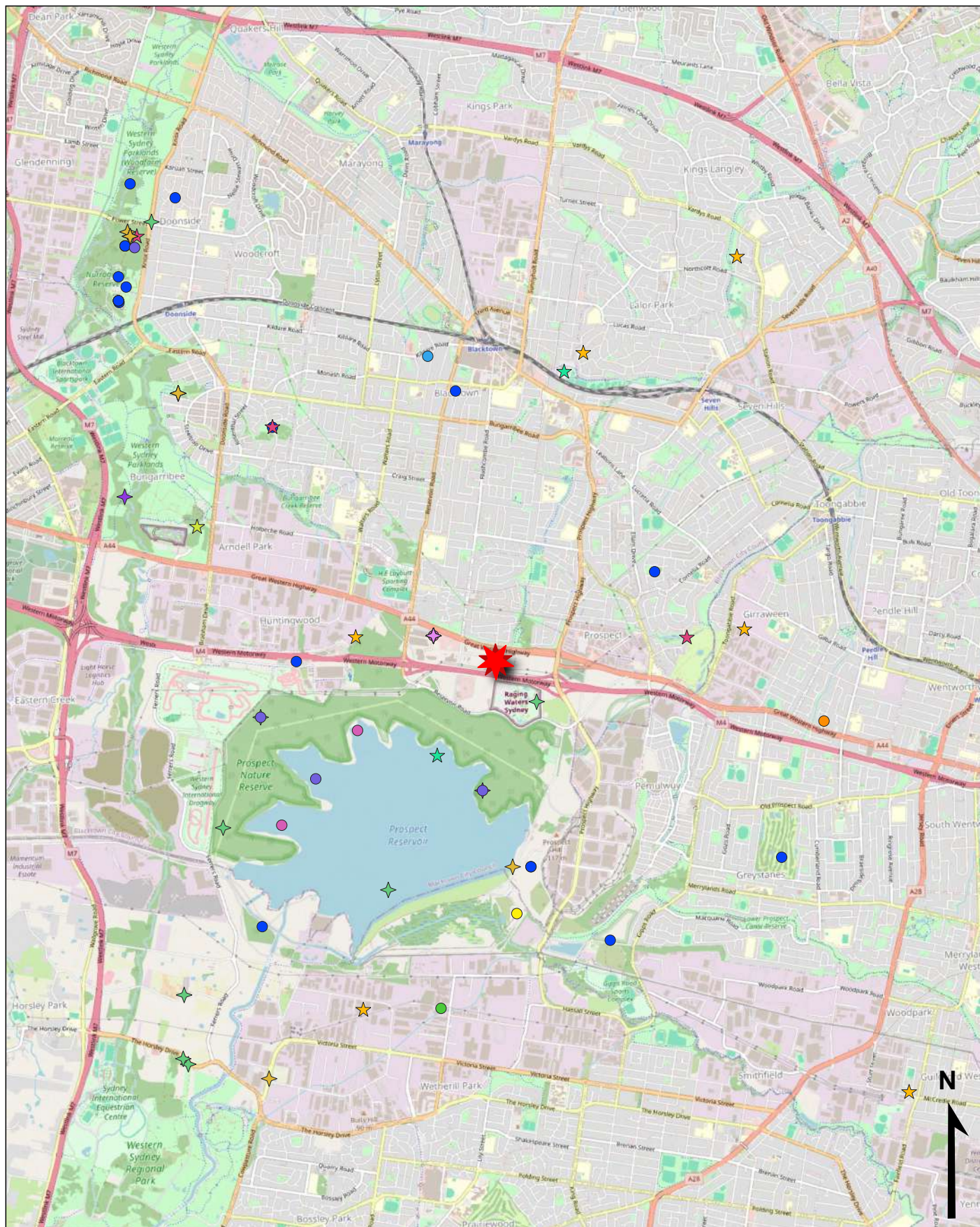


Yellow-bellied Sheathtail-bat

0 0.75 1.5 km

Geocentric Datum of Australia
1994

Figure 5b.
Site location and BioNet records of threatened
mammal species overlaid on the OpenStreetMap imagery



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Date created: 17-06-2026



Site location

BioNet Bird Records

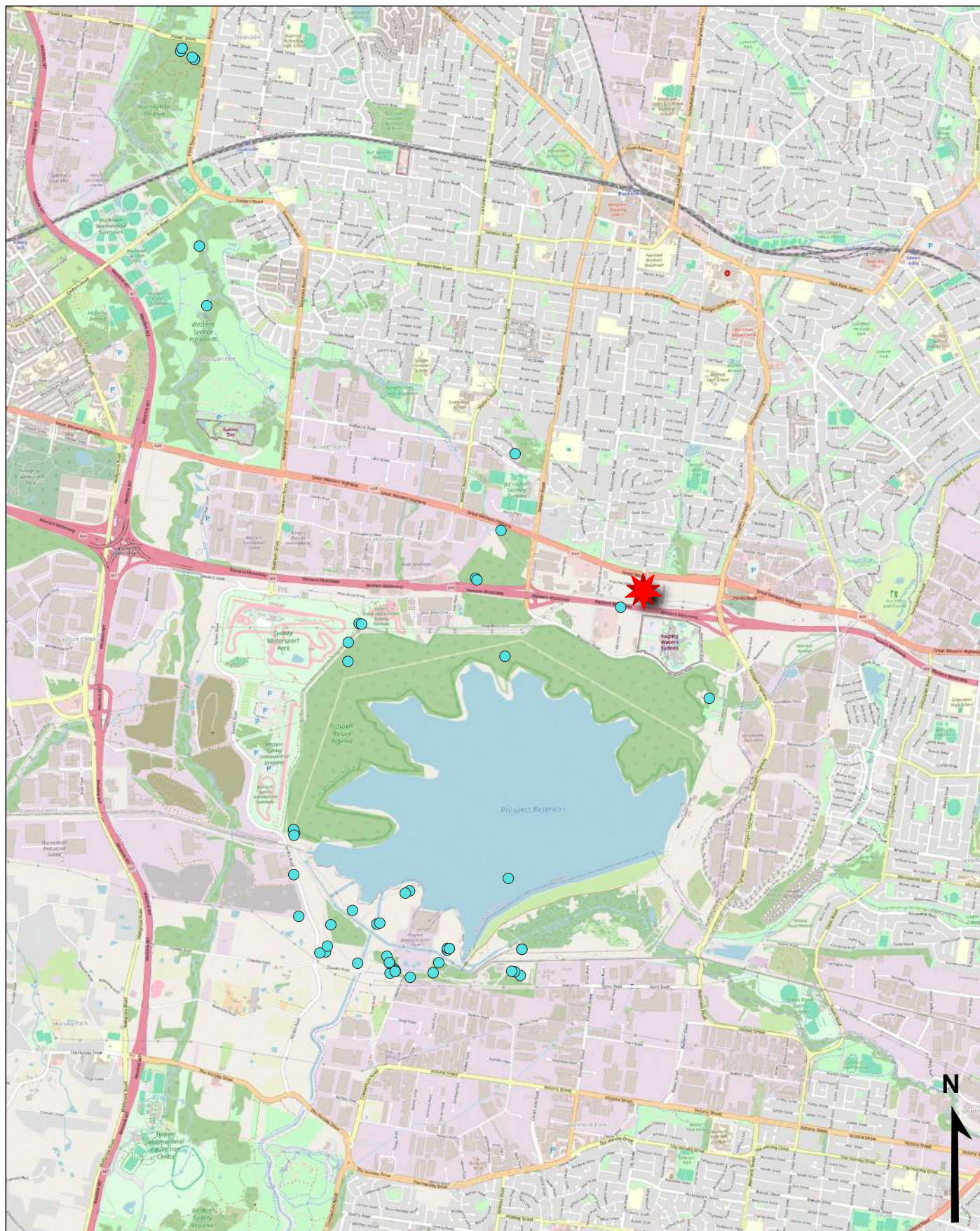
- Orange circle: Barking Owl
- Yellow diamond: Dusky Woodswallow
- Blue circle: Gang-gang Cockatoo
- Green star: Grey Plover
- Yellow-green star: Latham's Snipe
- Green star: Little Eagle

- Pink star: Little Lorikeet
- Purple circle: Masked Owl
- Yellow star: Powerful Owl
- Purple diamond: Regent Honeyeater
- Green circle: Square-tailed Kite
- Blue circle: Swift Parrot
- Yellow circle: Turquoise Parrot
- Purple circle: Varied Sittella
- Purple diamond: White-throated Needletail

0 1 2 km

Geocentric Datum of Australia
1994

Figure 5c.
Site location and BioNet
records of threatened bird species
overlaid on the OpenStreetMap imagery



ANNE CLEMENTS & ASSOCIATES PTY. LIMITED
Environmental and Botanical Consultants

Date created: 17-06-2026



Site location

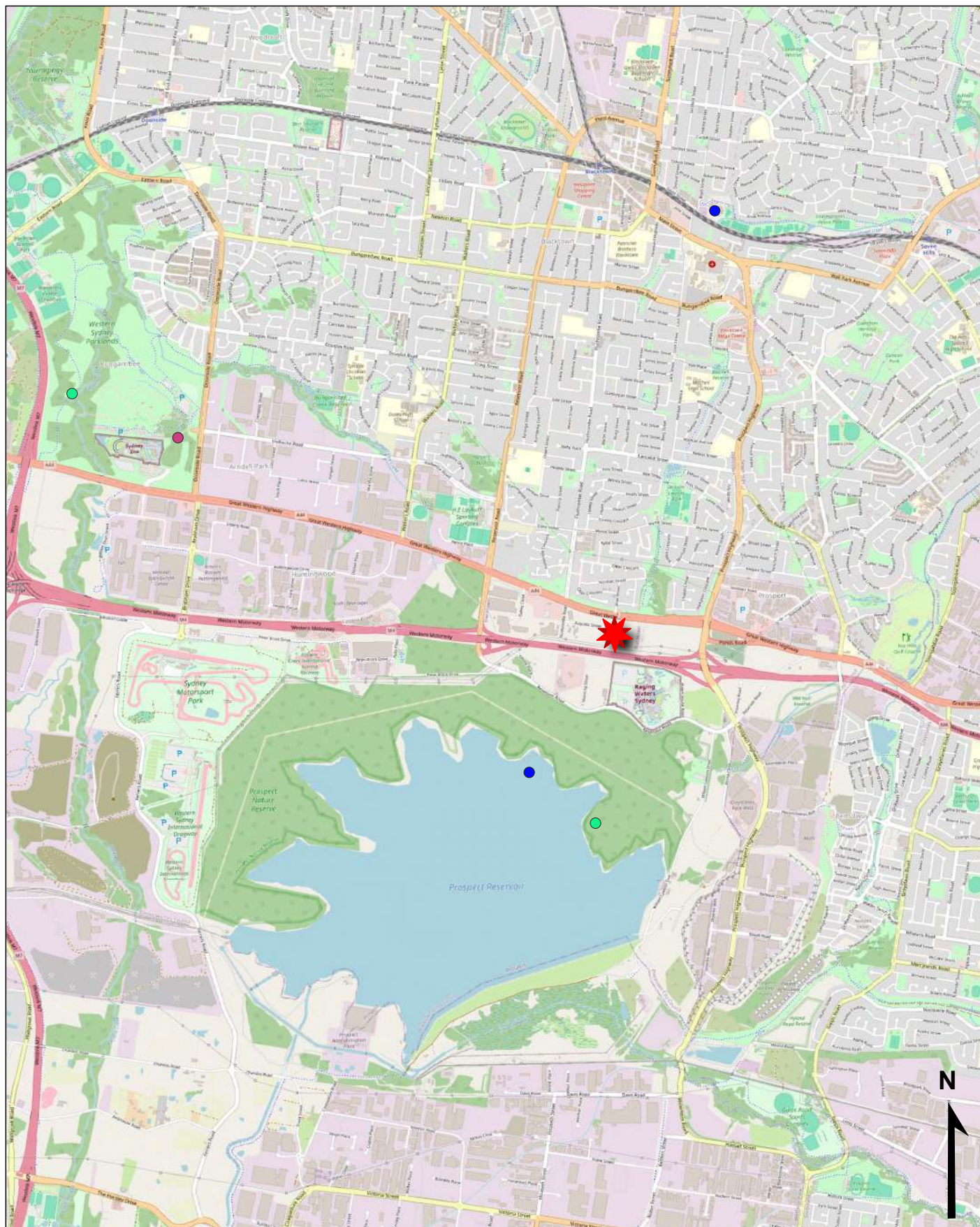
BioNet Gastropod Records

● Cumberland Plain Land Snail

0 0.75 1.5 km

Geocentric Datum of Australia
1994

Figure 5d.
Site location and BioNet records of threatened
gastropod species overlaid on the OpenStreetMap imagery



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Date created: 17-06-2026



Site location

BioNet Migratory Bird Records

- Grey Plover
- Latham's Snipe
- White-throated Needletail

0 0.75 1.5 km

Geocentric Datum of Australia
1994

Figure 5e.
Site location and BioNet records of threatened
migratory bird species overlaid on the OpenStreetMap imagery



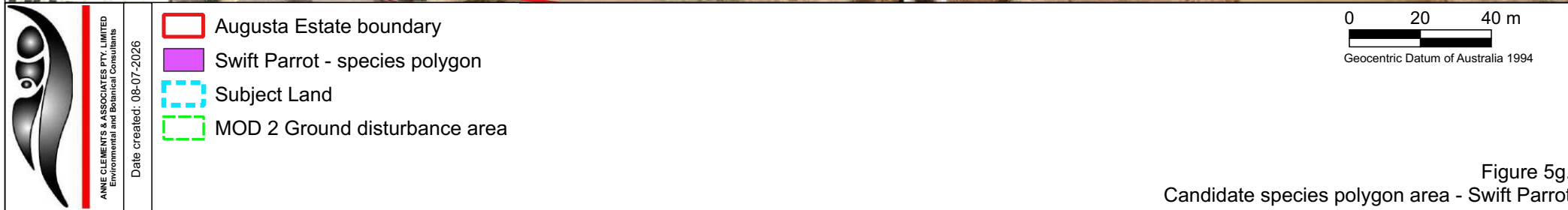
ANNE CLEMENTS & ASSOCIATES PTY. LIMITED
Environmental and Botanical Consultants

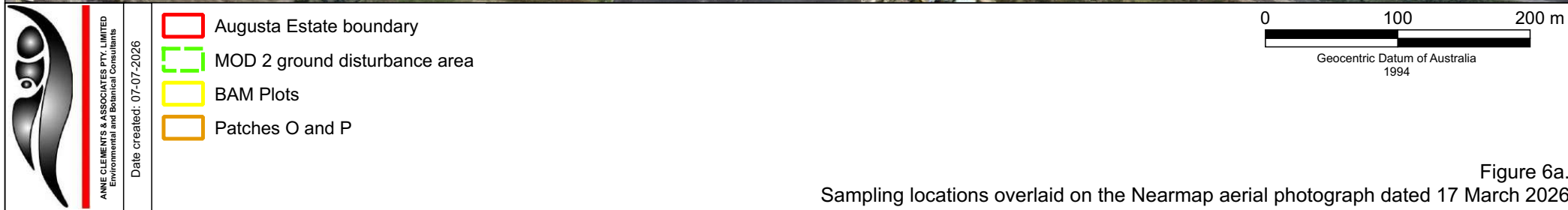
Date created: 08-07-2026

- Augusta Estate boundary
- MOD 2 Ground disturbance area
- Swift Parrot mapped Important Area

0 20 40 m
Geocentric Datum of Australia 1994

Figure 5f.
Important Habitat map for the Swift Parrot





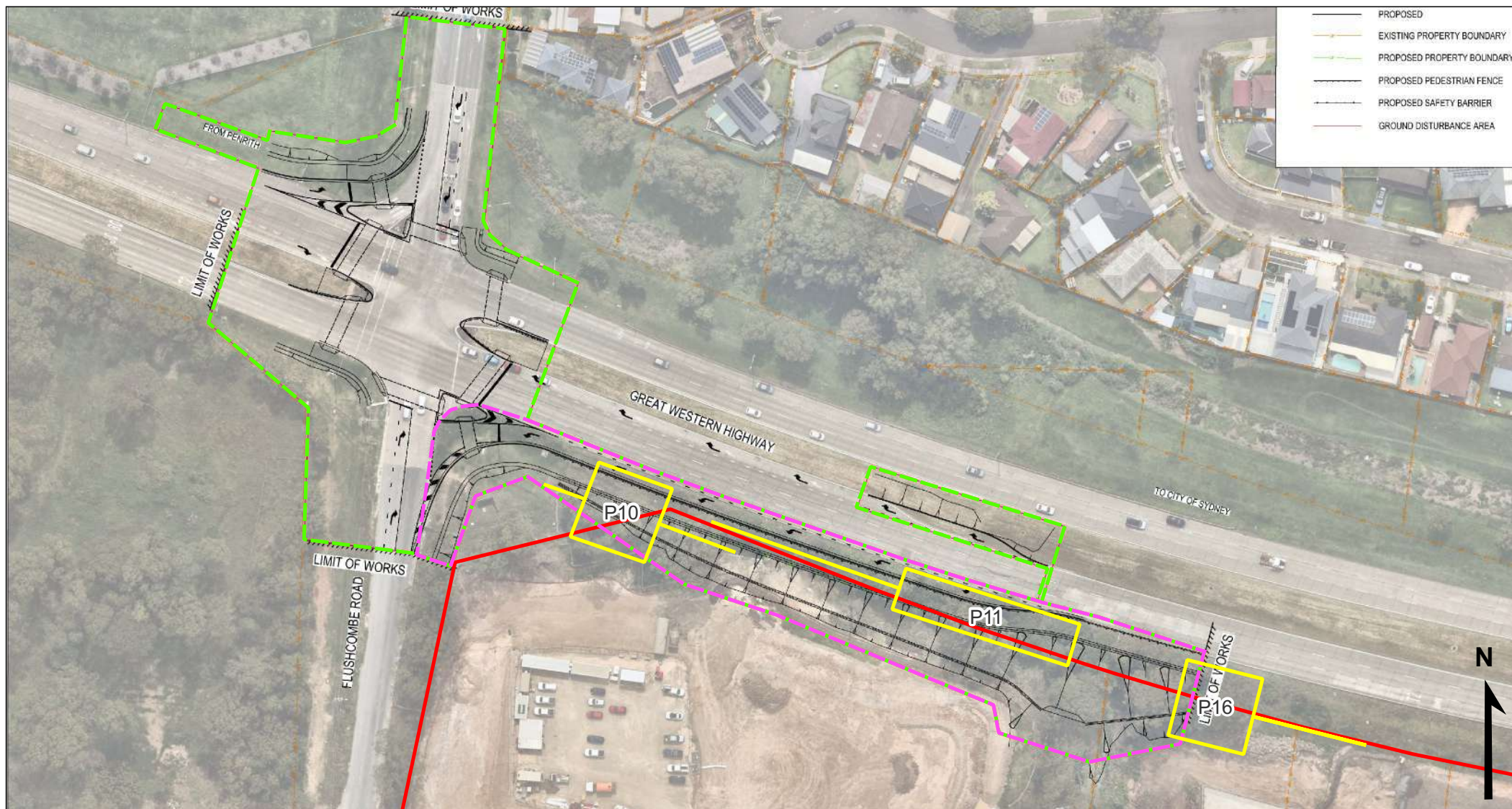
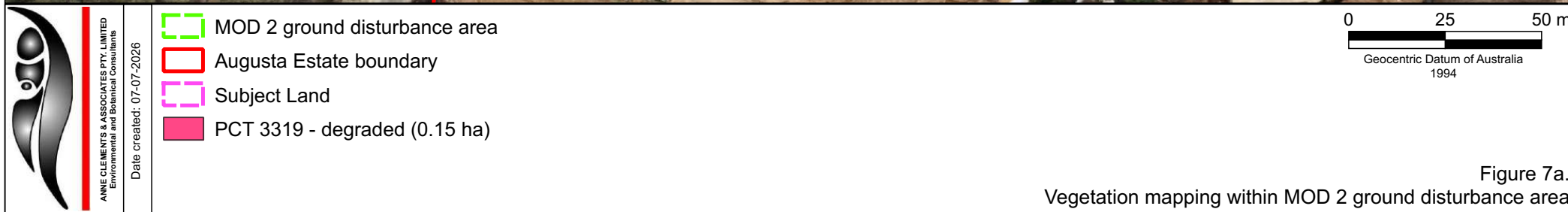


Figure 6b.
Sampling locations within the MOD 2 affected area





Date created: 07-07-2026

- Augusta Estate boundary
- MOD 2 ground disturbance area
- Subject Land
- PCT 3319 in Conservation Area (0.09 ha)
- PCT 3319 in road reserve (0.06 ha)
- Conservation Area A

0 25 50 m
Geocentric Datum of Australia
1994

Figure 7b.
Vegetation impacted within MOD 2 ground disturbance area

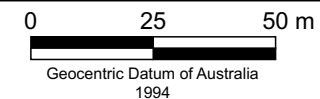
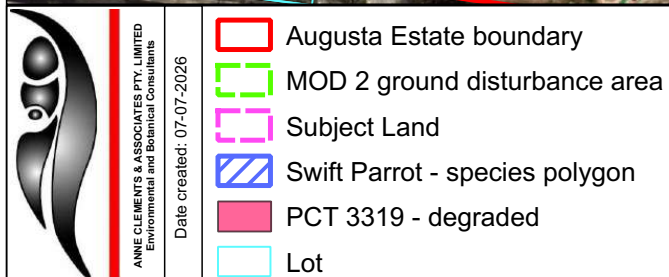


Figure 7c.
Mapped Important habitat for the Swift Parrot overlaid on the Vegetation Zone

Tables

Table 1. Species cover recorded in BAM Plots 10, 11 and 16

	Species	BAM Plots										
		P10-1	P10-2	P10-3	P10-4	P10 av	P11-1	P11-2	P11-3	P11-4	P11-av	P16-av
	Tree (TG)											
#	<i>Acacia saligna</i>								0.1	0.1		
	<i>Eucalyptus moluccana</i>	16	15	50	30	30					50	
	<i>Eucalyptus tereticornis</i>						10	40		15	15	
#	<i>Grevillea robusta</i>						2			0.5		
	<i>Melaleuca linariifolia</i>										5	
	Shrub (SG)											
	<i>Acacia implexa</i>						20			5		
	<i>Bursaria spinosa</i>										1	
	Other (OG)											
	<i>Convolvulus erubescens</i>								0.1	0.1		
	<i>Glycine tabacina</i>			0.1	0.2	0.1						
	Grass & Grasslike (GG)											
	<i>Bothriochloa macra</i>	0.5		0.1		0.2						
	<i>Cynodon dactylon</i>	0.1	0.1			0.1						
	<i>Cyperus gracilis</i>			0.1		0.1						
	<i>Lomandra filiformis</i> subsp. <i>filiformis</i>										0.1	
	<i>Microlaena stipoides</i>										1	
	Forb (FG)											
	<i>Dianella longifolia</i>			0.1		0.1						
	<i>Dichondra repens</i>			0.1		0.1						
	<i>Einadia nutans</i> subsp. <i>linifolia</i>				0.1	0.1						
	<i>Einadia polygonoides</i>			0.1		0.1						
	<i>Oxalis exilis</i>	0.1	0.1			0.1						
	<i>Phyllanthus virgatus</i>	0.1	0.1			0.1						
	<i>Sigesbeckia orientalis</i>			0.1		0.1						
	Fern (EG)											
	None											
	Exotic											
HTW	<i>Anredera cordifolia</i>										10	
HTW	<i>Araujia sericifera</i>				0.1	0.1						
HTW	<i>Asparagus aethiopicus</i>						1			0.3	1	
HTW	<i>Asparagus asparagoides</i>						1	1		0.5		
HTW	<i>Bidens pilosa</i>		0.1	0.1		0.1						
	<i>Bromus catharticus</i>				0.1	0.1						
HTW	<i>Chloris gayana</i>	3	5	1	15	10	3	2	1	1	0.1	
	<i>Cirsium vulgare</i>				0.1	0.1					0.1	
	<i>Conyza sumatrensis</i>		0.1		1	0.3		0.1		0.1		
HTW	<i>Cotoneaster glaucophyllus</i>						30			10		
	<i>Cyclospermum leptophyllum</i>	1	0.2			0.3						
HTW	<i>Ehrharta erecta</i>				0.1	0.1					2	
HTW	<i>Eragrostis curvula</i>	30	50	50	15	40						
	<i>Erythrina crista-galli</i>										0.1	
	<i>Euphorbia prostrata</i>						0.1			0.1		
	<i>Foeniculum vulgare</i>	0.1	1	0.1		0.3			0.1	0.1		
HTW	<i>Genista monspessulana</i>						0.1			0	0.1	
HTW	<i>Hyparrhenia hirta</i>									0.5	0.1	
	<i>Hypochoeris microcephala</i>	0.1				0.1						
HTW	<i>Lantana camara</i>			0.2		0.1	1	20	40	20	5	
HTW	<i>Ligustrum lucidum</i>						40	5	2		5	
HTW	<i>Ligustrum sinense</i>							5		1	20	
HTW	<i>Megathyrsus maximus</i>						1	5	1	2		
	<i>Modiola caroliniana</i>				0.1	0.1						
HTW	<i>Olea europaea</i> subsp. <i>africana</i>				2	0.5	10	10	3	10	20	

	Species	BAM Plots										
		P10-1	P10-2	P10-3	P10-4	P10 av	P11-1	P11-2	P11-3	P11-4	P11-av	P16-av
HTW	<i>Paspalum dilatatum</i>			0.2		0.1						
HTW	<i>Paspalum notatum</i>	30	50	50	15	40						
	<i>Plantago lanceolata</i>	0.1	0.1		15	4						
	<i>Portulaca oleracea</i>			0.2		0.1						
HTW	<i>Senecio madagascariensis</i>	0.1				0.1						
	<i>Senna pendula</i>							1	2		0.8	
	<i>Sida rhombifolia</i>		0.2	0.3	0.1	0.2						
	<i>Solanum nigrum</i>				1	0.3						
	<i>Solanum sisymbriifolium</i>			0.1	0.1	0.1						1
	<i>Sonchus oleraceus</i>							0.1	0.1		0.1	
	<i>Taraxacum officinale</i>	0.1				0.1						
HTW	<i>Tradescantia fluminensis</i>											50
	<i>Verbena quadrangularis</i>				0.2	0.1						

HTW = High Threat Weed

= Non-Local Native

Table 2. Maximum height and number of individuals per 10 m x 10 m subquadrat, for species present $\geq$ 2 m.

Botanical name	Subquadrat 1		Subquadrat 2		Subquadrat 3		Subquadrat 4	
	Number	Height	Number	Height	Number	Height	Number	Height
Plot 10								
<i>Eucalyptus moluccana</i>					2	12 m	1	20 m
Plot 11								
<i>Acacia implexa</i>			2	8 m				
<i>Cotoneaster glaucophyllus</i>	2	7 m						
<i>Eucalyptus tereticornis</i>			1	16 m	1	18 m		
NLN <i>Grevillea robusta</i>			1	2m				
* <i>Ligustrum lucidum</i>	5	8 m			1	7 m		
* <i>Olea europea subsp. africana</i>	2	6 m	3	4 m			4	5 m
Plot 16								
	Number				Height			
<i>Eucalyptus moluccana</i>	3				27 m			
<i>Eucalyptus tereticornis</i>	3				20 m			
<i>Melaleuca linariifolia</i>	1				8 m			

* Exotic

NLN – non-local native

Appendices

Appendix 1.

Photographic record from 23 February, 22 May and 10 June 2026

Photographic record from 23 February, 22 May and 10 June 2026



Plot 10: Nearby the Great Western Highway, looking SE on *Eucalyptus moluccana*.



Plot 10: Nearby the Great Western Highway, looking SE.



Plot 10: Looking on *Eucalyptus moluccana*, *Paspalum notatum* and *Eragrostis curvula*.



Plot 11: Nearby Great Western Highway, looking NW on *Cotoneaster glaucophyllus*.



Plot 11: Nearby Great Western Highway, looking SE.



Plot 16: Nearby Great Western Highway, looking S.



Plot 16: Nearby Great Western Highway, looking NE.



Conservation Area A: Looking NE, drainage swale with culvert on bottom left.



Conservation Area A: Looking NW towards the Great Western Highway.



Conservation Area A: Looking NW towards the Great Western Highway from eastern side of the drainage swale.



Conservation Area A: Looking SW across the drainage swale. Privet stand on the right.

Appendix 2.

BAM import data, and number and cover of exotic species

BAM import data, and number and cover of exotic species

Location values

Plot	Location							
	PCT	Area of zone	Patch size	Condition class	Zone	Eastings	Northings	Bearing
Plot 10	3319	0.15	100	Degraded	56	305982	6257959	100°
Plot 11	3319	0.15	100	V Degraded	56	306088	6257919	283°
Plot 12	No PCT	n/a	100		56	306254	6257828	90°
Plot 13	No PCT	n/a	100		56	306409	6257857	85°
Plot 14	No PCT	n/a	100		56	306702	6257823	80°
Plot 15	3319	n/a	100		56	306962	6257802	85°
Plot 16	3319	0.15	100	Degraded	56	306127	6257901	110°

Composition values

Note: Growth form groups from power query on the online BAM Calculator: Tree = TG, Shrub = SG, Groundcover and other (GG= Grass & Grasslike, FG= Forb, EG= Fern, OG = Other).

Plot	Composition (number of trees, shrubs and groundcover species recorded in the plots) and for exotic species						
	TG	SG	GG	FG	EG	OG	Exotic (Not entered in the BAM calculator)
Plot 10	1	0	3	7	0	1	24
Plot 11	1	1	0	0	0	1	18
Plot 12	0	0	2	1	0	0	20
Plot 13	1	1	5	1	0	1	18
Plot 14	1	2	3	3	0	0	28
Plot 15	0	0	2	1	0	0	24
Plot 16	3	1	2	0	0	0	14

Structure values

Note: Growth form groups from power query on the online BAM Calculator: Tree = TG, Shrub = SG, Groundcover and other (GG = Grass & Grasslike, FG = Forb, EG = Fern, OG = Other).

Plot	Structure (summed percent cover for trees, shrubs and groundcover species recorded in the plots) and for exotic species						
	TG	SG	GG	FG	EG	OG	Exotic (Not entered in the BAM calculator)
Plot 10	30.0	0.0	0.4	0.7	0.0	0.1	97.3
Plot 11	15.0	5.0	0.0	0.0	0.0	0.1	58.8
Plot 12	0.0	0.0	2.3	0.1	0.0	0.0	99.5

Plot	Structure (summed percent cover for trees, shrubs and groundcover species recorded in the plots) and for exotic species						
	TG	SG	GG	FG	EG	OG	Exotic (Not entered in the BAM calculator)
Plot 13	2.0	0.5	21.3	0.1	0.0	0.1	80.3
Plot 14	1.0	1.1	20.2	0.7	0.0	0.0	71.1
Plot 15	0.0	0.0	0.4	0.3	0.0	0.0	92.5
Plot 16	70.0	1.0	1.1	0.0	0.0	0.0	98.1

Function values

Note: The benchmark for Large Tree stem class DBH for PCTs 3319 is **50 cm**:

The number of trees with stem classes above the benchmarks is entered into the online BAM Calculator. The online Calculator is used to calculate the Vegetation Integrity Score of the Plot.

Plot	Function										
	Litter cover	Length of fallen logs	Hollow bearing trees	Stem class DBH (cm)							Percent cover of High Threat Weeds
				<5	5-9	10-19	20-29	30-49	50-79	80+	
Plot 10	54	0	0	0	0	1	1	1	1	0	91.1
Plot 11	50	0	0	0	0	0	0	0	2	0	46.0
Plot 12	10	0	0	0	0	0	0	0	0	0	92.3
Plot 13	30	0	0	0	0	0	0	0	0	0	78.1
Plot 14	34	0	0	0	0	0	0	0	0	0	51.9
Plot 15	30	0	0	1	0	1	1	1	2	0	84.7
Plot 16	30	0	0	0	1	1	1	1	2	0	118.2

Appendix 3.
BAM Calculator Reports



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00067242/BAAS17088/26/00067321	Augusta Estate SSD 36138263 MOD 2	09/04/2026
Assessor Name	Assessor Number	BAM Data version *
Anne Clements	BAAS17088	Current classification (live - default) (94)
Proponent Names	Report Created	BAM Case Status
	09/07/2026	Finalised
Assessment Revision	BOS entry trigger	Assessment Type
7	BOS Threshold: Biodiversity Values Map	Part 4 Developments (Small Area)
Date Finalised	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
09/07/2026		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Cumberland Plain Woodland in the Sydney Basin Bioregion		3319-Cumberland Shale Hills Woodland
Species		
Lathamus discolor / Swift Parrot		

BAM Biodiversity Credit Report (Like for like)

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

Calyptrorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo

Ephippiorhynchus asiaticus / Black-necked Stork

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

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3319-Cumberland Shale Hills Woodland	Cumberland Plain Woodland in the Sydney Basin Bioregion	0.2	0	3	3

Species Credit Summary



BAM Biodiversity Credit Report (Like for like)

Species	Vegetation Zone/s	Area / Count	Credits
Lathamus discolor / Swift Parrot	3319_degraded	0.1	1.00

Credit Retirement Options

Like-for-like credit retirement options

Lathamus discolor / Swift Parrot	Spp	IBRA subregion
	Lathamus discolor / Swift Parrot	Any in NSW

BAM Candidate Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00067242/BAAS17088/26/00067321	Augusta Estate SSD 36138263 MOD 2	09/04/2026
Assessor Name	Report Created	BAM Data version *
Anne Clements	09/07/2026	Current classification (live - default) (94)
Assessor Number	Assessment Type	BAM Case Status
BAAS17088	Part 4 Developments (Small Area)	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
7	BOS Threshold: Biodiversity Values Map	09/07/2026

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List of Species Requiring Survey

Name	Presence	Survey Months
<i>Eucalyptus benthamii</i> Camden White Gum	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☒ May ☒ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Lathamus discolor</i> Swift Parrot	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Miniopterus australis</i> Little Bent-winged Bat	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Large-eared Pied Bat	Chalinolobus dwyeri	Habitat constraints
Regent Honeyeater	Anthochaera phrygia	Habitat constraints

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00067242/BAAS17088/26/00067321	Augusta Estate SSD 36138263 MOD 2	09/04/2026
Assessor Name	Report Created	BAM Data version *
Anne Clements	09/07/2026	Current classification (live - default) (94)
Assessor Number	BAM Case Status	Date Finalised
BAAS17088	Finalised	09/07/2026
Assessment Revision	BOS entry trigger	Assessment Type
7	BOS Threshold: Biodiversity Values Map	Part 4 Developments (Small Area)

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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

BAM Credit Summary Report

Cumberland Shale Hills Woodland

1	3319_degraded	Cumberland Plain Woodland in the Sydney Basin Bioregion	28	28.0	0.15	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	3
											Subtotal	3
											Total	3

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAIL	Species credits
Lathamus discolor / Swift Parrot (Fauna)									
3319_degraded	28.0	28.0	0.06	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1
								Subtotal	1

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00067242/BAAS17088/26/00067321	Augusta Estate SSD 36138263 MOD 2	09/04/2026
Assessor Name	Report Created	BAM Data version *
Anne Clements	09/07/2026	Current classification (live - default) (94)
Assessor Number	Assessment Type	BAM Case Status
BAAS17088	Part 4 Developments (Small Area)	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
7	BOS Threshold: Biodiversity Values Map	09/07/2026

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Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Black Falcon	Falco subniger	3319-Cumberland Shale Hills Woodland
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	3319-Cumberland Shale Hills Woodland
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	3319-Cumberland Shale Hills Woodland
Diamond Firetail	Stagonopleura guttata	3319-Cumberland Shale Hills Woodland
Dusky Woodswallow	Artamus cyanopterus cyanopterus	3319-Cumberland Shale Hills Woodland
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	3319-Cumberland Shale Hills Woodland
Eastern Osprey	Pandion cristatus	3319-Cumberland Shale Hills Woodland
Gang-gang Cockatoo	Callocephalon fimbriatum	3319-Cumberland Shale Hills Woodland
Grey-headed Flying-fox	Pteropus poliocephalus	3319-Cumberland Shale Hills Woodland

BAM Predicted Species Report

Large Bent-winged Bat	Miniopterus orianae oceanensis	3319-Cumberland Shale Hills Woodland
Latham's Snipe	Gallinago hardwickii	3319-Cumberland Shale Hills Woodland
Little Bent-winged Bat	Miniopterus australis	3319-Cumberland Shale Hills Woodland
Little Eagle	Hieraaetus morphnoides	3319-Cumberland Shale Hills Woodland
Little Lorikeet	Parvipsitta pusilla	3319-Cumberland Shale Hills Woodland
Regent Honeyeater	Anthochaera phrygia	3319-Cumberland Shale Hills Woodland
Scarlet Robin	Petroica boodang	3319-Cumberland Shale Hills Woodland
Speckled Warbler	Pyrrholaemus sagittatus	3319-Cumberland Shale Hills Woodland
Spotted Harrier	Circus assimilis	3319-Cumberland Shale Hills Woodland
Spotted-tailed Quoll	Dasyurus maculatus	3319-Cumberland Shale Hills Woodland
Square-tailed Kite	Lophoictinia isura	3319-Cumberland Shale Hills Woodland
Swift Parrot	Lathamus discolor	3319-Cumberland Shale Hills Woodland
Varied Sittella	Daphoenositta chrysoptera	3319-Cumberland Shale Hills Woodland
White-bellied Sea-Eagle	Haliaeetus leucogaster	3319-Cumberland Shale Hills Woodland
White-throated Needletail	Hirundapus caudacutus	3319-Cumberland Shale Hills Woodland
Yellow-bellied Sheath-tail-bat	Saccolaimus flaviventris	3319-Cumberland Shale Hills Woodland

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Common Name	Scientific Name	Plant Community Type(s)
Black-necked Stork	Ephippiorhynchus asiaticus	3319-Cumberland Shale Hills Woodland
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	3319-Cumberland Shale Hills Woodland

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

BAM Predicted Species Report

Common Name	Scientific Name	Justification in the BAM-C
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	Habitat constraints
South-eastern Glossy Black-Cockatoo	<i>Calyptrorhynchus lathami lathami</i>	Habitat constraints



BAM Vegetation Zones Report

Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00067242/BAAS17088/26/00067321	Augusta Estate SSD 36138263 MOD 2	09/04/2026
Assessor Name	Report Created	BAM Data version *
Anne Clements	09/07/2026	Current classification (live - default) (94)
Assessor Number	Assessment Type	BAM Case Status
BAAS17088	Part 4 Developments (Small Area)	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
7	BOS Threshold: Biodiversity Values Map	09/07/2026

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Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	3319_degraded	3319-Cumberland Shale Hills Woodland	degraded	0.15	1	

Appendix 4.

**WILD Conservation Pty Ltd (2026) Microbat Review Great Western Highway,
Huntingwood. Prepared by Kane Durrant of WILD Conservation Pty Ltd.
Dated 20 June 2026**

20 June 2026

Microbat Review Great Western Highway, Huntingwood

REPORT PREPARED FOR ANNE CLEMENTS AND ASSOCIATES
BY WILD CONSERVATION PTY LTD - KANE DURRANT
PRINCIPAL ECOLOGIST JUNE 2026



WILD Conservation June 2026

WILD CONSERVATION | PO BOX 1143, NARELLAN, NSW 2567

Micro Bat Review Huntingwood WILD Conservation June 2026

Subject – Microbat Review

WILD Conservation Pty Ltd was engaged by Anne Clements and Associates to undertake a review of likelihood for Microchiropteran mammals (Microbats) at the subject site Corner of Great Western Highway and Flushcombe Road, Huntingwood (-33.800862, 150.904439). One Genus is of particular interest in this review, *Miniopterus* (Bent Winged Bats). There are several older records of *Miniopterus* nearby (likely transient animals in flight), however the habitat present at the site has been found to be unsuitable during more recent surveys (WILD Conservation, March 2024 and July 2024), especially for roosting. While these surveys and review were at the time primarily looking at *Myotis*, an overarching survey was undertaken for Microbats across the site footprint, and no recordings were detected during acoustic monitoring, and no Microbats were observed during dusk and nocturnal spotlight surveys.

The roadside trees proposed to be cleared as part of these works (Figures 1 and 2) have faced disturbance in recent months with significant clearing and earthworks occurring across the greater site footprint. The site had also been home to a large colony of feral cats that were being actively fed by cat care groups from the surrounding suburb. This high density of known Microbat predators and disturbance is contrary to any Microbats persisting in this direct vicinity.

In addition to this, WILD Conservation has been present during the tree clearing at the site for the warehouse development project. No Microbats were observed in any of the trees cleared with all hollows and habitat features thoroughly searched prior to and during tree felling activities undertaken at the site. Initial pre clearance surveys were undertaken by a qualified ecologist and fauna spotter catcher from WILD Conservation Pty Ltd on 30/07/2025 - 31/07/2025. Diurnal surveys were conducted to inspect the trees for habitat structures and any native fauna that may visit these structures and offer evidence of occupation or nesting behaviours. Transient species such as macropods and birds were observed using the site and surrounds as feeding and roosting areas, but no nesting behaviour was recorded.

Clearing commenced on the 28/08/2025 and habitat trees were inspected for fauna by WILD Conservation staff on 28/08/2025 and 02/09/2025 – 04/09/2025 and supervision was required for processing on 18/09/2025. The Habitat Trees were cleared 02/09/2025 – 04/09/2025 and inspected in full for fauna occupancy. All trees to be impacted by these works were successfully cleared with no immediate adverse impacts observed. A final inspection of the clearing area was completed at the end of all tree clearing to ensure no fauna had been missed or had wandered back into the site or clearing footprint. WILD Conservation found no evidence of further fauna usage.

The trees on and adjoining the site currently offer little value to Microbat colonies that may exist in the region to the south at Prospect Reservoir and if any were observed here, they would likely be transient animals opportunistically foraging, rather than roosting here. There were no Microbats detected or observed during pre clearance surveys and Microbat surveys undertaken at the site to date.



Figure 1. *Site at Great Western Highway, Huntingwood.*



Figure 2. *The roadside trees proposed for clearing. Great Western Highway, Huntingwood.*