Canopy Estate

Biodiversity Development Assessment Report

Final Report (Response to Submissions amendment)

Prepared for Ethos Urban on behalf of FPI Developments NSW Pty Limited

7 May 2026

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Biosis acknowledges the Aboriginal and Torres Strait Islander peoples as Traditional Custodians of the land on which we live and work.
We pay our respects to the Traditional Custodians and Elders past and present and honour their connection to Country and ongoing contribution to society.

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Definitions

AIA	Arboricultural Impact Assessment
Assessment Area	All land within 1500 m of a site-based development
BAM	NSW Biodiversity Assessment Method 2020
BAM-C	BAM Calculator
BC Act	NSW *Biodiversity Conservation Act 2016*
BCAR	Biodiversity Certification Assessment Report
BDAR	Biodiversity Development Assessment Report
Biosecurity Act	*Biosecurity Act 2015*
Biodiversity and Conservation SEPP	State Environmental Planning Policy (Biodiversity and Conservation) 2021
BOS	Biodiversity Offsets Scheme
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
CM Act	*Coastal Management Act 2016*
Cth DCCEEW	Australian Commonwealth Department of Climate Change, Energy, the Environment and Water
DPHI	Department of Planning, Housing and Infrastructure
DBH	Diameter at Breast Height
DCP	Development Control Plan
Development footprint	The area of land that is directly impacted by the proposal
Development site	The broader area in which the development footprint is located, consisting of 1647-1671 The Horsley Drive, 157-213 and 136-170 Redmayne Road, 137-209 Chandos Road, and a portion of Redmayne Road, Horsley Park.
DoIW	Directory of Important Wetlands
DP	Deposited Plan
DPIRD	NSW Department of Primary Industries and Regional Development
Ecosystem credits	A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur with a PCT. Ecosystem credits measure the loss in biodiversity values at a development
Ecosystem credit species	Threatened species whose occurrence can generally be predicted by vegetation surrogates and/or landscape features, or that have a low probability of detection using targeted surveys. A targeted survey is not required to identify or confirm the presence of ecosystem credit species.
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

GDE	Groundwater Dependent Ecosystem
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation of Australia
LEP	Local Environmental Plan
LGA	Local Government Area
Locality	Area located within 10 km radius from the subject land
LLS	Local Lands Services
LPI	NSW Land and Property Information
MNES	Matters of National Environmental Significance protected by a provision of Part 3 of the EPBC Act
NOG	Non-offsettable grassland
NPW Act	*National Parks and Wildlife Act 1974*
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
PCT	Plant Community Type
Resilience and Hazards SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
SAII	Serious and Irreversible Impact
SALIS	NSW Soil and Land Information System
SEARs	Secretary's Environmental Assessment Requirements
SEPP	NSW State Environmental Planning Policy
Species credits	A class of biodiversity credits required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates
Species credit species	Threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence or components of their habitat. A targeted survey or an expert report is required to confirm the presence of these species on the subject land. Alternatively, the proponent may elect to assume the species is present for development/clearing projects only.
SSD	State Significant Development
SSDA	State Significant Development Application
SEPP	State Environmental Planning Policy
Subject land	The areas within and the combined areas of the development site, and any indirect and prescribed impacts.
TEC	Threatened Ecological Community
TBDC	Threatened Biodiversity Data Collection
TPZ	Tree Protection Zone
VI	Vegetation Integrity
VMP	Vegetation Management Plan
VPA	Voluntary Planning Agreement
VRZ	Vegetated Riparian Zone
WM Act	NSW *Water Management Act 2000*

Summary

FPI Developments NSW Pty Limited ('Frasers Property Industrial' or 'the Applicant') proposes to develop land as part of an industrial estate known as Canopy Estate on Horsley Drive, Redmayne Road and Chandos Road, Horsely park (the subject land) in New South Wales (NSW) (Figure 1). The subject land covers approximately 46.16 hectares and is proposed to cover the construction and operation of an industrial estate comprising five (5) development lots.

Due to the scale of the project, the project will be assessed under Part 4 Division 4.7 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) as a State Significant Development (SSD, #SSD-76397489). Planning Secretary's Environmental Assessment Requirements (SEARs) have been issued for the project, which require a Biodiversity Development Assessment Report (BDAR) to be submitted to the approval authority. The BDAR is to be prepared in accordance with the NSW *Biodiversity Conservation Act 2016* (BC Act) and the *NSW Biodiversity Assessment Method* (BAM) (DPIE 2020a).

This BDAR has been prepared by Dr Caragh Heenan, overseen by Accredited Assessor Callan Wharfe (BAAS18138) and reviewed by Callan Wharfe and Matthew Hyde, to accompany the State Significant Development Application (SSDA). This BDAR describes the outcome of the development assessment case (#00051084) conducted consistent with the BAM (DPIE 2020a).

Field investigation, undertaken in accordance with the BAM, recorded 42.19 hectares of native vegetation within the subject land, representing three threatened ecological communities (TECs):

- *Cumberland Plain Woodlands in the Sydney Basin Bioregion* (Critically Endangered Ecological Community [CEEC], BC Act).
- *Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions* (Endangered Ecological Community [EEC], BC Act).
- *River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions* (EEC, BC Act).

No TECs listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were determined to be present within the subject land.

Avoidance of native vegetation, TECs, and threatened species habitat have been undertaken to restrict impacts to 28.77 hectares of native vegetation including Plant Community Type (PCT) 3320, PCT 3975 and PCT 4025. Consideration has been given to avoiding and minimising impacts to biodiversity where possible during the assessment and preliminary design. Mitigation and management measures will be put in place to adequately address direct, indirect and prescribed impacts associated with the proposal.

No threatened species were recorded within the subject land during targeted surveys, and the vegetation integrity (VI) score of the vegetation to be impacted was calculated as between 1.0 and 25.7. As such, in accordance with Section 10 of the BAM, the following offsets are required to be secured for the proposed development:

- A total of 17 credits for direct impacts to PCT 3320 in low condition.
- A total of 2 credits for direct impacts to PCT 3975 in low condition.
- A total of 4 credits for direct impacts to PCT 4025 in low condition.

Offsets are not required for impacts to PCT 3320 in scattered, planted, exotic or non-offsettable grassland (NOG) condition, due to a low VI score which was below the threshold required for offsetting.

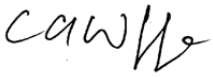
As no threatened entities listed under the EPBC Act were detected on site, the project will not result in a significant impact to species or communities listed under the EPBC Act, and as such a referral to the Minister of the Environment and Water is not required.

Certification and declarations

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

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

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

Signature: 

Callan Wharfe

Date: 07/05/2026

BAM Assessor Accreditation Number: BAAS18138

Stage 1 – Biodiversity assessment

1 Introduction

Biosis Pty Ltd was commissioned by Ethos Urban on behalf of FPI Developments NSW Pty Limited ('Frasers Property Industrial' or 'the Applicant') to undertake a biodiversity assessment to accompany a SSDA for an industrial estate known as Canopy Estate (SSD-76397489) located on land along The Horsley Drive, Redmayne Road and Chandos Road, Horsley Park (the development site) in NSW.

The development site was subject to a Planning Proposal (PP-2021-3824) for a broader area known as the 'Keyhole Lands' which amended the land zoning under the *Fairfield Local Environmental Plan 2013* (Fairfield LEP 2013) from RU2 Rural Landscape to E4 General Industrial (NSW DPHI 2023). Frasers Property Industrial have identified the site as strategically significant, as demonstrated by the recent rezoning, and are seeking to establish a high-quality industrial estate that benefits from strong connections to key freight transport corridors in Western Sydney, meeting current and future tenant requirements.

A 2.5-kilometre stretch of road, along Horsley Drive, between the M7 and Cowpasture Road, Horsley Park NSW will be subject to road upgrades associated with the project. It is also understood that Transport for NSW (TfNSW) is proposing to upgrade the existing road to improve safety and journey reliability for motorists, and to cater for existing and future traffic flows. An assessment against the BC Act and EPBC Act for impacts to threatened species, populations of ecological communities (entities) is required for these additional impacts. Biosis understands that approval for the road upgrades will be sought via Part 5 of the EP&A Act with TfNSW and a Review of Environmental Factors (REF) is being prepared accordingly.

The purpose of this assessment was to apply the NSW BAM (DPIE 2020a) to the proposed development, and provide Frasers Property Industrial with a BDAR. The BDAR is to be submitted to Department of Planning, Housing and Infrastructure (DPHI) as part of a SSD Application, under Part 4 of the EP&A Act, for the proposed development.

1.1 Project description

Frasers Property Industrial proposes to develop an industrial estate, Canopy Estate, at Horsley Drive, Redmayne Road and Chandos Road, Horsley Park in NSW (Figure 1). The development will involve clearance of vegetation across 32 individual lots and construction of a Warehouse and Logistics Hub.

Due to the scale of the project, the project will be assessed under Part 4 Division 4.7 of the EP&A Act as a SSD (#SSD-76397489). SEARs have been issued for the project, which require a BDAR to be submitted to the approval authority. The BDAR is to be prepared in accordance with the BC Act and the BAM (DPIE 2020a).

The SSDA seeks development consent for the following:

- Site preparation works, including demolition, clearing of existing vegetation, bulk earthworks and construction of retaining walls.
- Site infrastructure works, comprising construction of stormwater management infrastructure, services infrastructure, and internal road network comprising an Estate Road including connection to The Horsley Drive intersection upgrade, and the Estate Road / Redmayne Road intersection including upgrades to parts of Redmayne Road.
- Subdivision of the site.

- Construction and operation of industrial buildings including ancillary office space and a café across five (5) development lots for the purposes of warehouse or distribution centres and general industry, food and drink premises and ancillary office premise uses.
- Construction of hardstand area for loading/unloading and vehicle manoeuvring.
- Construction of on-site car parking.
- Landscaping, including on-lot and street reserve planting.
- Signage including estate signage and signage zones.
- Hours of Operation being 24 hours, 7 days a week.

For a detailed description of the proposed development, refer to the Environmental Impact Statement (EIS) prepared by Ethos Urban.

1.1.1 Project background

In 2021, a Planning Proposal (PP-2021-3824) was submitted by Frasers Property Industrial for the 'Keyhole Lands' which comprised a 60 hectare site including land along The Horsley Drive, Redmayne Road and Chandos Road. On 15 May 2023, Gateway Determination was issued by DPHI recommending the Planning Proposal proceed to Public Exhibition which occurred from 14 November to 15 December 2023.

The Planning Proposal enabled industrial development on the Keyhole Lands through the following amendments to the Fairfield LEP 2013:

- Amend the Land Zoning Map from RU2 Rural Landscape to E4 General Industrial.
- Amend the Height of Buildings Map to remove the existing building height control.
- Amend the Floor Space Ratio Map to introduce a 0.55:1 floor space ratio control.
- Amend the Minimum Lot Size Map from 10,000 m² to 930 m².
- Remove the minimum lot size for dual occupancy dwellings.

The proposed amendments to the Fairfield LEP 2013 were accompanied by a Site-Specific Development Control Plan (DCP) as well as local and State Voluntary Planning Agreements (VPAs) to support the development of the necessary infrastructure required to support the development of the Keyhole Lands for industrial purposes.

Following Public Exhibition, the Planning Proposal was reported to the Fairfield City Council (Council) Outcomes Committee on 9 July 2024 where Council formally advised of its in-principle support. The amending plan (*Fairfield Local Environmental Plan 2013 (Map Amendment No 9)*) was made on 28 August 2024 and notified on 30 August 2024 with a deferred commencement of 10 January 2025 to enable the finalisation of the State VPA.

1.1.2 Response to submissions

The BDAR was submitted to DPHI as the consent authority via the Major Projects portal on approximately 10 September 2025. Following the submission of the BDAR and commencement of the Response to

Submissions (RtS) phase, Frasers Property Industrial has received responses, three of which are relevant to biodiversity, including:

- Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) Conservation Programs, Heritage and Regulation (CPHR) Group – 30 October 2025.
- Fairfield City Council – 12 November 2025.
- 'Samuel' – letter undated.

The RtS comments have been addressed and responded to in Table 1 below.

Table 1 Response to submissions

Reference	Comment	Biosis' response
NSW DCCEEW CPHR – 30 October 2025		
1.1	***BDAR - Impacts to Threatened Ecological Communities (TECs)*** *CPHR requires confirmation and clarification regarding the extent of impacts to TECs presented in the BDAR. For example, Figure 14 in the BDAR does not clearly identify all endangered ecological communities and critical endangered ecological communities with a Vegetation Integrity Score (VIS) ≥15 proposed for removal.* *Recommended actions:* • *The ecological consultant reviews the Arboricultural Impact Assessment (AIA) and Architectural Drawings.* • *Update the BDAR with further details after reviewing the AIA and Architectural Drawings and confirm that all impacts requiring offsets are accounted for.* • *The BDAR include figure(s) at an appropriate scale that clearly show TEC patches proposed to be removed and retained, along with their associated VIS scores.*	The AIA (CPS 2025) has been received and reviewed. The development footprint has been revised such that it excludes areas of Tree Protection Zone (TPZ) where they occur along the western boundary of the subject land (Figure 1). All neighbouring trees with TPZ that encroach the development site will be retained via adjustments to the civil design. The exception to this occurs along Redmayne Road, where the development footprint includes areas of TPZ located outside of the development site, for which a portion of TPZ overlaps with the development site. This is on the understanding that while the tree will not be directly impacted, indirect impacts may result in degradation and subsequent decline in condition of these trees (Figure 1). The impact considerations have been updated in the BDAR and associated figures, and these additional impacts will be offset accordingly.
2	***BDAR - Prescribed impacts - human-made structures*** *The BDAR acknowledges the presence of dwellings within the subject land that may be used by insectivorous bats. CPHR recommends that roost searches be conducted to confirm whether these structures are being utilised by threatened insectivorous bat species.* *This recommendation is particularly relevant as the ecological consultant used harp traps in an open environment to survey for Myotis macropus. The placement of harp traps in open areas greatly reduces the likelihood of capturing bats.* *Recommended actions:* • *Conduct roost surveys in human-made structures within the subject land, noting that some*	Biosis understands that dwellings were inhabited by people at the time of the assessment. Further targeted survey in the form of roost searches, active searches at dusk around buildings and/or structures and waterbodies has been undertaken in December 2025 and January 2026 (Section 4.2.1). Targeted survey did not record microbat presence, or evidence thereof, in any of the dwellings. Three microbats were recorded within the subject land during targeted surveys, including Long-eared Bat *Nyctophilus* spp., Eastern Free-tailed Bat *Ozimops rideii* and Greater Broad-nosed Bat *Scoteanax rueppellii*. Of these, Greater Broad-nosed Bat is listed as threatened (Vulnerable, BC Act), listed as an ecosystem credit species under the BAM (Section 4.2.2). It is likely

Reference	Comment	Biosis' response
	threatened insectivorous bats, including Myotis macropus, are known to utilise human-made structures such as buildings for roosting. • *Roost searches must be undertaken in accordance with Section 2.8 of the 'Species Credit' Threatened Bats and their Habitats: NSW Survey Guide for the Biodiversity Assessment Method.*	that these species were utilising the site for foraging purposes. The BDAR and associated figures have been updated accordingly.
3	***BDAR mitigation measures*** *The mitigation measures in the BDAR are presented as voluntary actions. CPHR recommends the mitigation measures be revised to read as required specifications that form part of the EIS.* *Recommended actions:* • *Update the BDAR mitigation measures to read as required and prescriptive specifications rather than recommendations. Mitigation measures must not be presented as optional, and terms such as "should" are to be replaced with "must" where applicable.* • *Ensure all mitigation measures in the updated BDAR are practical and feasible. For example, if nest boxes are proposed to offset the loss of tree hollows, the BDAR must confirm that suitable host structures (for example, trees) remain on-site to allow for their installation.*	Noted. The BDAR wording has been revised and actions reviewed accordingly in Section 7.
Fairfield City Council – 12 November 2025		
E.I.	***Nest box Management Plan*** *A formal nest box management plan including locations, installation and timing, monitoring and maintenance and stakeholder agreements is to be provided to Council for review and acceptance.*	Biosis recommends removal of the recommendation in the BDAR around nest box installation and plan preparation. A nest box management plan would not be required if nest boxes are not being installed. See item E.XVII. below for further clarification.
E.II.	***Updated Landscape Plan*** *A revised landscape plan is to be provided that aligns with the Fairfield Council Biodiversity Strategy 2022, excludes invasive/hybridising species, uses local provenance species from PCT 3320 and 4025 and includes a Vegetation Management Plan (VMP) for ongoing maintenance.*	A suitably qualified Project Ecologist must prepare a Biodiversity Management Plan, which includes a Vegetation Management Subplan prior to commencement of construction. DPHI have not raised the requirement for plan preparation as part of the EIS process and as such, Biosis believe this could be deferred until the post-approval stage. A Landscape Masterplan (Habit8 2026) has been prepared for the project and addressed in Section 5.1.
E.XVI.	***Biosecurity Management Plan*** *A Biodiversity Management Plan is to be provided addressing pathogen containment, weed control, vehicle machinery and hygiene protocols. The plan must reference vehicle and machinery clean down procedures (NSW DPI), NSW Weed Control Handbook*	A suitably qualified Project Ecologist must prepare a Biodiversity Management Plan, which includes a Biosecurity Management Subplan prior to commencement of construction. DPHI have not raised the requirement for plan preparation as part of the EIS process and as such, Biosis believe

Reference	Comment	Biosis' response
	(8th ed) and Greater Sydney Regional Strategic Weed Management Plan 2023–2027.	this could be deferred until the post-approval stage.
E.XVI.	***BDAR Limitation*** *Several critical components, such as road upgrades, watercourse realignment, and future development stages have been deferred or excluded from the BDAR, despite being essential to the overall function and footprint of the development. A revised BDAR must be provided that considers all stages of development.*	Biosis has been engaged by Frasers Property Industrial to undertake field investigations and a Biodiversity Assessment Report (BAR) to support a Review of Environmental Factors (REF) will be prepared for the Horsley Drive Road upgrades, which will be assessed under Part 5 of the EP&A Act. Biosis has updated the BDAR to include reference to the Horsley Drive road upgrades as a separate assessment (Section 1, Section 1.3 and Section 5.1).
E.XVII.	***Loss of Breeding Habitat*** *The BDAR says retained vegetation in adjacent lots provides higher quality habitat and will not be reduced by the proposed works, the vegetation in the adjacent lots is still zoned E4 and may be potentially removed in later stages of the Estate's development. Therefore, adjacent vegetation should not be considered higher quality habitat.* *It is recommended the Applicant have an agreement with neighbouring lots zoned E4 specifying the agreed location of the hollows/boxes as well as monitoring and maintenance programs up to 10 years after issuance of the final Occupation Certificate (OC) for the site.*	Biosis recommends removal of the recommendation in the BDAR around nest box installation and plan preparation, as: • No threatened species have been recorded within the subject land that utilise hollows. • Hollows cannot be installed within the development site due to the absence of retained vegetation. A suitably qualified Project Ecologist would be engaged to nominate suitable areas to relocate the any non-threatened species found in hollows off-site as part of a preclearance strategy and Project Ecologist role (Section 7). This would be specified within a Biodiversity Management Plan and relevant subplans. The impact of hollow removal via removal of native vegetation is being offset though ecosystem credits in the BDAR (Section 8.3.1). No further action beyond BDAR updates is required. See also item E.I. above.
'Samuel' – Response undated		
3.1	*I am concerned that the consent authority may be incapable of adequately assessing the biodiversity impacts of this proposal, because the BDAR submitted by the proponent fails to meet some of the minimum requirements. This is with reference to the BDAR cited as:* *"Biosis 2025. Canopy Estate Biodiversity Development Assessment Report. Report for Ethos Urban on behalf of FPI Developments NSW Pty Limited. Authors: Heenan C, Guiliano J, Gray R. Biosis Pty Ltd., Sydney, NSW. Project no. 40675."* *To provide a succinct review of my concerns, I have annotated an excerpt of Table 24, 'minimum information requirements', from Appendix K of the Biodiversity Assessment Method Order 2020 (BAM).*	
3.2	***Location Map – Digital aerial photography at 1:1,000 scale or finer.*** *Although it is stated that aerial photography at this scale is provided, this is not present within the BDAR or within the attachments.* *The finest aerial photography provided is 1:5000, this is a 5-fold more coarse than the minimum requirement.*	Noted. Biosis has undertaken updates to the figure scale and resolution of the Location Map in the revised BDAR (Figure 3).

Reference	Comment	Biosis' response
	When comparing the imagery in the BDAR to google map imagery, there is native woody vegetation on site which is not apparent in the BDAR imagery. For example, a stag. *With reference to the scale detail required, the following example is a stag of what looks like a Red Gum on Google Maps and streetview.* *[Image provided]* *Referred to in the note on the map scale needed.* *When this location on Redmayne Road is compared to Google, there is a Red Gum stag south of the gum tree, and there is native tree cover in the area north of this dam of much greater extent than mapped.* *[Reference to Figure 5 of the BDAR, where pink shading is identified in the legend as "exotic grassland"; Image provided].*	
3.3	***Native vegetation:*** • ***Identify native vegetation extent within the subject land, including cleared areas and evidence to support differences between mapped vegetation extent and aerial imagery (as described in BAM Section 4.1(1–3.) and Subsection 4.1.1).*** • ***Provide justification for all parts of the subject land that do not contain native vegetation (as described in BAM Subsection 4.1.2).*** • ***Extent (ha) within the subject land.*** • ***Describe the vegetation integrity assessment of the subject land, including:*** ○ ***Identification and mapping of vegetation zones (as described in BAM Subsection 4.3.1).*** *Areas which the authors knew contained native vegetation (as indicated in appendix plot data), were characterised as "exotic" (2.98 ha) and "exotic grassland" (36.74 ha).* *Areas wrongly labelled "not native" in this way comprised the vast majority of the 46.16 ha site. BAM Section 4.1 makes it extremely clear that all areas containing native vegetation must be assigned a native PCT, regardless of co-occurring exotic vegetation.*	Noted. The 'exotic grassland' has been recategorised as VZ 3320_Non-offsetable grassland (3320_NOG) and the 'exotic vegetation' has been recategorized as VZ 3320_exotic (Section 3.1). These VZs have been added to the BAM Calculator and a VI score generated accordingly. The BDAR has been updated with these changes. The VI scores generated for these areas is less than the threshold required for offsetting and does not alter the required offsets for the project; including 1.3 and 1.0 for 3320_Exotic and 3320_NOG, respectively (Section 3.2.3). The 3320_NOG is in very poor quality and not of significant ecological value, occurring in large, disturbed patches dominated by a predominantly weedy grassy groundcover.
3.4	• ***Map of native vegetation extent within the subject land at scale not greater than 1:10,000 including identification of cleared areas (as described in BAM Section 4.1(1–3.)) and all parts of the subject land that do not contain native vegetation (BAM Subsection 4.1.2).*** • ***Map of PCTs within the subject land (as described in BAM Section 4.2(1.)).***	Noted. See below references (3.5, 3.6 and 3.7) which provide responses to this broad comment.

Reference	Comment	Biosis' response
	• ***Map of vegetation zones within the subject land (as described in BAM Subsection 4.3.1).*** • ***Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCTs boundaries.*** *Vegetation integrity survey plots were not all established or assessed in line with the requirements of subsections 4.3.4 (4, 5, 6, 11.)*	
3.5	***Table of current vegetation integrity scores for each vegetation zone within the site and including:*** • ***Composition condition score.*** *I have concerns about the accuracy of the composition component of the floristic data. The grand total number of native species recorded in the appendix, 29, is unusually low in this particular site/surveying context.* *Further, numerous species from these PCTs which typically appear in degraded agro-industrial sites in Sydney are absent. I believe a portion of the following are very likely to be present within the VI plots; Oplismenus aemulus, Oxalis perennans, Phragmites australis, Wahlenbergia sp., Lobelia purpurascens, Centella asiatica, Commelina cyanea, Geranium sp., Cotula australis, Hydrocotyle sp., Eragrostis leptostachya, Carex sp., Alternanthera denticulata, Causonis clematidea.* *The concern is largely speculative, but not entirely so. One of the above species (Phragmites australis) appears to be visible (with inflorescence) in the foreground of* Photo 6. *The speculative aspect of this concern should be tested through site observation.*	The subject land is located in a highly disturbed area in the Cumberland Plain that has been subjected to historical clearing and intensive past agricultural practices (as per historical aerial imagery). The groundcover within the subject land is predominantly exotic and dominated by exotic species that typically out compete native groundcover species, such as Kikuyu, a common occurrence in the Cumberland Plain (NSW Scientific Committee 2009) (Section 3.1). The Cumberland Plain has been subjected to extensive modification and disturbance, therefore it is not unusual for Cumberland Plain Woodland and other native vegetation communities to exist as scattered eucalypts with an entirely exotic groundcover and mid-storey (NSW Scientific Committee 2009). Although the species listed by Samuel do typically occur in heavily disturbed patches of Cumberland Plain Woodland, they were not recorded as present within the BAM plots included in the BDAR (Appendix 3). Biosis has extensive experience undertaking BAM plots in the Cumberland Plain and is highly familiar with the local species (both native and exotic) that are expected to occur within the area. Furthermore, the previous BDAR undertaken for the project (écologique 2024) also recorded a low number of native species and high numbers of exotic species, reaffirming the low native flora species diversity within the subject land. Photo 6 was not taken at the location of BAM plot B03 for VZ 3975_Low, hence why Common Reed *Phragmites australis* was not captured within the BAM plot data. Photo 6 was taken at a section of 3975_Low in the southeast corner of the subject land which was determined too difficult to fit a BAM plot in at the time due to exceptionally dense exotic vegetation adjacent. However, Biosis has undertaken an additional BAM plot in this section to ensure PCT 3975 is well represented within the BDAR (Section 3.2, Table 10, Figure 6). The BAM plot data has been added to the BAM Calculator, and a revised VI score has been generated accordingly (Section 3.2.3).

Reference	Comment	Biosis' response
		The BDAR has been updated with these changes.
3.6	***Table of current vegetation integrity scores for each vegetation zone within the site and including:*** • ***Structure condition score.*** *The structure data for PCT 3975 does not match the photographs of PCT 3975 supplied, which show a greater percentage cover of grasses and grass-like plants than 11.2%.* *The BAM plot B03, which was the only plot conducted for PCT 3975, is located on the NW corner of a dam on Redmayne Rd. From Google Streetview, this corner contains a far lower proportion of wetland plants (Phragmites australis and/or Typha orientalis) when compared to the NE corner of that dam. The BAM plot may not be in a representative location.* *Extra note, from Google maps, the BAM03 plot (PCT 3975) is located on the NW corner of the dam, which appears to be much more heavily disturbed from dam building earthworks than the NE corner.* *If the missing species indicated in the BDAR (Azolla and Phragmites), are added to the BAM-c case, at 1 and 10% cover respectively, this takes the VI score above the threshold.*	Biosis has undertaken additional BAM plots for PCT 3975; one in the north-east corner of the dam (where the original BAM plot was completed) and one where Photo 6 was taken along the first order mapped waterway in the south-east corner of the development footprint (Section 3.2, Table 10, Figure 6). The BAM plot data has been added to the BAM Calculator, and a revised VI score has been generated accordingly (Section 3.2.3). As mentioned in Reference 3.5, Photo 6 was not taken at the location of BAM plot B03 for VZ 3975_Low, hence why Common Reed was not captured within the BAM plot data. Photo 6 was taken at a section of 3975_Low in the southeast corner of the subject land. Biosis has undertaken a BAM plot in this section to ensure PCT 3975 is well represented within the BDAR (Section 3.2, Table 10, Figure 6). The BAM plot data has been added to the BAM Calculator, and a revised VI score has been generated accordingly (Section 3.2.3). The BDAR has been updated with these changes.
3.7	***Table of current vegetation integrity scores for each vegetation zone within the site and including:*** • ***Presence of hollow bearing trees.*** *For example (under 4.3.4 (11.)): There are seven locations of hollow-bearing trees identified in Figure 5. These appear to be within 6 different zones/areas.* *Each zone containing any hollow-bearing trees is required to have this feature included in at least one plot. Of the multiple areas this applies to, only one zone has a VI plot with a hollow tree in it (Appendix 3.2).* *It is wrongly indicated in* Table 11 *that two zones have no hollow bearing trees: those zones actually do have this feature (Figure 5), but due to the plot locations, this wasn't recorded.*	Hollow-bearing trees are located within the following vegetation zones (VZs) (Section 6.1.1, Figure 5): • 3320_Low • 3320_Scattered Trees A BAM plot was undertaken for VZ 3320_Scattered Trees which had a hollow-bearing tree present. Therefore, one additional BAM plot in VZ 3320_low (excluding 3320_Scattered Trees) has been undertaken in the location where the hollow-bearing tree is present (Section 3.2, Table 10, Figure 6). The BAM plot data has been added to the BAM Calculator, and a revised VI score has been generated accordingly (Section 3.2.3). The BDAR has been updated with these changes.

1.2 Purpose of this assessment

This BDAR will:

- Address the BAM (DPIE 2020a) and the Biodiversity Offsets Scheme (BOS).
- Identify how the proponent has avoided and minimised impacts to biodiversity.
- Identify any potential impact that could be characterised as serious and irreversible.

- Describe the offset obligations required to compensate for any unavoidable biodiversity impacts resulting from the proposed development.
- Consider and assess the proposal in accordance with other relevant legislation such as the Commonwealth EPBC Act.

All biodiversity assessments have been undertaken in accordance with the BAM (DPIE 2020a), and this BDAR has been prepared by Dr Caragh Heenan, overseen by Accredited Assessor Callan Wharfe (BAAS18138) and reviewed by Callan Wharfe and Matthew Hyde. This BDAR describes the outcome of the development assessment case (#00051084; Revision 4) conducted consistent with the BAM (DPIE 2020a).

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

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

- The development site comprises land located along The Horsley Drive, Redmayne Road and Chandos Road, Horsley Park, within the Fairfield City Council Local Government Area (LGA) and the Greater Sydney Local Land Services (LLS) region. It is located approximately 13 km to the south-west of the Parramatta Central Business District (CBD) and approximately 14 km north-east of Western Sydney International Airport. The Horsley Drive is a State road which connects to the M7 Motorway and Wallgrove Road approximately 700 m to the west and Wetherill Park to the east. The development site is identified as 1647-1671 The Horsley Drive, 157-213 and 136-170 Redmayne Road, 137-209 Chandos Road, and a portion of Redmayne Road, Horsley Park. It comprises eighteen (18) lots and a portion of Redmayne Road with a total site area of approximately 36 ha which is owned by Frasers Property Industrial. The development site is defined as the entirety of the lots provided in Table 2 and shown in Figure 1 and Figure 2.
- The development footprint comprises the majority of the development site, including all direct impacts from the development, including vegetation removal, construction and laydown areas and is approximately 35.85 ha. Following RtS, the development footprint has been extended beyond the development site boundary to include the entire TPZ for trees whose TPZ overlaps with the development site and original development footprint along Redmayne Road on the implication that the trees may be indirectly impacted by the development in this area. Excluded from the development footprint is a small strip of land along The Horsley Drive at the southernmost end of the development site. This area is set aside for road access and widening for the proposed development, to be assessed under a separate Part 5 assessment.
- The subject land is defined as the extent of the development footprint as well as a 30 m buffer for indirect impacts and is approximately 46.40 ha. The subject land is located in the Fairfield LGA and the Greater Sydney LLS region and is zoned as E4 General Industrial under the Fairfield LEP 2013, as per the *Amendment to Fairfield LEP 2013 – Industrial Rezoning of the Key Hole Lands* (NSW DPHI 2023).
- The assessment area includes the subject land and the area of land within the 1500 m buffer zone surrounding the subject land and is approximately 1224.23 ha (Figure 3).

Table 2 Lots forming the development site

Address	Lot/DP
203-209 Chandos Road	Lot 58A DP 17288

Address	Lot/DP
187-201 Chandos Road	Lot 57 DP 13961
171-185 Chandos Road	Lot 56 DP 13961
155-169 Chandos Road	Lot A DP 361393
137-153 Chandos Road	Lot B DP 361393
157-165 Redmayne Road	Lot 59A DP 362022
167-183 Redmayne Road	Lot 1 DP 505934
185-193 Redmayne Road	Lot 2 DP505934
195-201 Redmayne Road	Lot 61B DP 17288
203-213 Redmayne Road	Lot A DP 347034
136-142 Redmayne Road	Lot B DP 357890
144-150 Redmayne Road	Lot A DP 357890
152-170 Redmayne Road	Lot B DP 377249
102 – 118 Redmayne Road	Lot 110 DP 13905
1671 The Horsley Drive	Lot 78B DP 347873
1667 The Horsley Drive	Lot 79A DP 17288
1657 The Horsley Drive	Lot 79B DP 17288
1647 The Horsley Drive	Lot 1 DP 849699

1.4 Sources of information

Sources of information used in the assessment included relevant databases, spatial data, literature and previous site reports. In order to provide a context for the assessment area, records of flora and fauna from within 5 kilometres (the locality) were collated, and biodiversity data from the following databases and datasets were reviewed:

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

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

- The NSW PCTs, as held within the BioNet Vegetation Classification database (NSW DCCEEW 2025b).

- Relevant vegetation mapping, such as The Native Vegetation of the Sydney Metropolitan Area (OEH 2016) and the NSW State Vegetation Type Map (SVTM C2.0M2.0) (NSW DCCEEW 2024b).

The following reports were also reviewed and relied on to provide additional information:

- *Industrial Rezoning of the Keyhole Lands (PP-2021-3824) Biodiversity Development Assessment Report* (écologique 2024).

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

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

- Catchment Boundaries of New South Wales dataset.
- Mitchell Landscapes Version 3.0.
- Interim Biogeographic Regionalisation of Australia (IBRA) Version 7.
- Directory of Important Wetlands (DoIW).
- Spatial data associated with NSW State Vegetation Type Map (SVTM C2.0M2.0) (NSW DCCEEW 2024b).
- NSW Soil and Land Information System (SALIS).
- Mapping has been produced using a Geographic Information System (GIS). The following maps and data have been provided:
  - Digital mapping with aerial photography showing 1:1000 or finer.
  - Site map as described in subsection 3.1.1 of the BAM (DPIE 2020a).
  - Location map as described in subsection 3.1.2 of the BAM (DPIE 2020a).
  - Landscape map with features including 1,500 metre buffer, as described in section 3.1.3 of the BAM (DPIE 2020a).

1.5 Legislative requirements

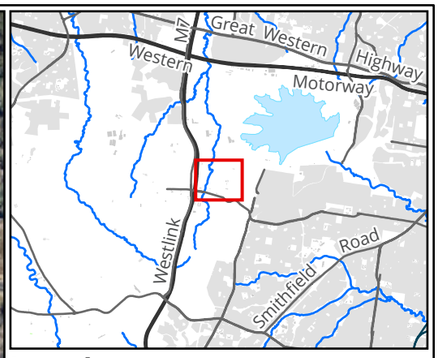
The project has been assessed against relevant biodiversity legislation and government policy, including:

- *Environment Protection and Biodiversity Conservation Act 1999.*
- *Environmental Planning and Assessment Act 1979.*
- *Biodiversity Conservation Act 2016.*
- *Fisheries Management Act 1994.*
- *Biosecurity Act 2015.*
- State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP).
- State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP).
- *Fairfield CityWide Development Control Plan 2013* (Fairfield DCP).
- *Draft Keyhole Estate Development Control Plan 2023* (Keyhole Estate DCP).
- *Fairfield Local Environmental Plan 2013* (Fairfield LEP).

This report has been prepared in response to the requirements contained within the SEARs for SSD-76397489 and directly responds to the relevant SEARs outlined in Table 3 below.

Table 3 SEARs in relation to biodiversity

Reference	SEARs requirement	Report section
1	*Landscaping: A detailed site-wide landscape plan, including:* • *An arborist report, tree protection plan and vegetation management plan.* • *Detailed plans showing:* – *Suitable landscaping which incorporates endemic species, heights of trees at maturity and proposed canopy coverage.* – *Location of trees to be removed and retained.*	This recommendation includes the preparation of a VMP. A VMP can be prepared to rehabilitate any patches of retained native vegetation, if required. Biosis understands that limited native vegetation is being retained along the western boundary of the development site, limited to canopy only and TPZ/understorey of trees located outside of the development site. Native species relevant to the PCTs present within the subject land are to be utilised in landscaping (Habit8 2026). See Section 5 for more information.
2	*Biodiversity: An assessment of the proposal's biodiversity impacts in accordance with the Biodiversity Conservation Act 2016, including the preparation of a BDAR where required under the Act, except where a waiver for preparation of a BDAR has been granted.*	This BDAR has been prepared, in accordance with the BAM (DPIE 2020a), with consideration to the EPBC Act and BC Act, as well as the legislation outlined above, to support this requirement.



Legend

- Subject land
- Development site
- Development footprint

Figure 1 Subject land

0 50 100 150 200

Metres
Scale: 1:5,000 @ A3
Coordinate System:
GDA2020 MGA Zone 56

N

biosis
APEM Group

Matter: 40675, Date: 02 March 2026,
Prepared for CBH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F1_SubjectLand

2 Landscape context

This chapter describes the landscape and site context of the subject land, describing the landscape features present within the subject land and within a 1500 metre buffer, as required by the BAM (DPIE 2020a). Figure 3 shows the location of the subject land and landscape features within the 1500 metre buffer.

2.1 Subject land description

The subject land is located directly north of The Horsley Drive and south of Chandos Road, with Redmayne Road passing through its centre, in Horsley Park, between Eastern Creek and Wetherill Park. Current land use is residential and agricultural. It contains some residential buildings, but consists primarily of cleared grassland with scattered patches of native vegetation. There is one watercourse within the subject land, located to the south, traversing east-west.

The subject land is within the Penrith 1:100k soil landscape (Hazelton & Tille 1990) and is mapped as Luddenham soil landscape to the south and east, and Blacktown soil landscape to the north and west (Hazelton & Tille 1990).

The Luddenham landscape is characterised by undulating rolling low hills on Wianamatta Group shales, often associated with Minchinbury sandstone. Soil of this landscape is highly susceptible to erosion, and much of the landscape has been extensively cleared. The composition of the soil is highly influential on the condition of the vegetation communities observed. Common canopy species for the area include Spotted Gum *Eucalyptus maculata* and Grey Box *E. moluccana*.

The Blacktown soils landscape is characterised by gently undulating rises on Wianamatta Group shales. Dominant land uses for this landscape include intensive residential horticulture and animal husbandry. Common canopy species for the area include Forest Red Gum *Eucalyptus tereticornis*, Narrow-leaved Ironbark *E. crebra,* and Grey Box, however the region has been extensively cleared.

2.1.1 Native vegetation cover

Vegetation within the assessment area (within the 1500 metre buffer area) was assessed using aerial photographic interpretation, field survey results and existing vegetation mapping. Table 4 to Table 6 provide the list of PCTs identified from the current assessment, as occurring within the subject land. Conservation status of the communities is also provided.

The total area of the 1500 metre buffer around the subject land is 1224.92 hectares, with the area of native vegetation mapped within the buffer being 267.24 hectares. This is a native vegetation cover of 22% (10–30% class as defined in Section 3.2.3 of the BAM (DPIE 2020a)) and this value was entered into the BAM calculator.

Cleared areas and areas of non-native vegetation within the assessment area cover 957.68 hectares.

2.1.2 IBRA Bioregions and subregions

The assessment area occurs within the Sydney Basin IBRA bioregion and the Cumberland IBRA subregion. The Sydney Basin Bioregion lies on the central east coast of NSW and covers an area of approximately 3,624,008 hectares. It occupies about 4.53% of NSW and is one of two bioregions contained wholly within the

state. The bioregion extends from just north of Batemans Bay to Nelson Bay on the central coast, and almost as far west as Mudgee. The bioregion is bordered to the north by the North Coast and Brigalow Belt South bioregions, to the south by the South East Corner Bioregion and to the west by the South Eastern Highlands and South Western Slopes bioregions. The Sydney Basin Bioregion is one of the most species diverse in Australia. This is a result of the variety of rock types, topography and climates in the bioregion (OEH 2016).

The Cumberland subregion covers a 275,693-hectare area containing the Cumberland Plain, a broad shale basin in western Sydney. The biodiversity of the Cumberland subregion is distinct from that of the surrounding areas of sandstone dominated vegetation. Instead, the shale soils of the Cumberland Plain provide a relatively flat and fertile land, much of which has been developed or cleared for agriculture. Approximately 13% of native vegetation that comprised the Cumberland Plain remains as intact bushland (OEH 2015). The Cumberland subregion includes the land west of Sydney city through to the Blue Mountains escarpment, including many of the suburbs of Western Sydney, such as North Richmond and Glossodia in the north through to Bargo and Yanderra in the south.

2.1.3 Rivers and streams

The development site is located within the Greater Sydney LLS Region and the Hawksbury catchment. The closest river-mouth is the Parramatta River located approximately 40 kilometres to the east of the development site. The closest major waterbody is Prospect Reservoir, located approximately 1 kilometre to the north-east of the development site. There is one unnamed first order watercourse mapped within the development site, associated with Eastern Creek (Figure 2).

Scoping report submissions from Fairfield City Council (2024), state that based on advice from NSW DCCEEW, the watercourse:

- Remain naturalised and meandering.
- Not be channelized or piped at any location including inter-allotment drainage lines.
- Be resolved to the confluence of Eastern Creek including through properties not owned by the developer (no partial solutions will be accepted).
- A stream erosion index of no greater than 2.0 conveyed from the watercourse into Eastern Creek in a post development scenario.
- That appropriate vegetation buffers required under the water management guidelines be applied.

The development footprint identified does not allow for retention of the first order waterway and therefore is not in accordance with submissions from Fairfield City Council (2024).

There are no Key Fish Habitats as mapped by the NSW Department of Primary Industries and Regional Development (DPIRD) within the development site (NSW DPI 2013).

2.1.4 Wetlands

No areas of the development site, and development footprint, are mapped as a Wetland in the DoIW of Australia (Cth DCCEEW 2026). The closest Wetland in the DoIW of Australia (Cth DCCEEW 2026), Bicentennial Park, is located approximately 19 kilometres to the east of the development site.

The development site is not in close proximity to a Ramsar wetland, with the closest Ramsar wetland being located approximately 32 kilometres to the south-east of the subject land.

2.1.5 Connectivity

Connectivity within the development site is poor, as much of the site has been previously cleared. Retained vegetation within the development site to the north has limited connection for mobile species to move to the north of the subject land to remnant patches of vegetation between the site and Prospect Reservoir. Less mobile species and other species reliant on waterbodies and watercourses (e.g., frogs) may be able to move into retained patches of vegetation to the east along a waterway associated with Eastern Creek (Figure 2 and Figure 3).

2.1.6 Geological features of significance

There were no recorded karst, caves, crevices, cliffs or other areas of geological significance within the development site or within the assessment area. There are some excavations in the assessment area, located to the north of the subject land, associated with the Austral Bricks Plant along Ferrers Road (Figure 3).

2.1.7 Areas of outstanding biodiversity value

There are no areas of outstanding biodiversity or biodiversity values mapped within the development site (NSW DCCEEW 2024c).

2.1.8 NSW (Mitchell) Landscape

The development site occurs within the Cumberland Plain Mitchell Landscape (DECC NSW 2002). The Cumberland landscape group consist of low rolling hills and valleys with a general elevation of 30 to 120 metres and local relief of 50 metres, in a rain shadow area between the Blue Mountains and the coast, NSW. The landscape group primarily consists of horizontal Triassic shales and lithic sandstones, Tertiary river gravels and sands, Quaternary alluvium, pedal uniform red to brown clays, red and brown texture-contrast soils and yellow harsh texture-contrast soils. The composition of the soil is highly influential on the vegetation communities observed. As such, the landscape is associated with woodlands and open forest of Grey Box, Forest Red Gum, Narrow-leaved Ironbark, Thin-leaved Stringybark *E. eugenioides*, Cabbage Gum *E. amplifolia* and Broad-leaved Apple *Angophora subvelutina*, Blackthorn *Bursaria spinosa*, Swamp Oak *Casuarina glauca* and Paperbark *Melaleuca* spp.

2.1.9 Additional landscape features

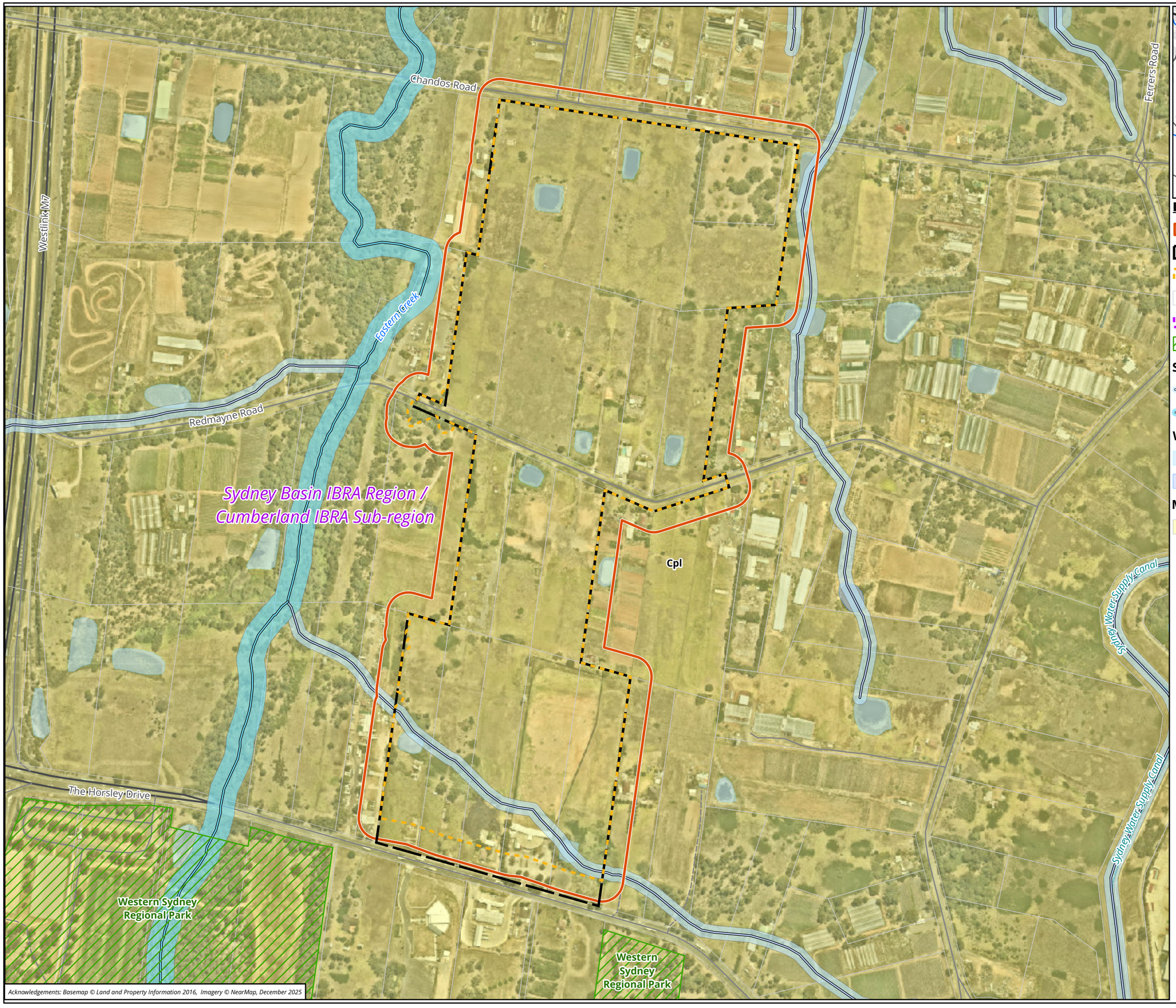
No additional landscape features were identified within the subject land.

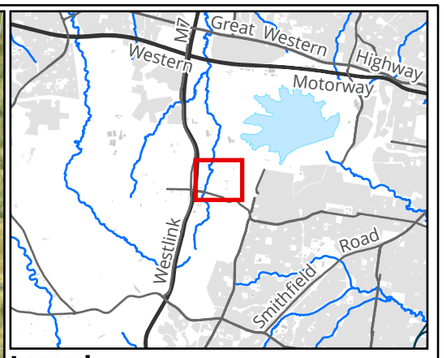
2.1.10 Hydrology

The site is not mapped as having Groundwater Vulnerability under the Fairfield LEP 2013.

2.1.11 Mapped Important Area

The subject land is not within a mapped Important Area (NSW DCCEEW 2024a).





Legend

- Subject land
- Development site
- Development footprint
- Lot
- IBRA Region/Sub-region
- National Park/Reserve

Strahler stream order / buffers

- 1
- 2

Waterbodies

- Dam
- Natural waterbody

Mitchell landscapes

- Cpl, Cumberland Plain

Figure 2 Site map

0 50 100 150 200

Metres

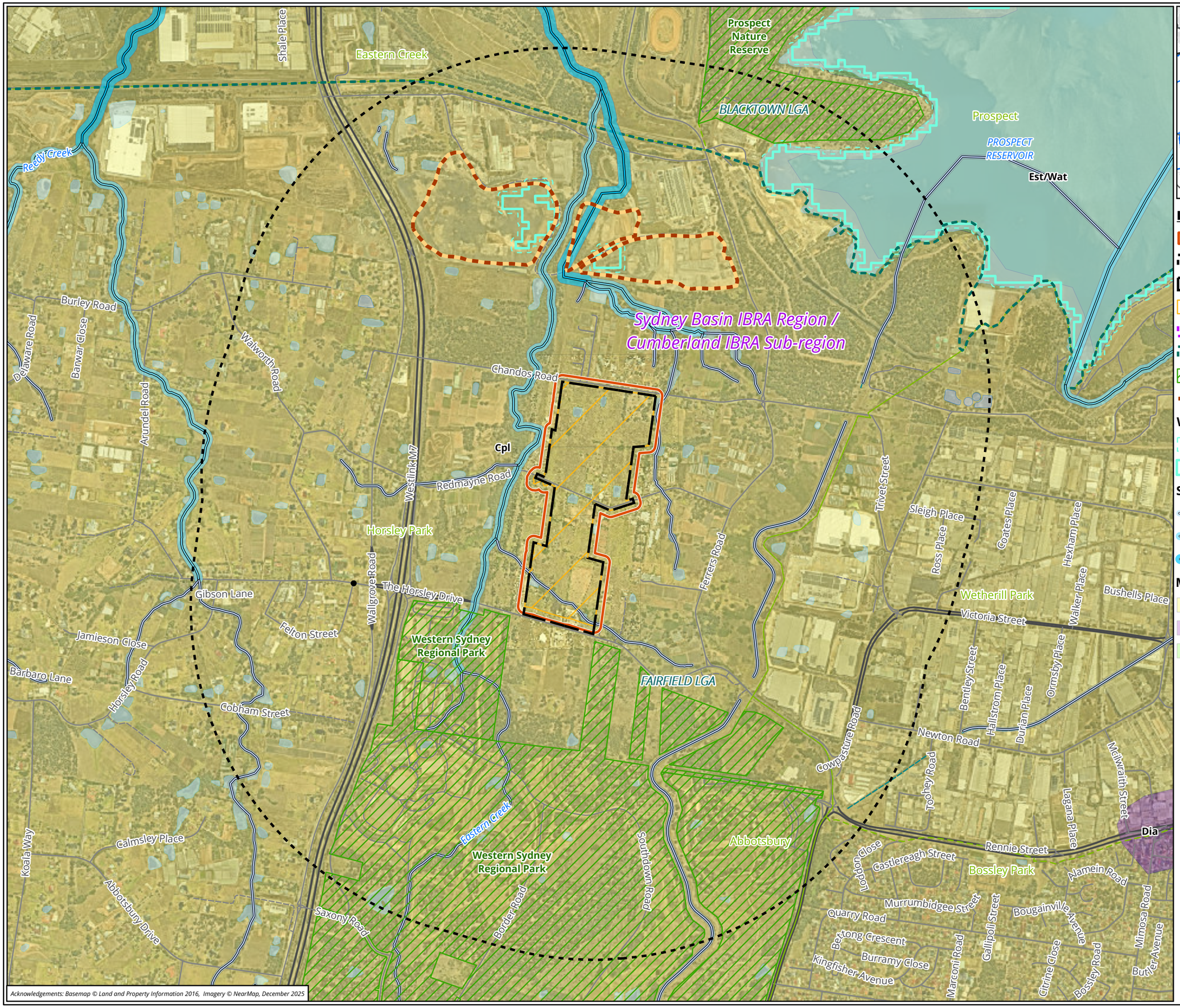
Scale: 1:5,000 @ A3

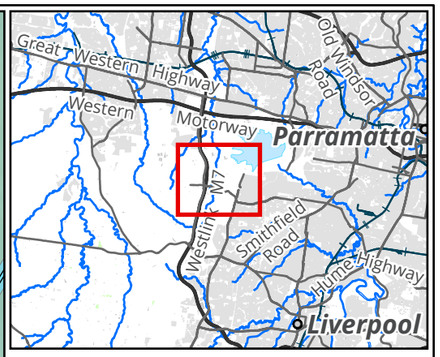
Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 02 March 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F2_Sitemap





Legend

- Subject land
- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve
- Excavation face

Wetlands /estuaries

- Riparian buffers - Local wetlands
- Local wetlands

Strahler stream order / buffers

- 1
- 2
- 3

Mitchell landscapes

- Cpl, Cumberland Plain
- Dia,Sydney Basin Diatremes
- Est/Wat,Estuary/Water Added

Figure 3 Location map

0 200 400 600

Metres

Scale: 1:16,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

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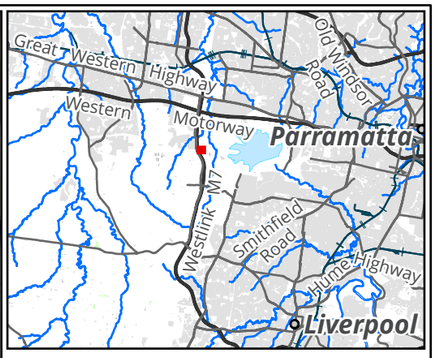

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

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Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50 Metres

N

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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Matter: 40675, Date: 17 April 2026
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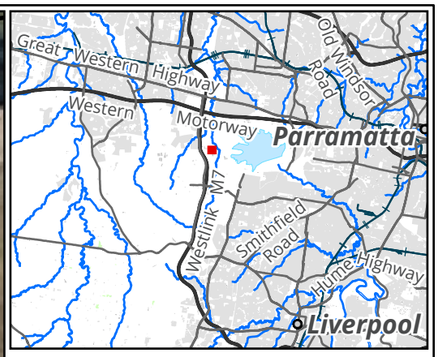
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025



Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 17 April 2026
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Layout: 40675_F3_LocationAA

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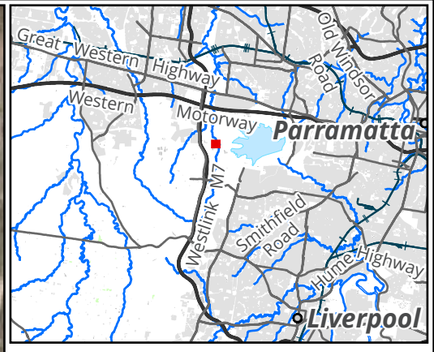

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
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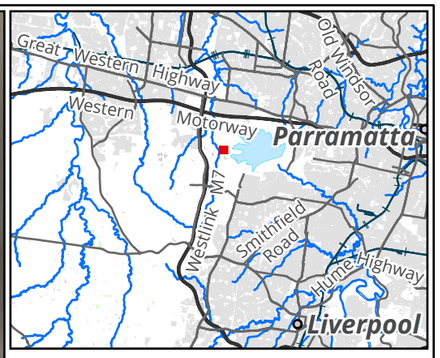

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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Matter: 40675, Date: 17 April 2026
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Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve

Strahler stream order / buffers

- 1
- 2
- 3

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Figure 3 Location map

0 — 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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Matter: 40675, Date: 17 April 2026
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Layout: 40675_F3_LocationAA

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve

Wetlands /estuaries

- Riparian buffers - Local wetlands
- Local wetlands

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

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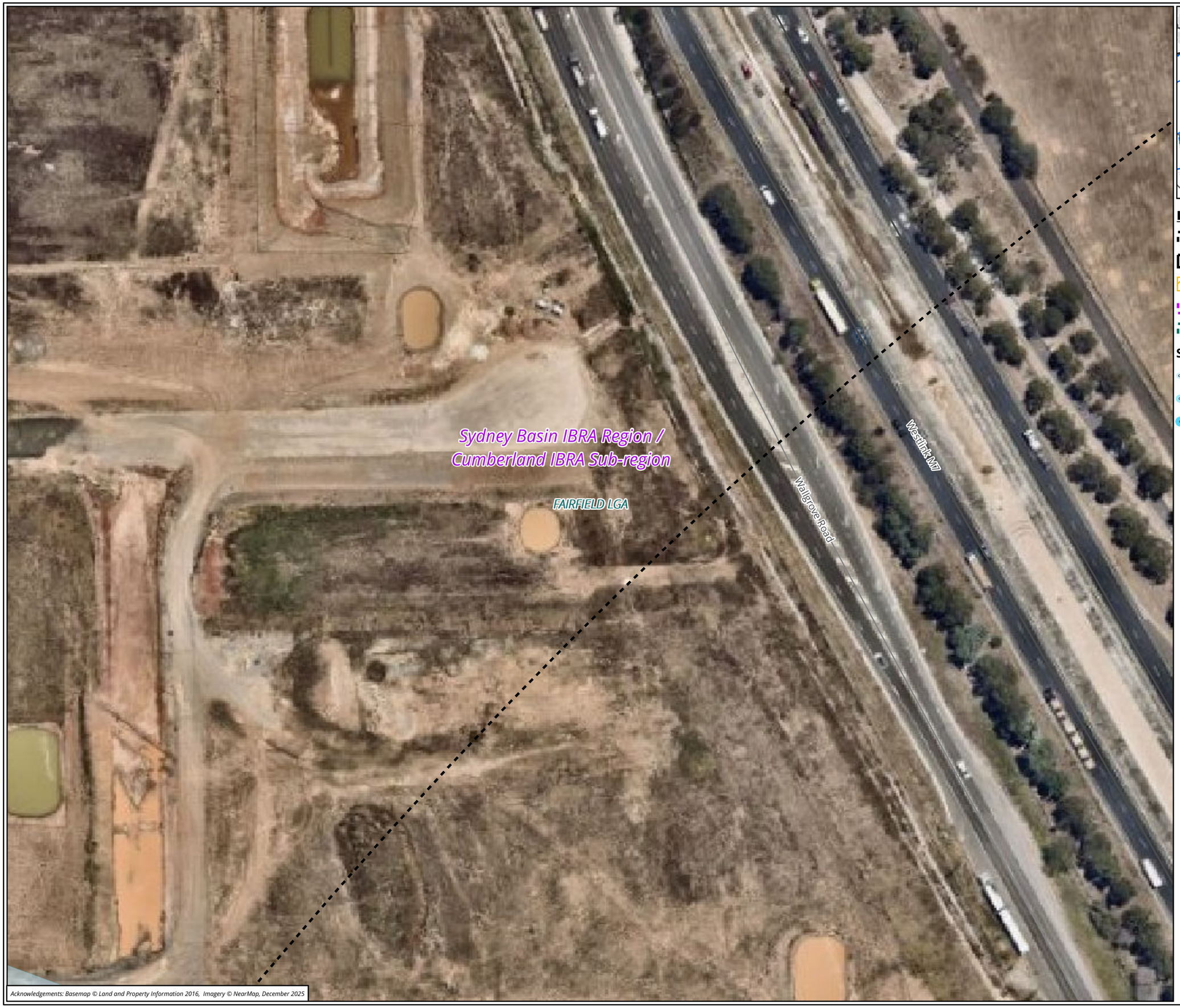
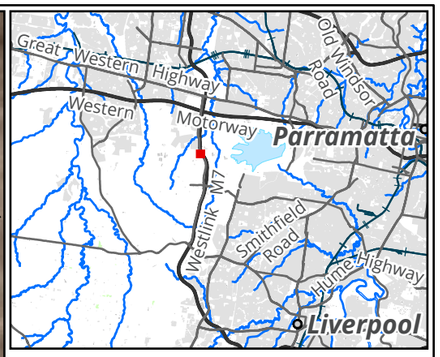
Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025





Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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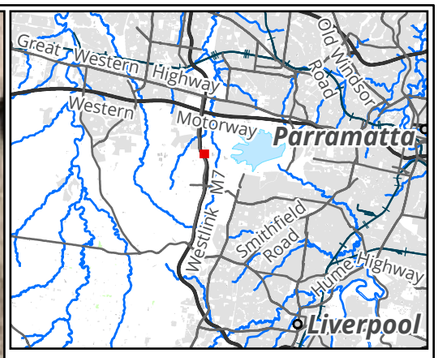

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 — 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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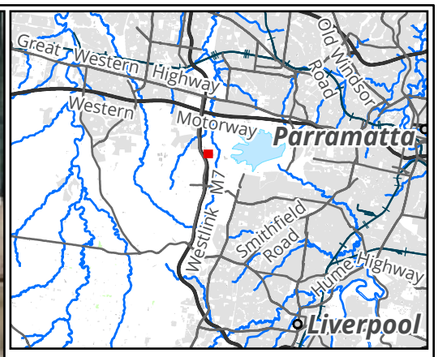

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- Excavation face

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 50 N

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

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Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- Excavation face

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
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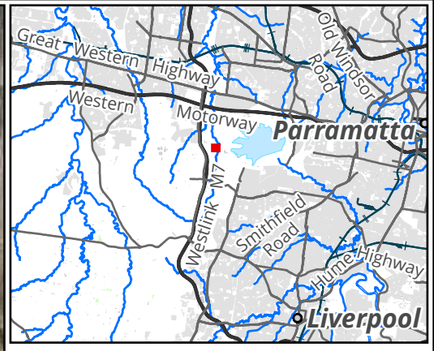

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 — 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
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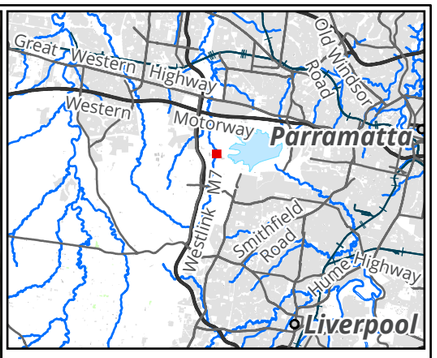

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
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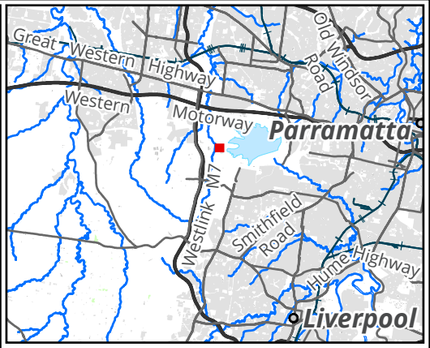

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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APEM Group

Matter: 40675, Date: 17 April 2026
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Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
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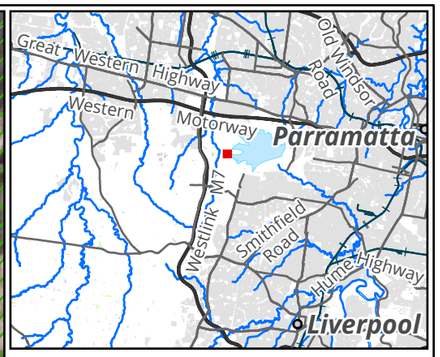

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

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

N

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APEM Group

Matter: 40675, Date: 17 April 2026
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Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve

Wetlands /estuaries

- Riparian buffers - Local wetlands
- Local wetlands

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 — 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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APEM Group

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Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve

Wetlands /estuaries

- Riparian buffers - Local wetlands
- Local wetlands

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 — 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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APEM Group

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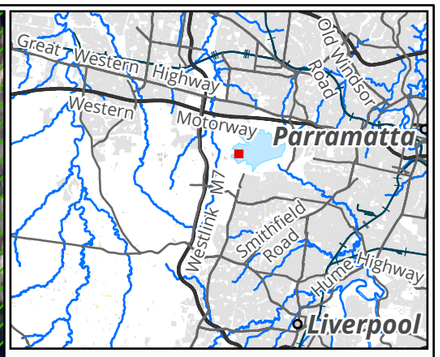

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve

Wetlands /estuaries

- Riparian buffers - Local wetlands
- Local wetlands

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 17 April 2026
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Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEM Group

Matter: 40675, Date: 17 April 2026
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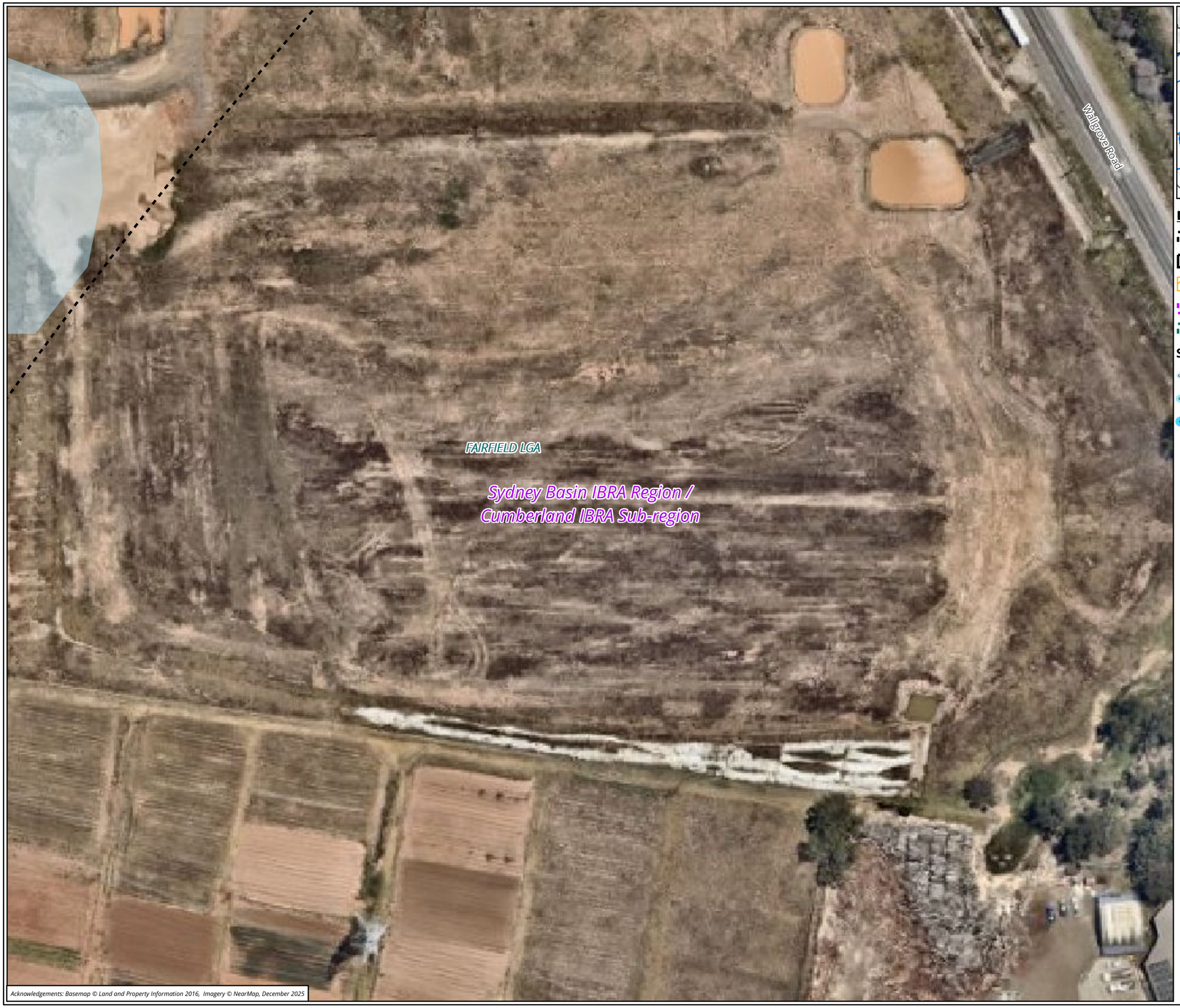

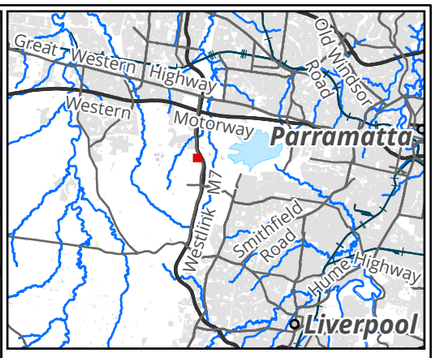

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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APEM Group

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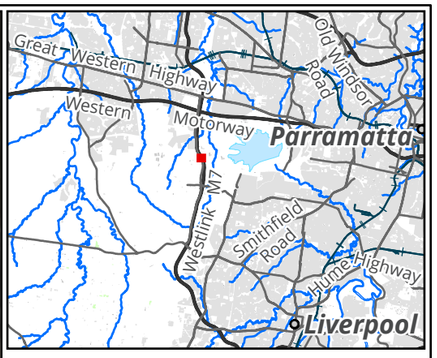

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- Excavation face

Strahler stream order / buffers

- 1
- 2
- 3

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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEM Group

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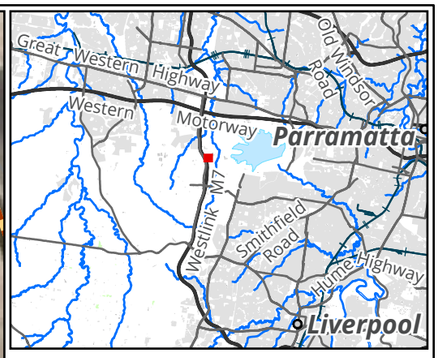

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- Excavation face

Strahler stream order / buffers

- 1
- 2
- 3

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Figure 3 Location map

0 — 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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APEM Group

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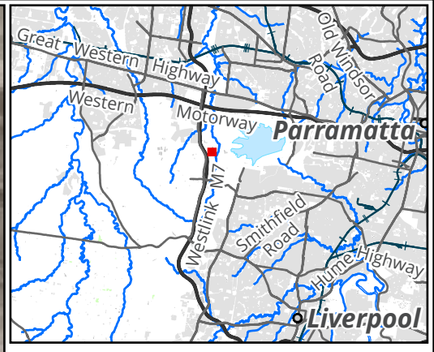

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
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- Excavation face

Wetlands /estuaries

- Riparian buffers - Local wetlands
- Local wetlands

Strahler stream order / buffers

- 1
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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
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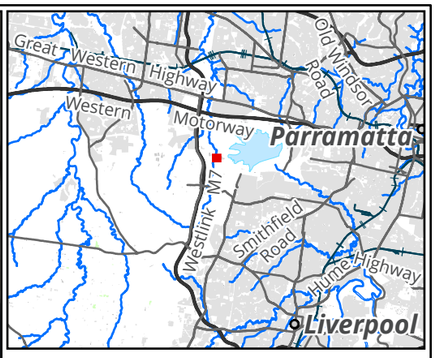

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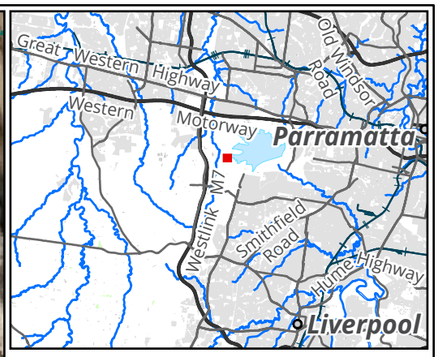

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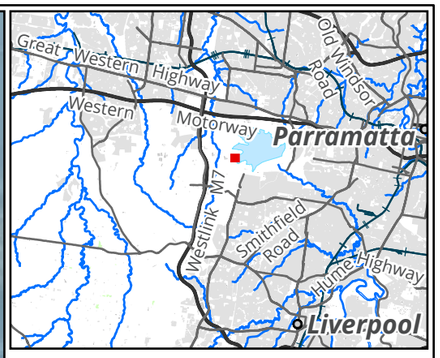

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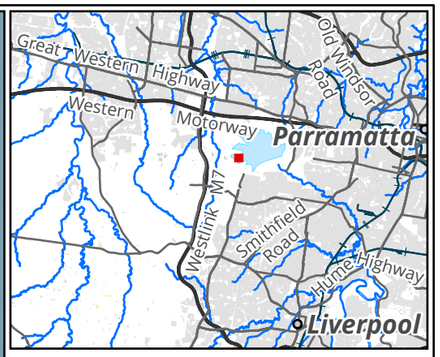

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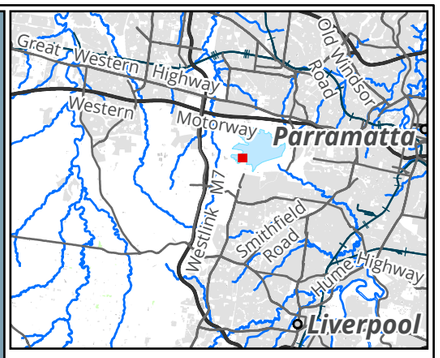

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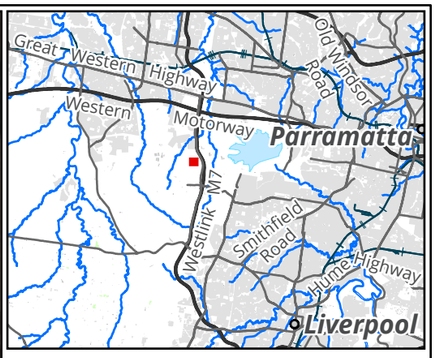

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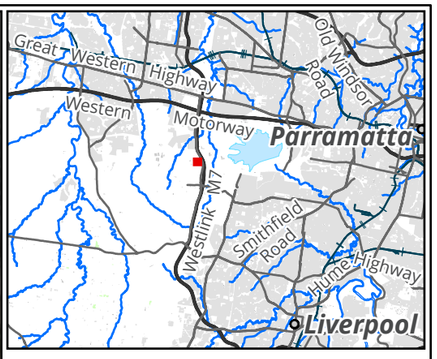

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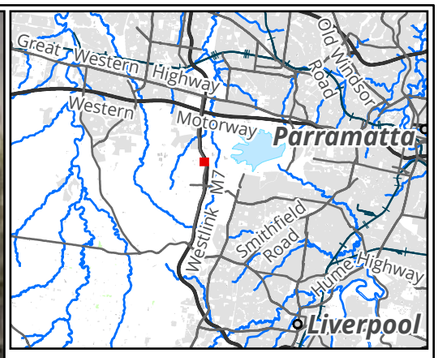

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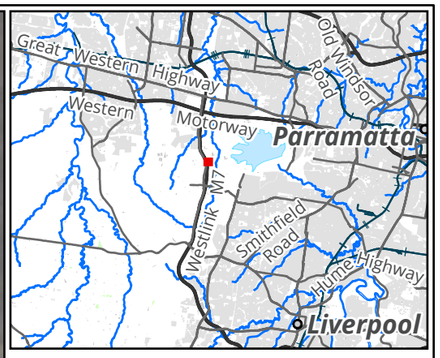

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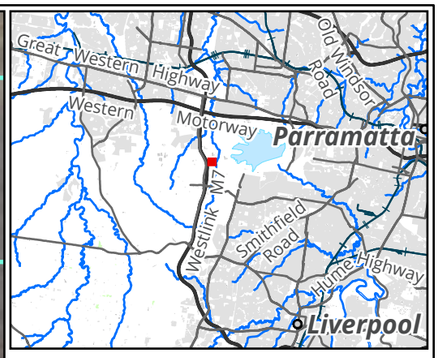

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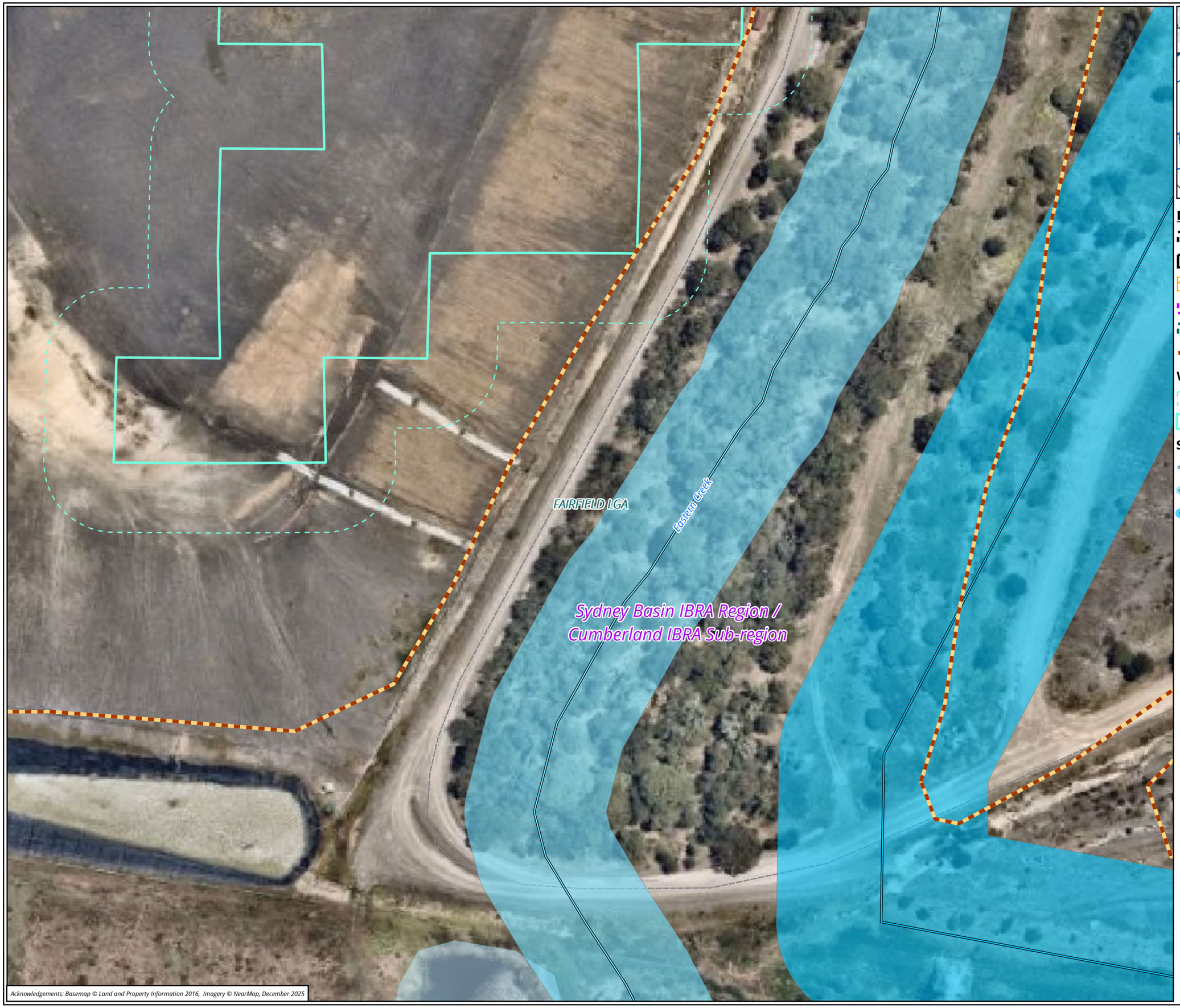

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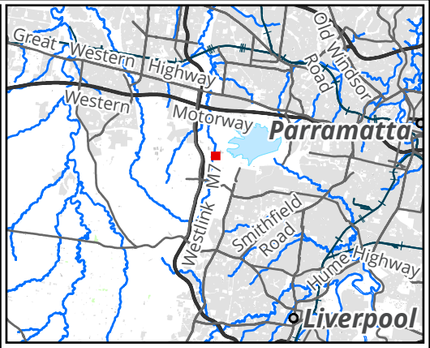

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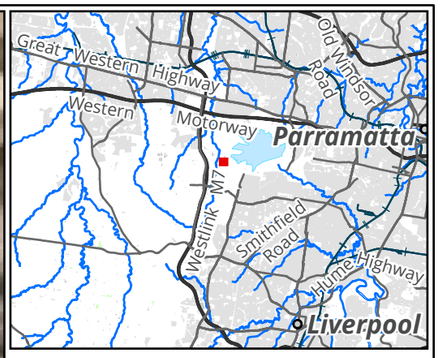

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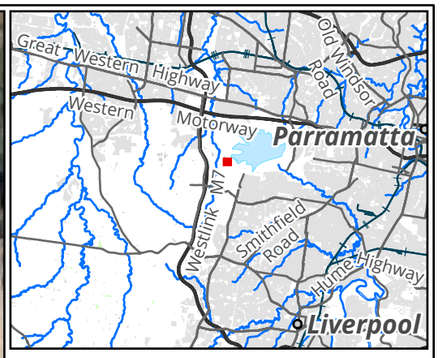

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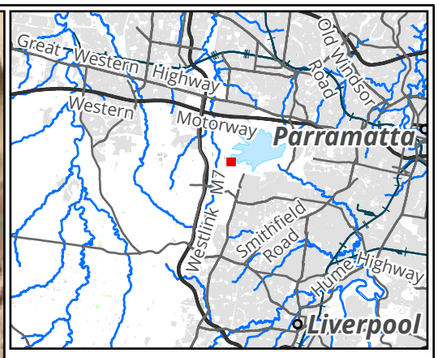

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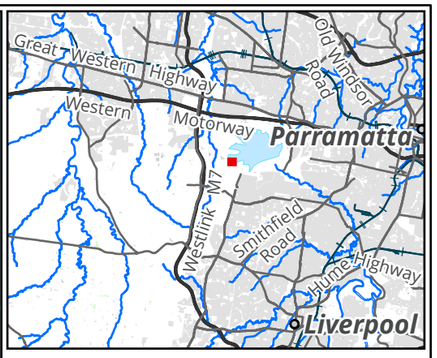

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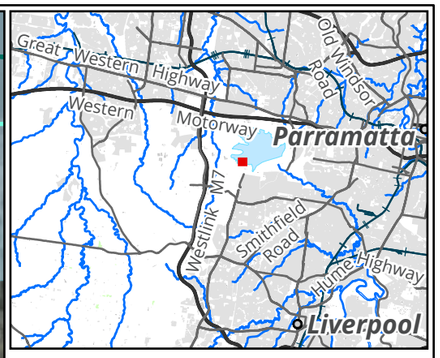

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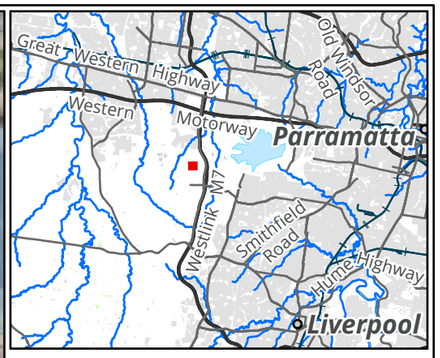

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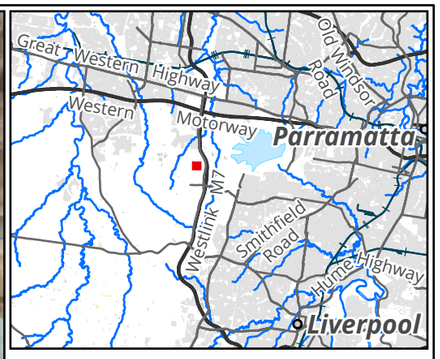

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APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEMGroup

Matter: 40675, Date: 17 April 2026
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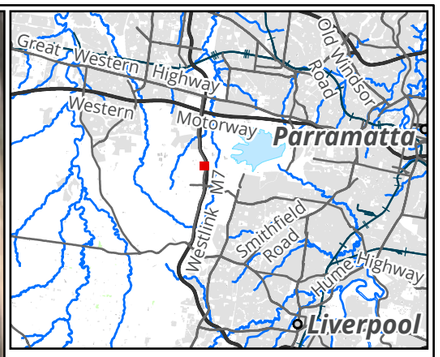

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Strahler stream order / buffers

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Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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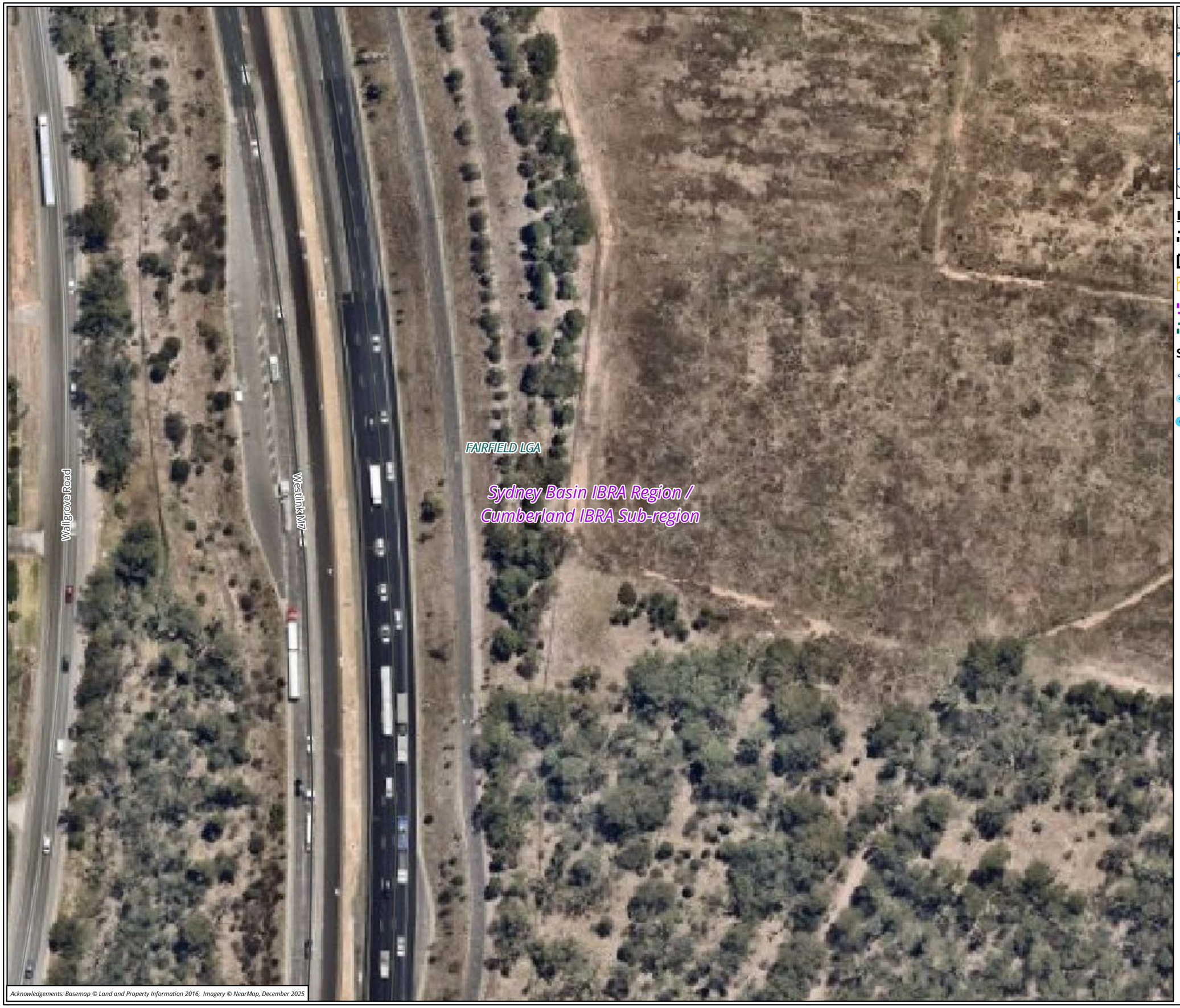

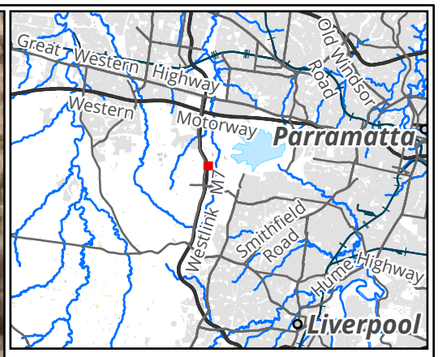

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- Assessment area
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Strahler stream order / buffers

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Figure 3 Location map

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Metres

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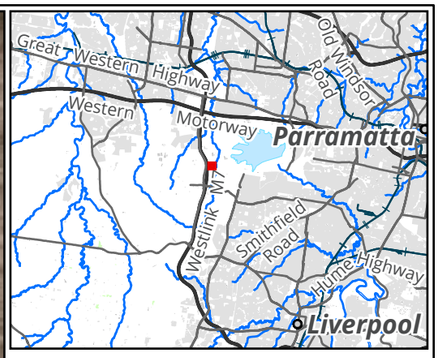

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Strahler stream order / buffers

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Figure 3 Location map

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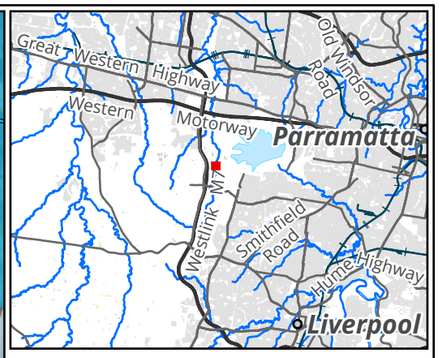

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Strahler stream order / buffers

- 1
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- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 50

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

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- Local Government Area
- Excavation face

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 — 50 Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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Legend

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Strahler stream order / buffers

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Figure 3 Location map

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Metres

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Coordinate System: GDA2020 MGA Zone 56

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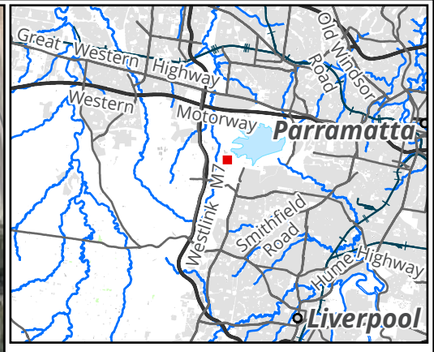

Legend

- Assessment area
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- Local Government Area
- Excavation face

Strahler stream order / buffers

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Figure 3 Location map

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Strahler stream order / buffers

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Figure 3 Location map

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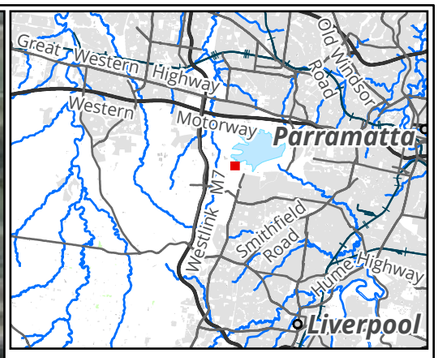

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Strahler stream order / buffers

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Figure 3 Location map

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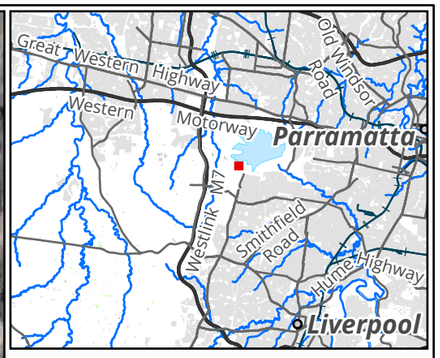

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Strahler stream order / buffers

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Figure 3 Location map

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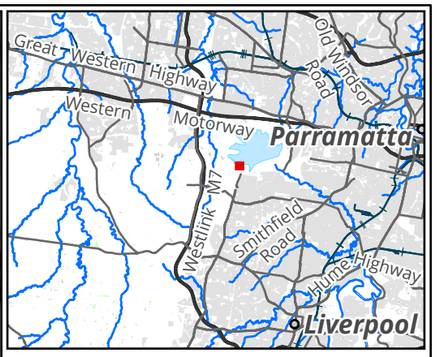

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Strahler stream order / buffers

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Figure 3 Location map

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Metres
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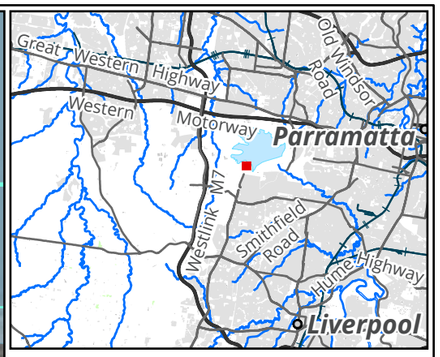

Legend

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- Local Government Area

Wetlands /estuaries

- Riparian buffers - Local wetlands
- Local wetlands

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50 Metres

N

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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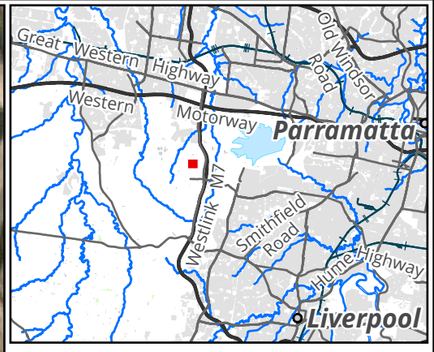

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Strahler stream order / buffers

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Figure 3 Location map

0 — 50 Metres

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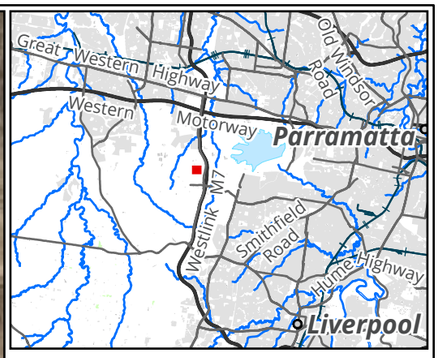

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Strahler stream order / buffers

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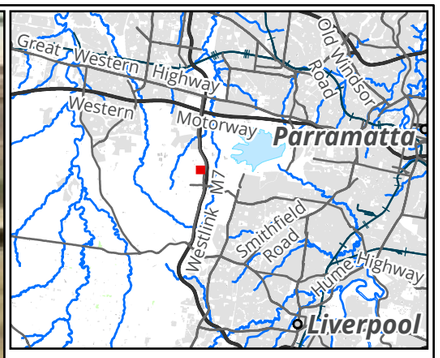

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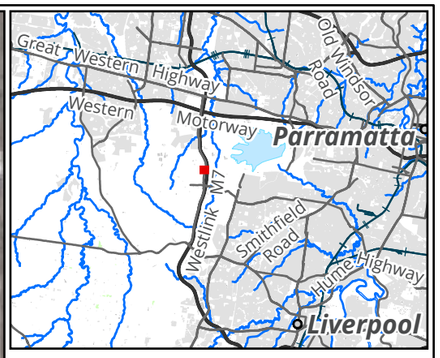

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Figure 3 Location map

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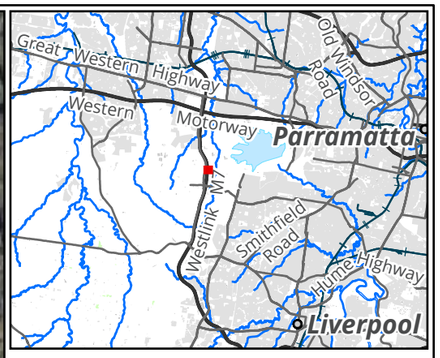

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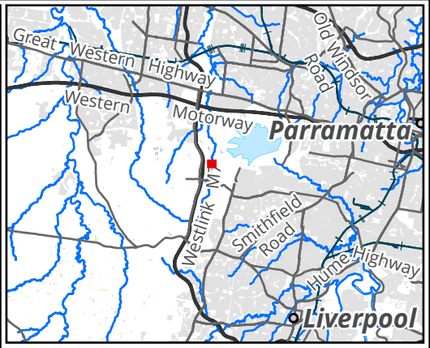

Legend

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

Strahler stream order / buffers

- 1
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Figure 3 Location map

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Legend

- Subject land
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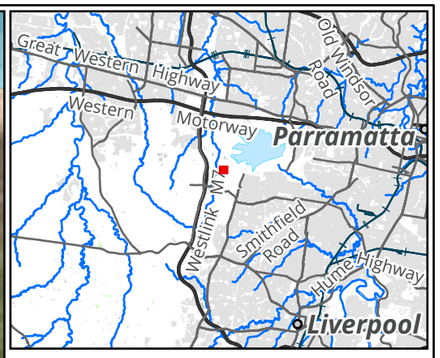

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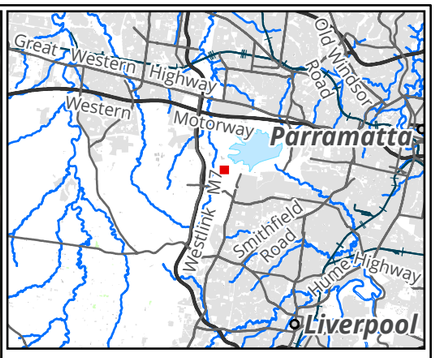

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Figure 3 Location map

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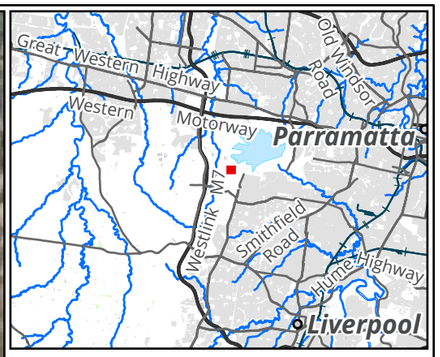

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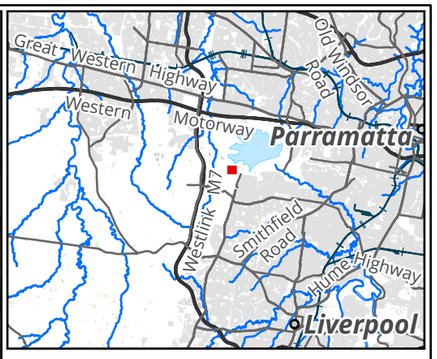

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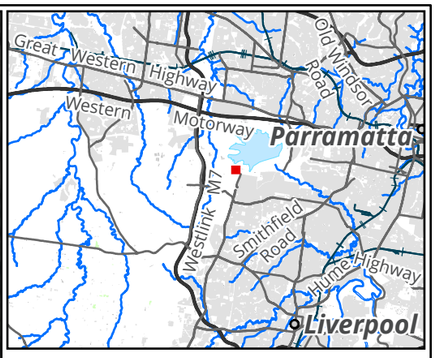
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025



Legend

- Assessment area
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Strahler stream order / buffers

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Figure 3 Location map

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Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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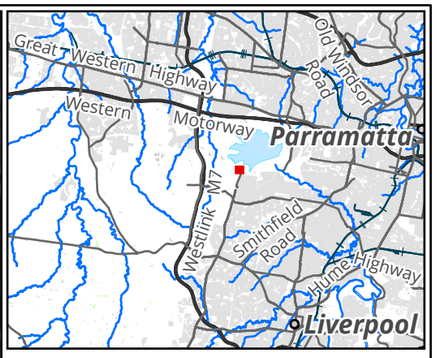

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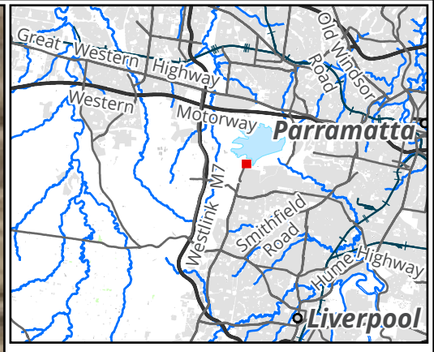

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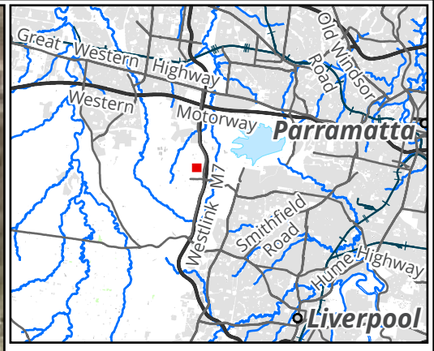

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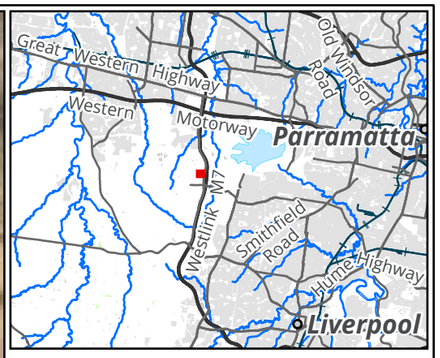

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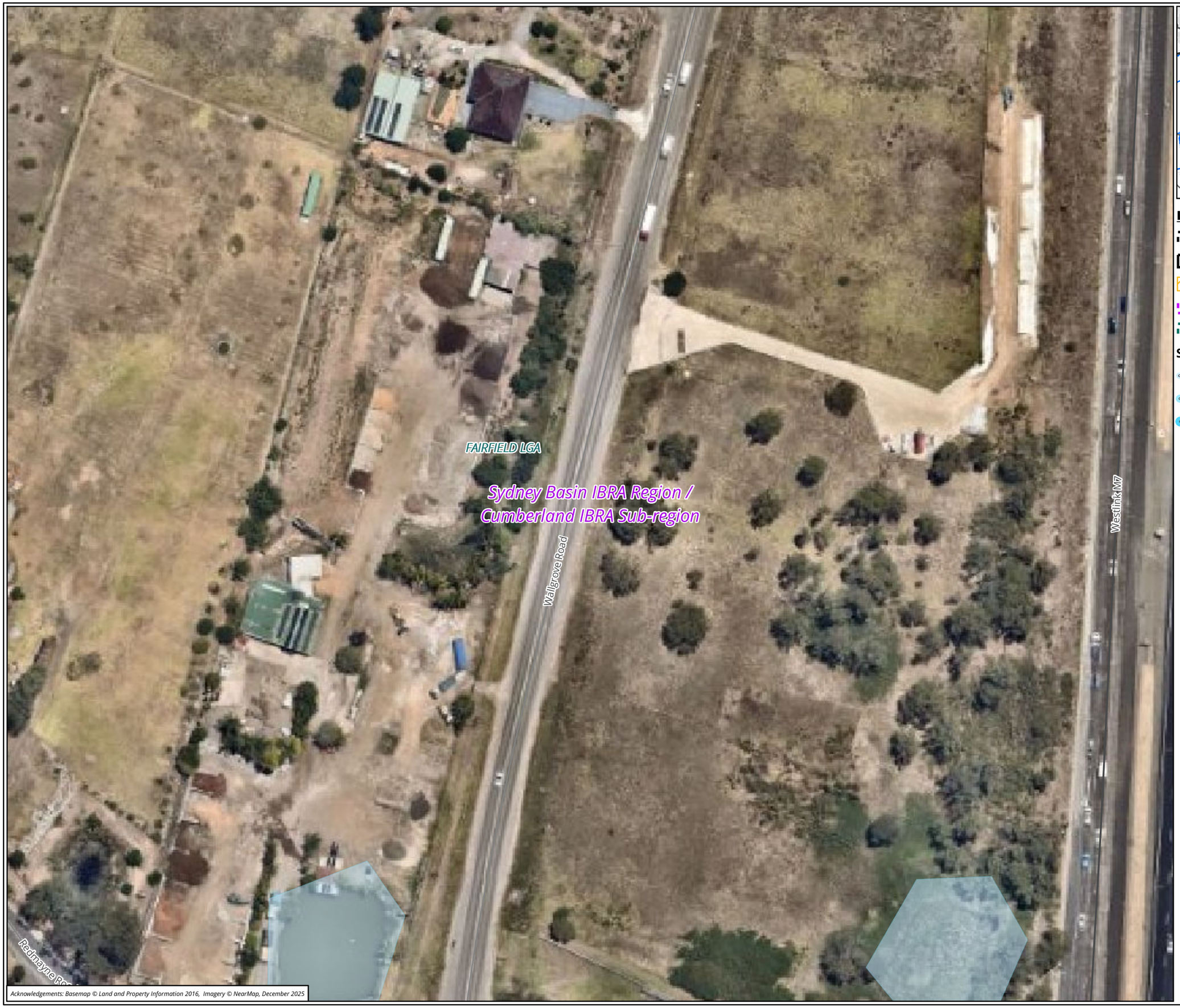

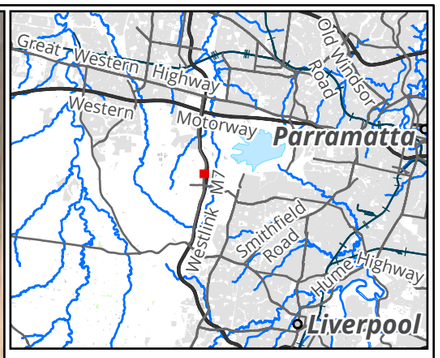

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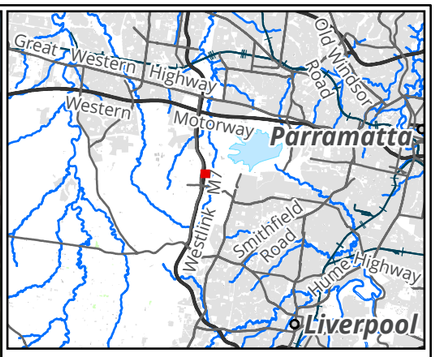

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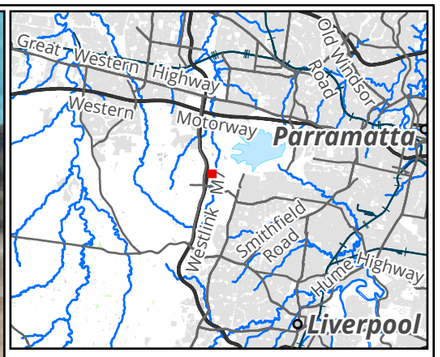

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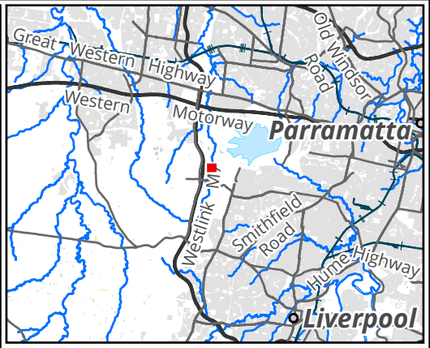

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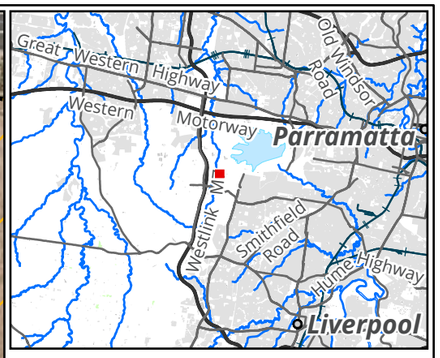

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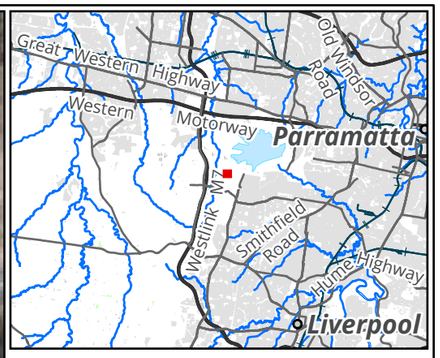

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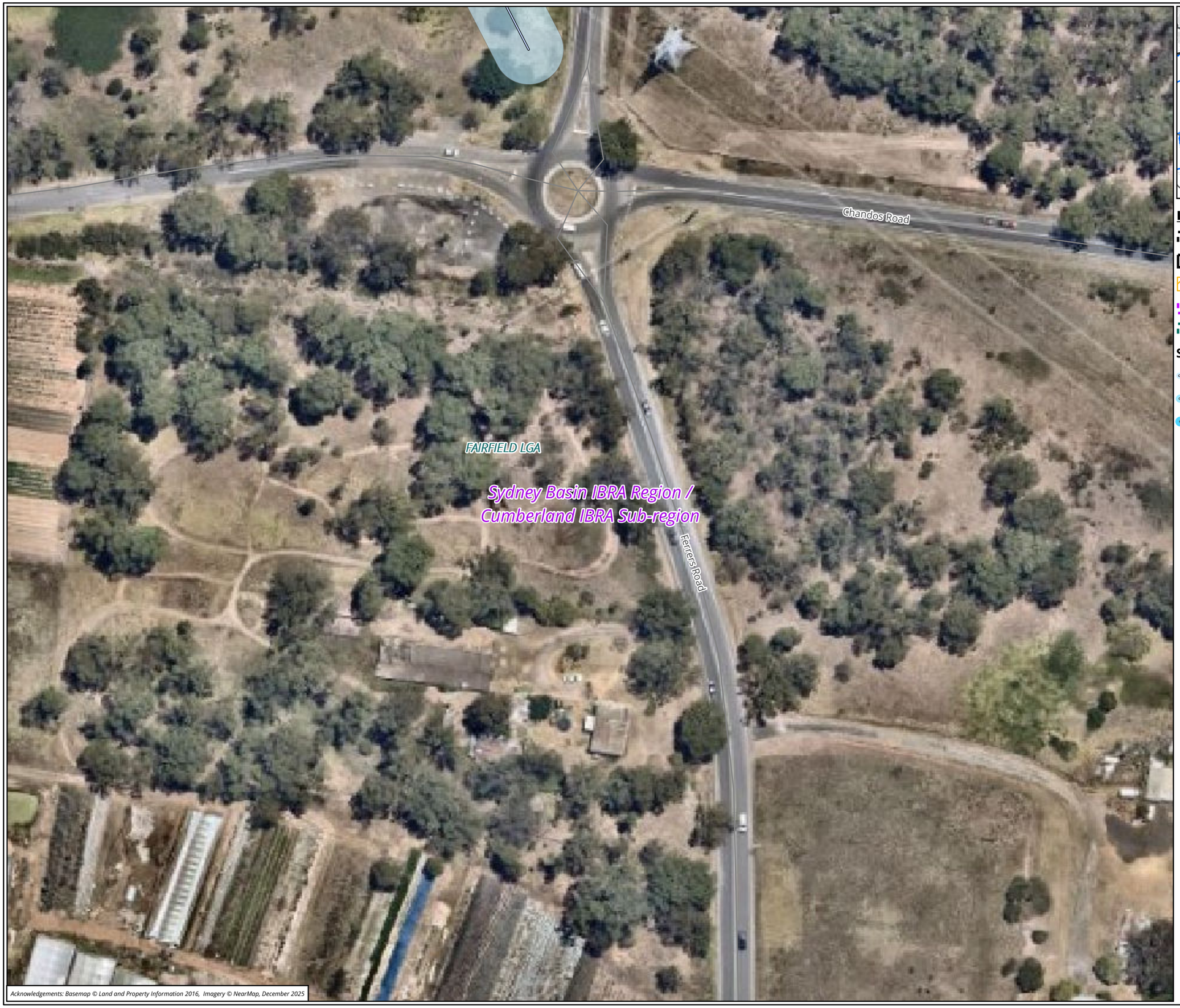

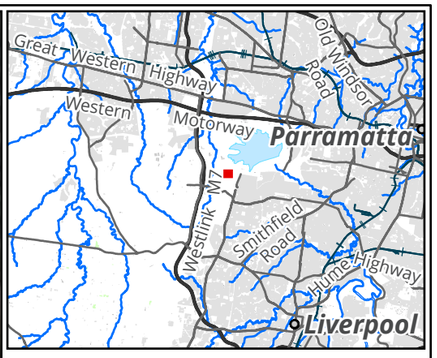

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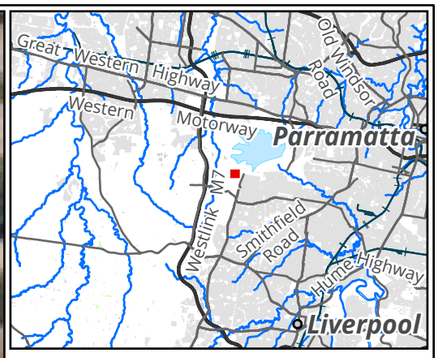

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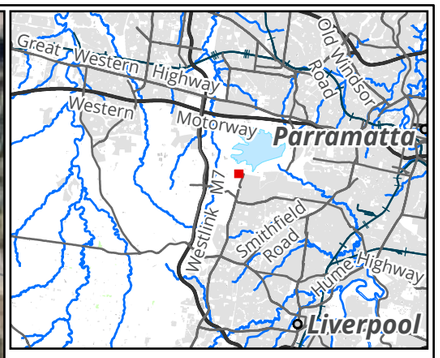

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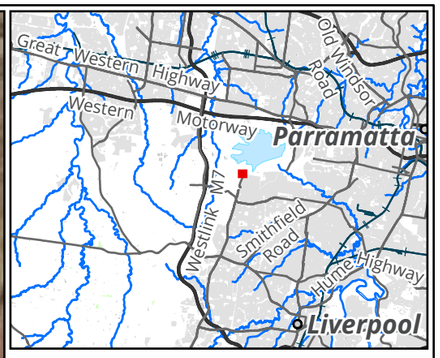

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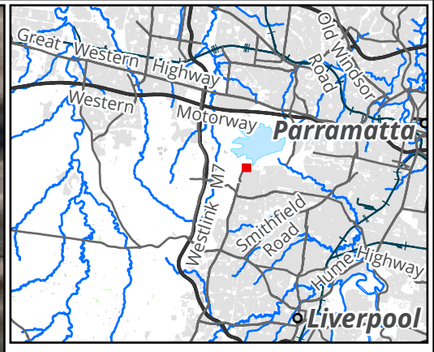

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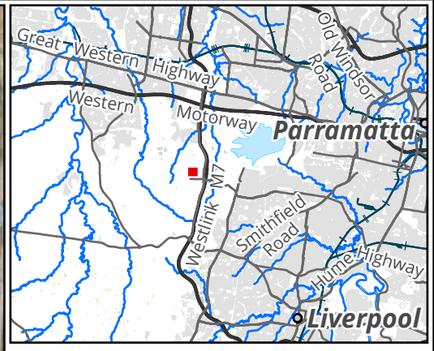

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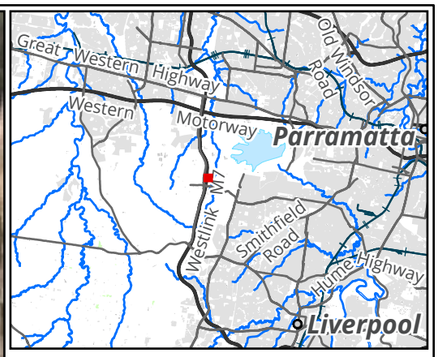

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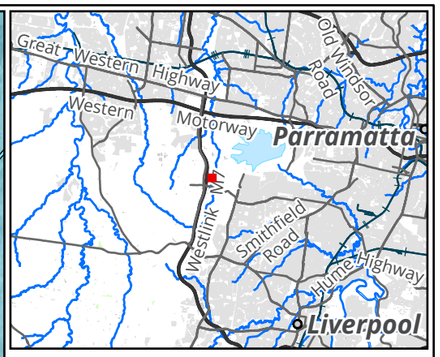

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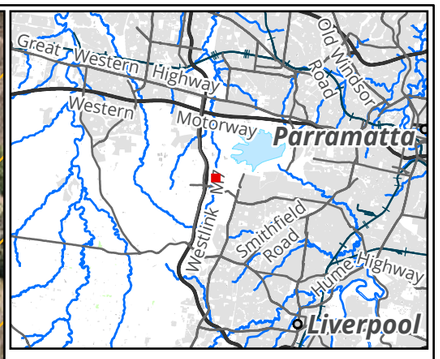

Legend

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

Strahler stream order / buffers

- 1
- 2
- 3

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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
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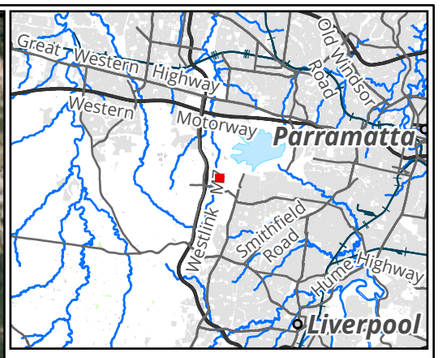

Legend

- Subject land
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Strahler stream order / buffers

- 1
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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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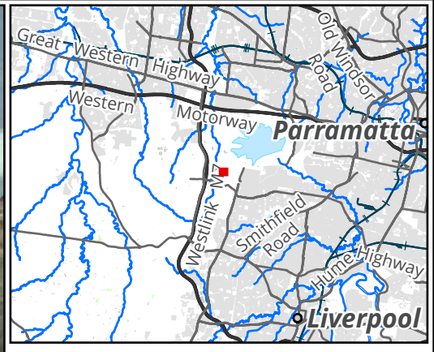

Legend

- Subject land
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Strahler stream order / buffers

- 1
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- 3

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Figure 3 Location map

0 — 50 Metres

N

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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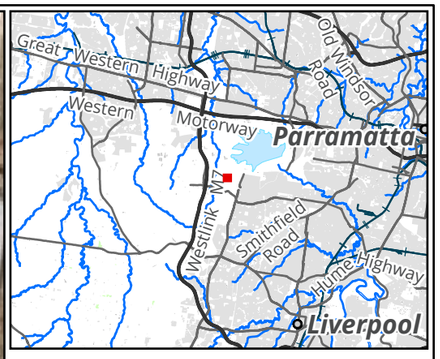

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Strahler stream order / buffers

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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

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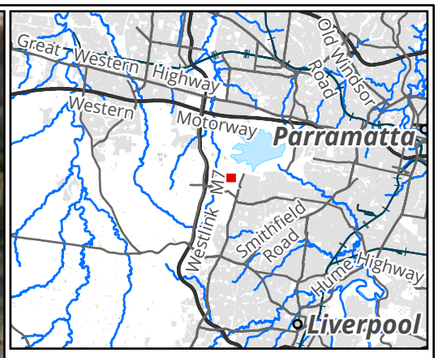

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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

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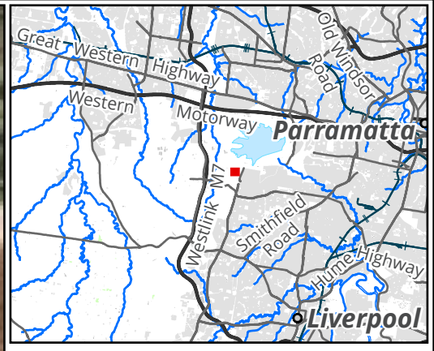

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- 1
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Figure 3 Location map

0 — 50 Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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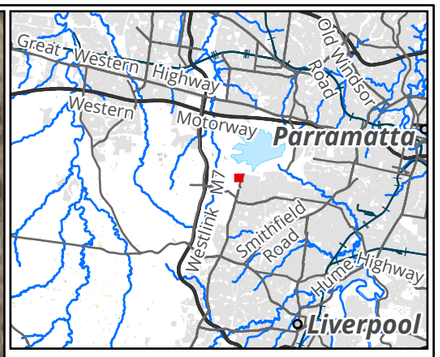

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Figure 3 Location map

0 — 50

Metres

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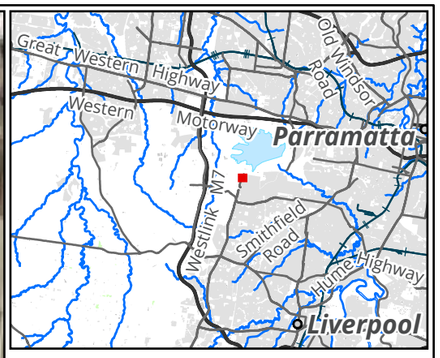

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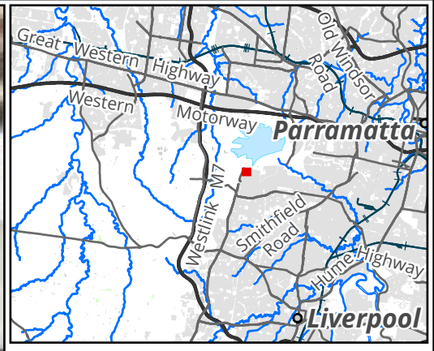

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Figure 3 Location map

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Metres
Scale: 1:1,000 @ A3
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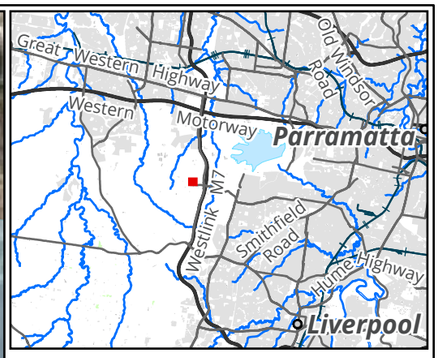

Legend

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Figure 3 Location map

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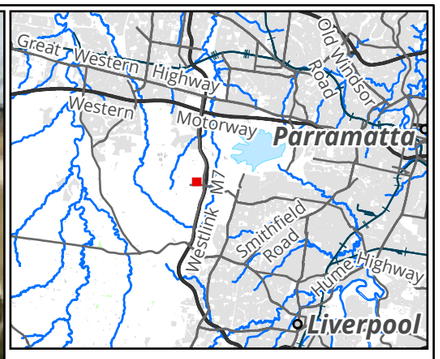

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Figure 3 Location map

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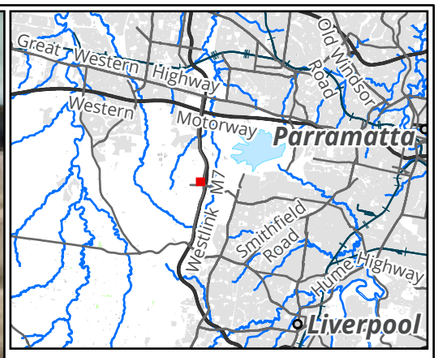

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Figure 3 Location map

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Metres

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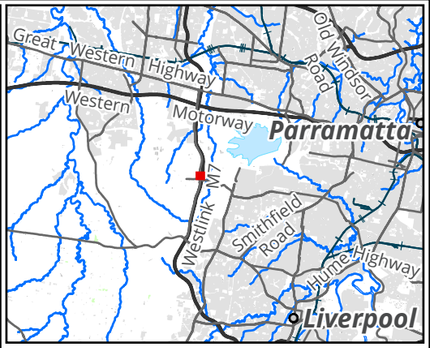

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- Assessment area
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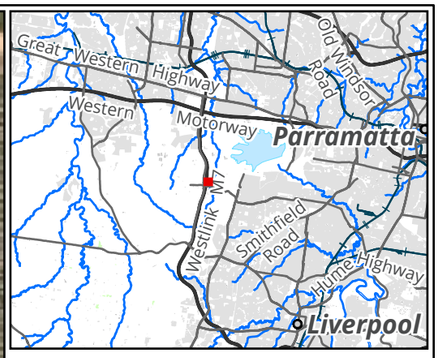

Legend

- Assessment area
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Strahler stream order / buffers

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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

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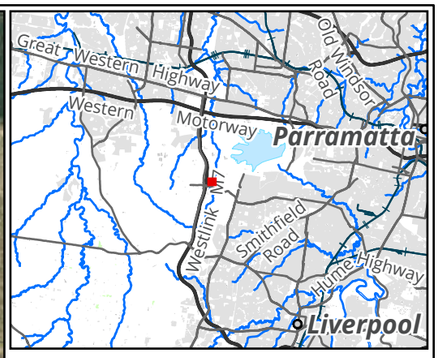

Legend

- Subject land
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Strahler stream order / buffers

- 1
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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

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Metres

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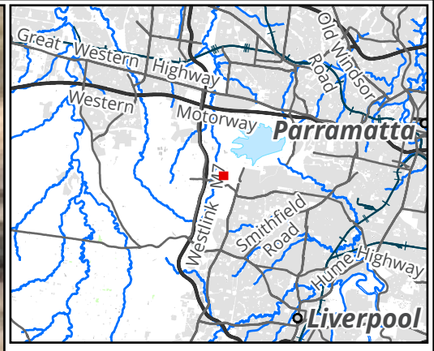

Legend

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0 50

Metres

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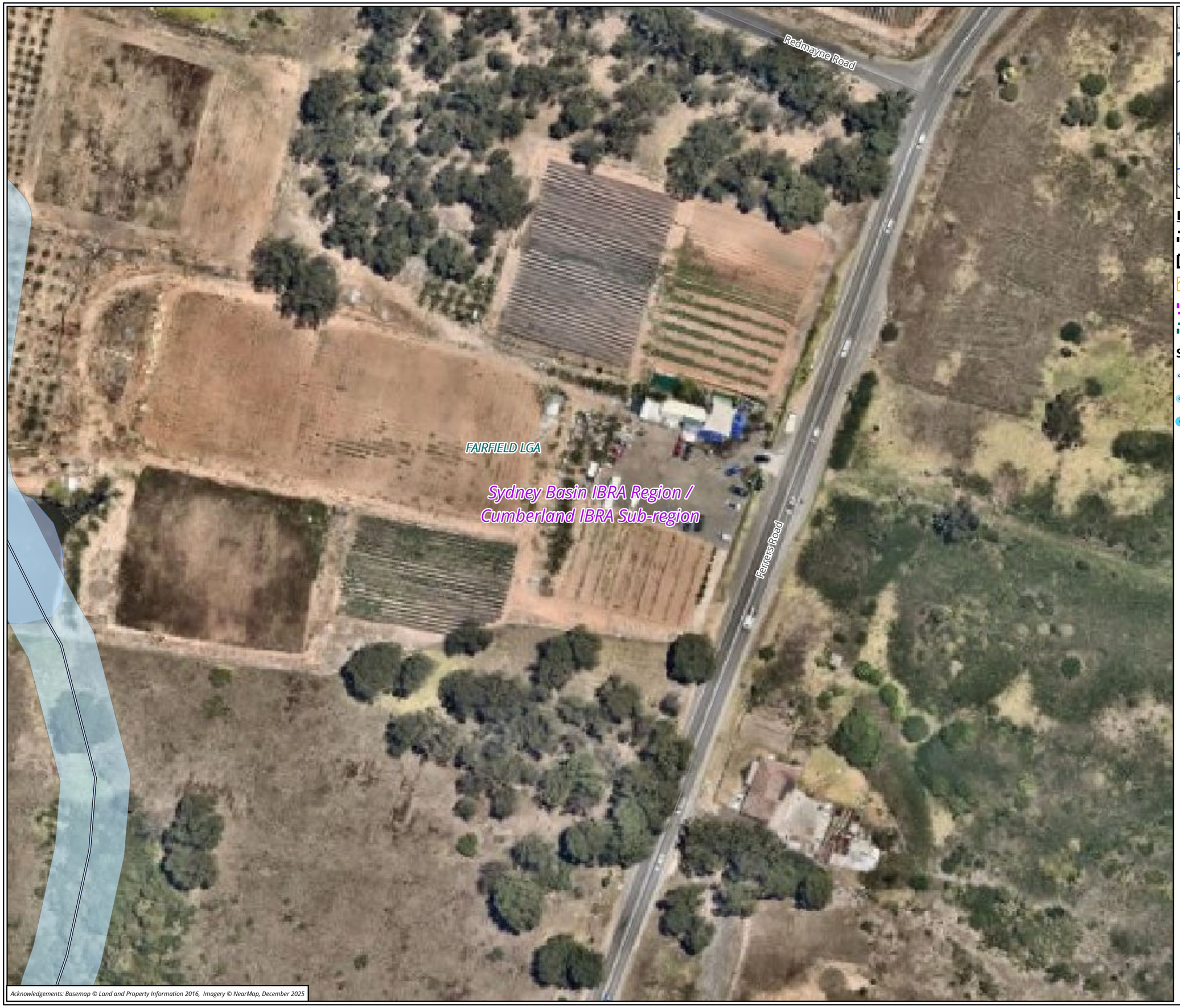

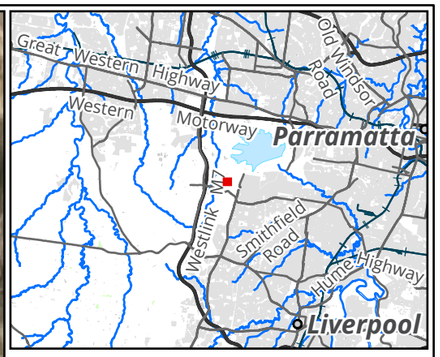

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Figure 3 Location map

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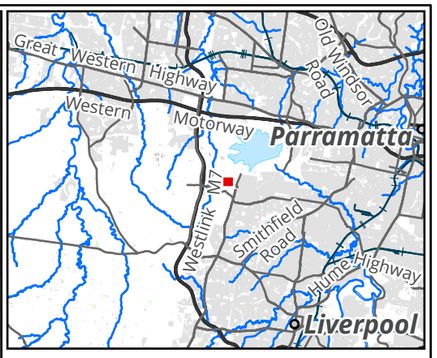

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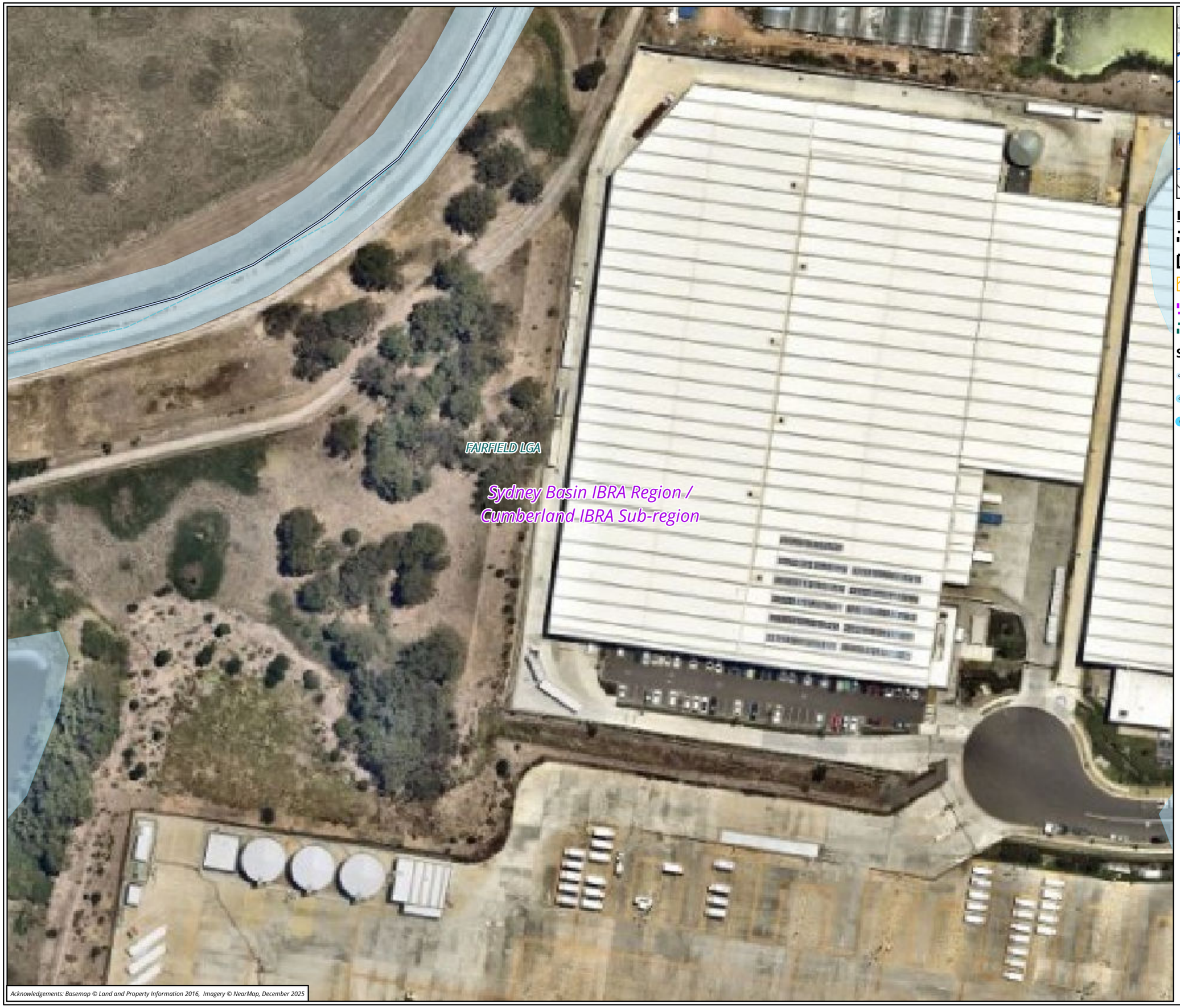

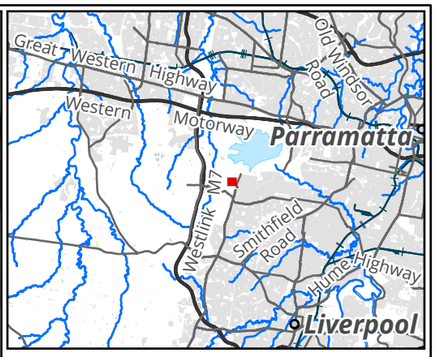

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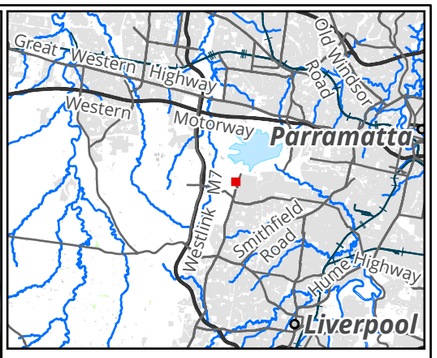

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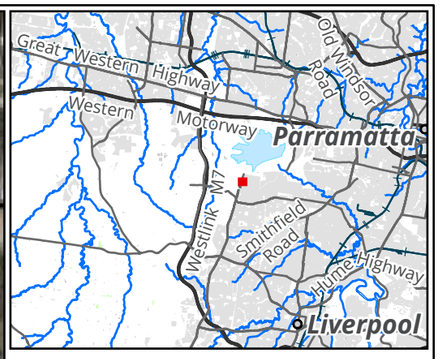

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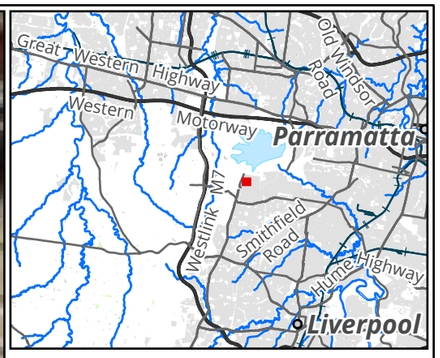

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- Local Government Area

Strahler stream order / buffers

- 1
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Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEMGroup

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
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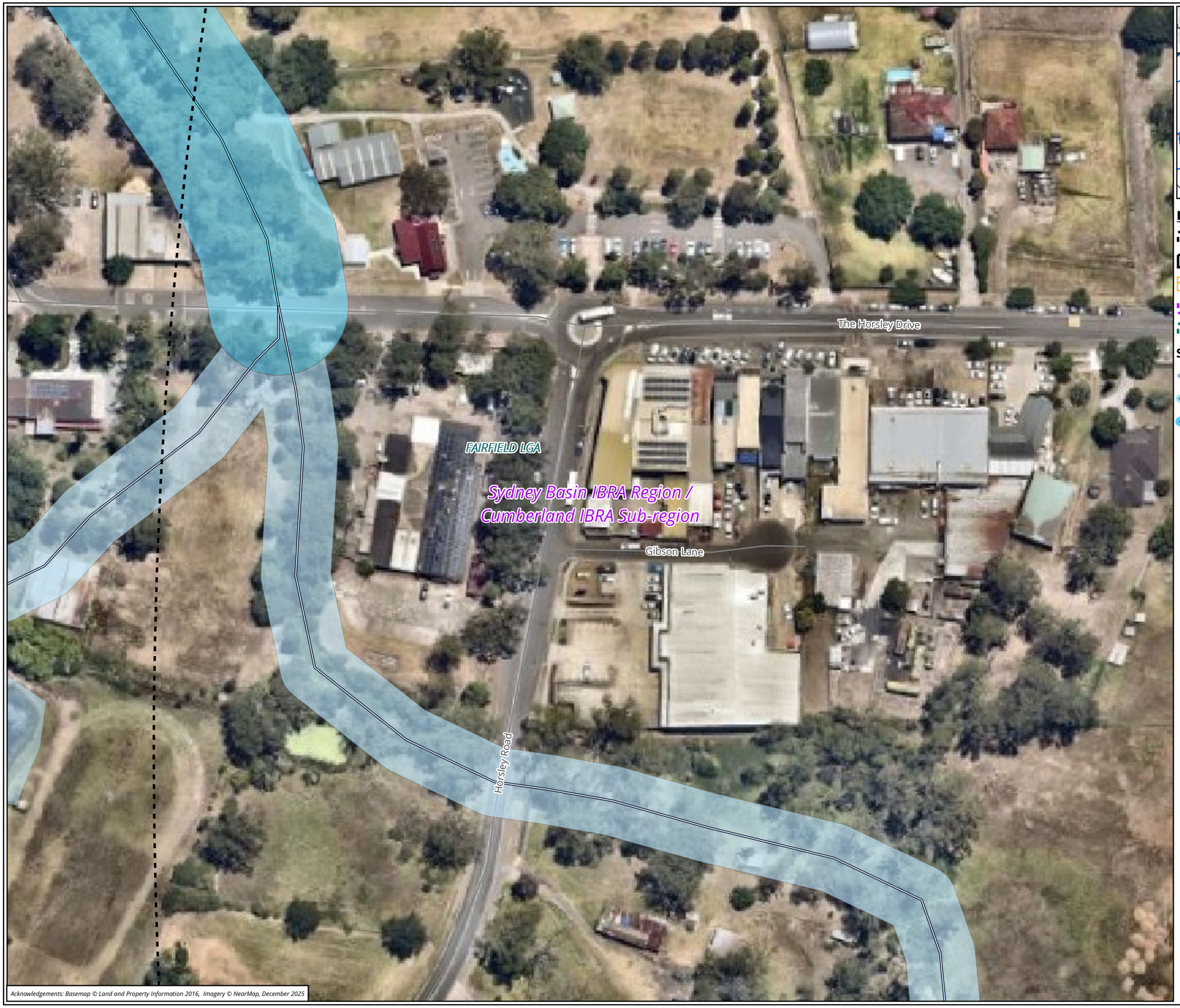

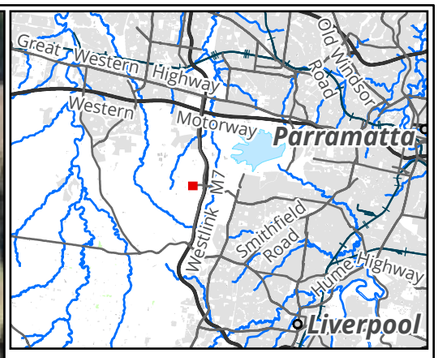

Legend

- Assessment area
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Strahler stream order / buffers

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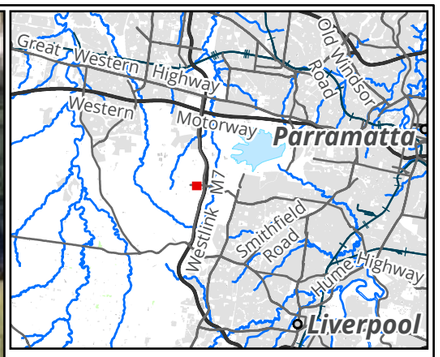

Legend

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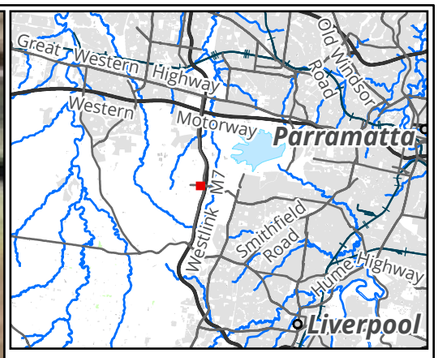

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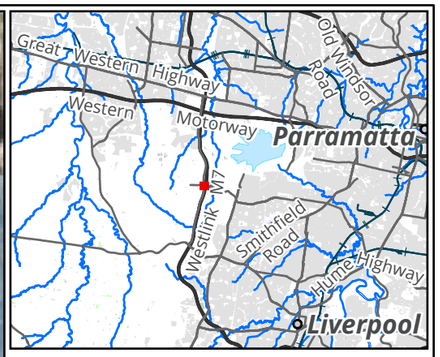

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Strahler stream order / buffers

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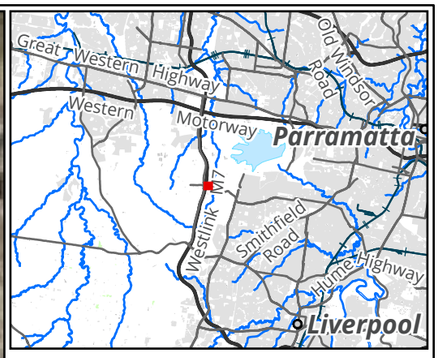

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Figure 3 Location map

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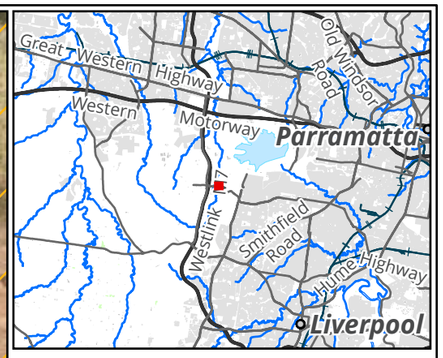

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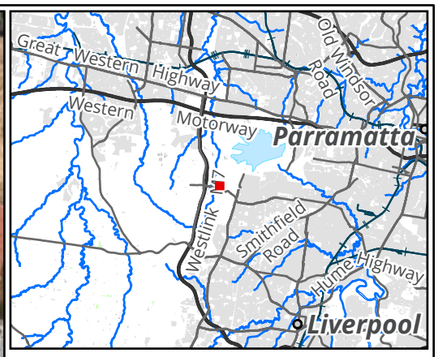

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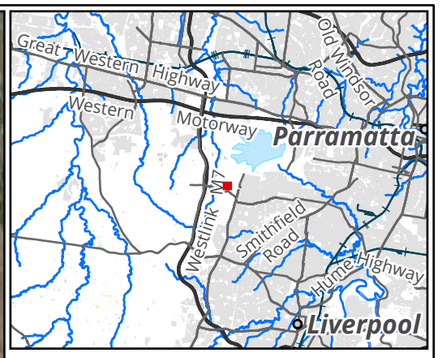

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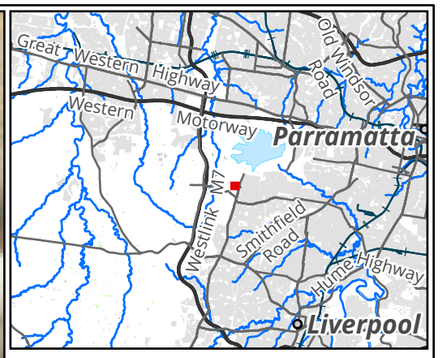

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Figure 3 Location map

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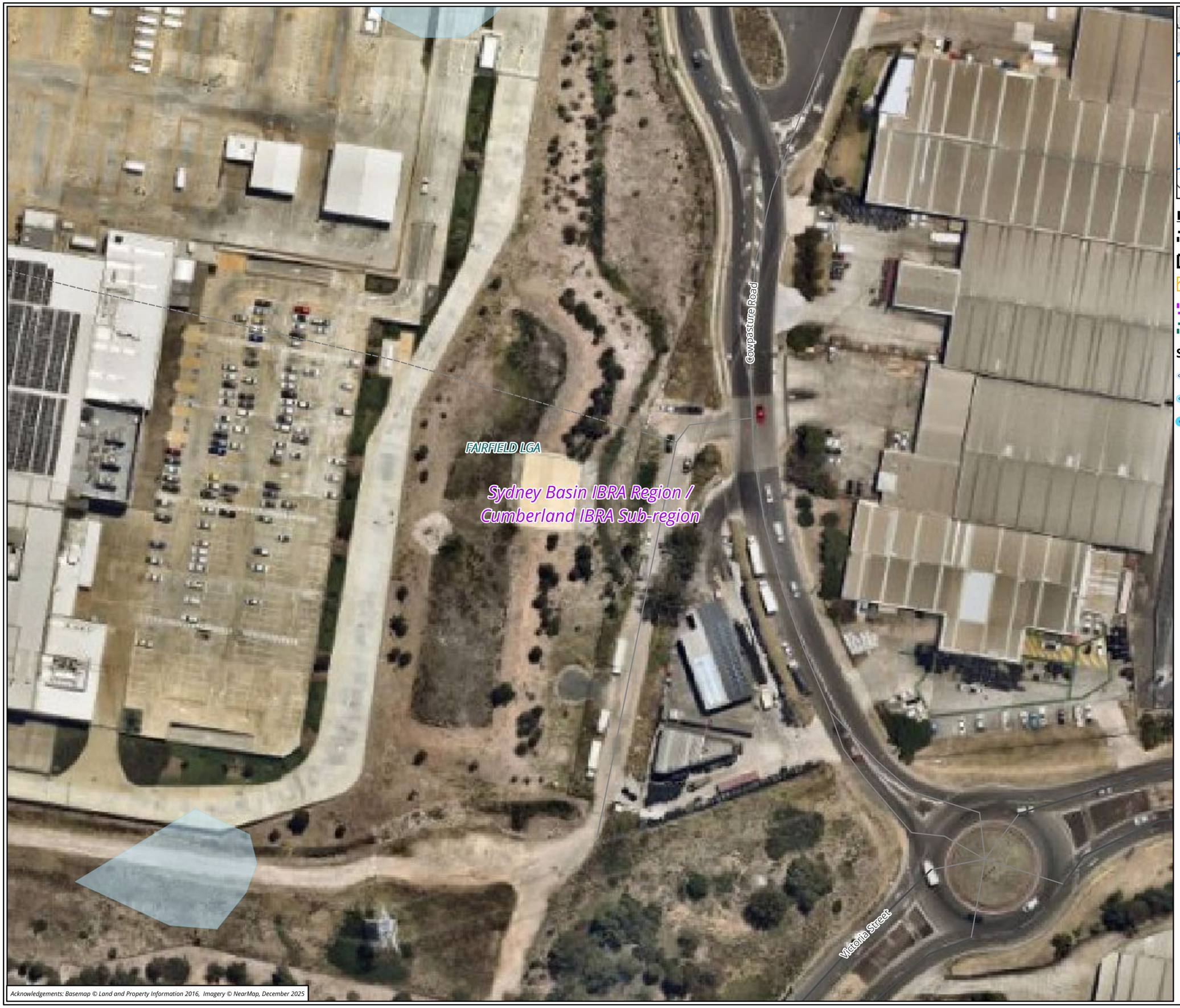

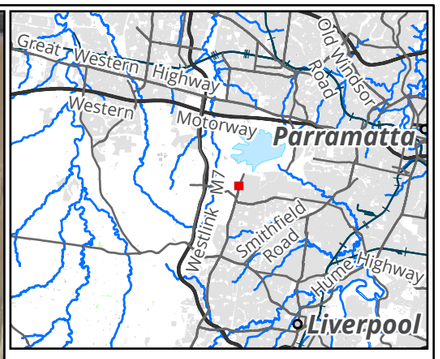

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Strahler stream order / buffers

- 1
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Figure 3 Location map

0 — 50 Metres

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Coordinate System: GDA2020 MGA Zone 56

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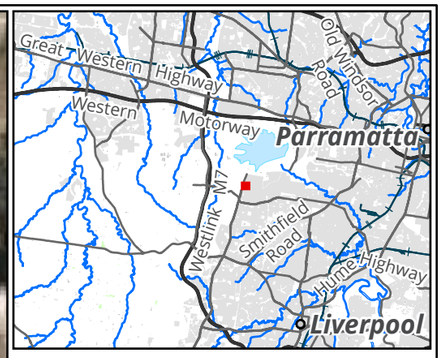

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Figure 3 Location map

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Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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Figure 3 Location map

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Figure 3 Location map

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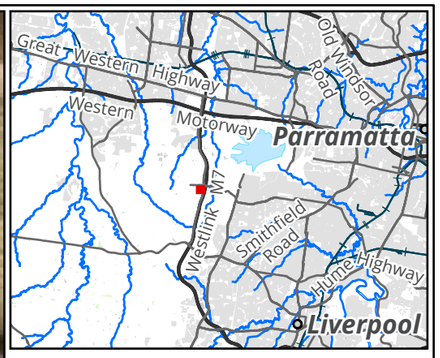

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Figure 3 Location map

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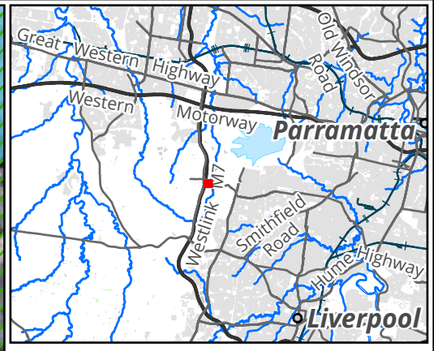

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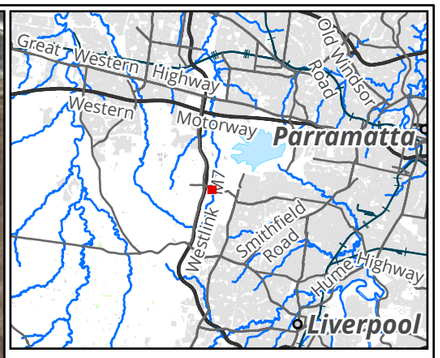

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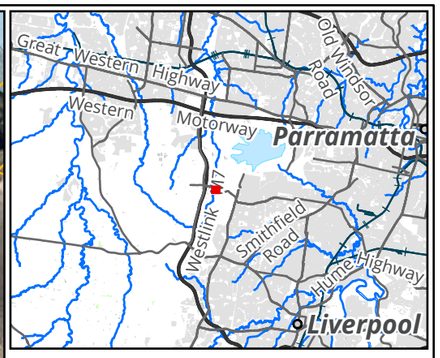

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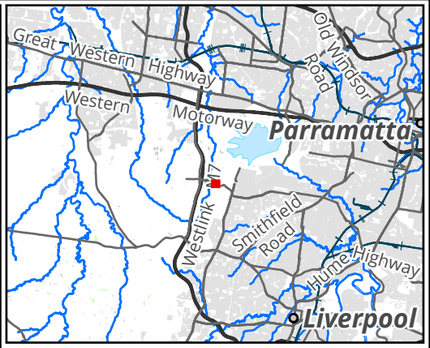

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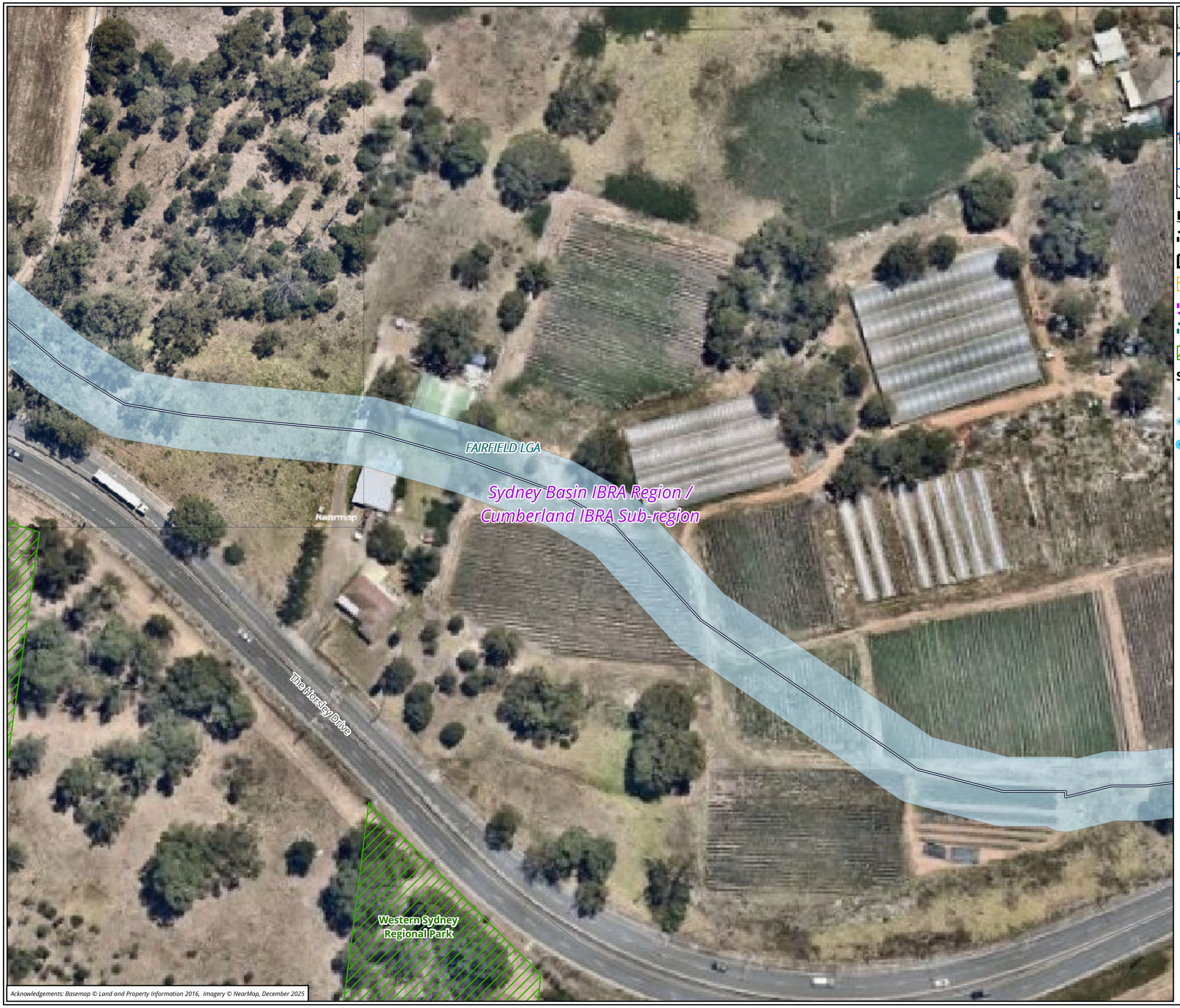

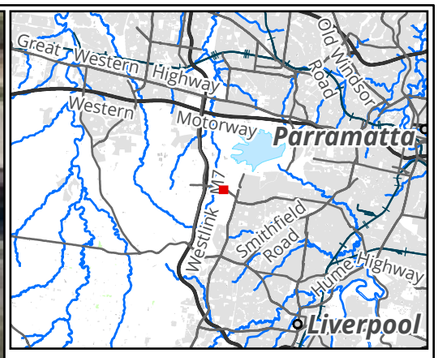

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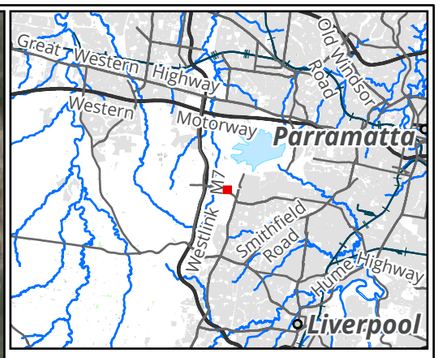

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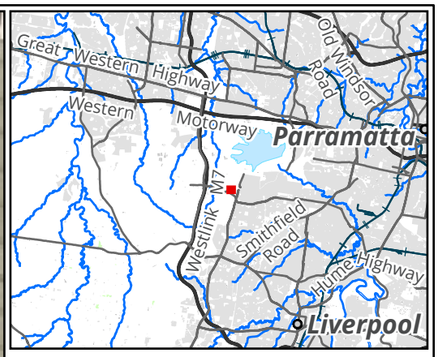

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Figure 3 Location map

0 — 50 Metres

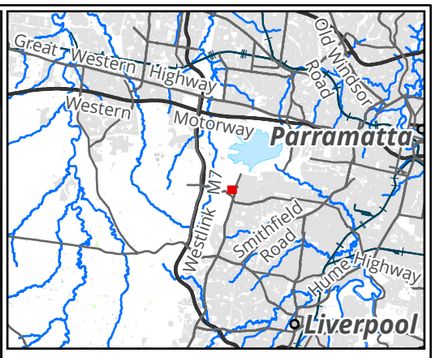
Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis
APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA



Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

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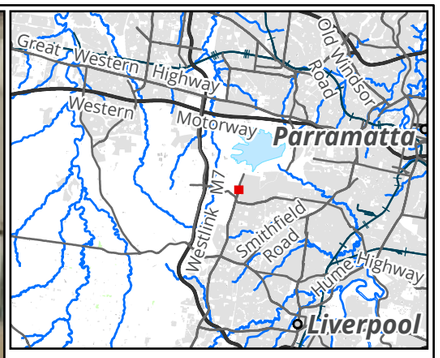

Legend

- Assessment area
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Strahler stream order / buffers

- 1
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Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 50

Metres

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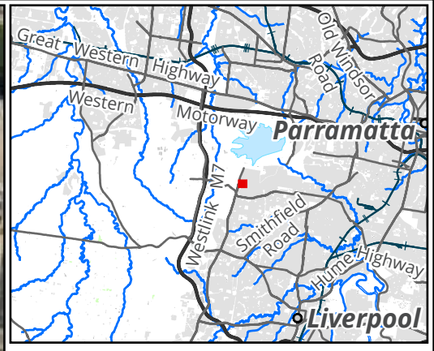

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Figure 3 Location map

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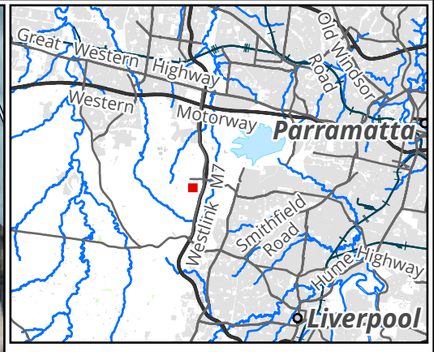

Legend

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Strahler stream order / buffers

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Figure 3 Location map

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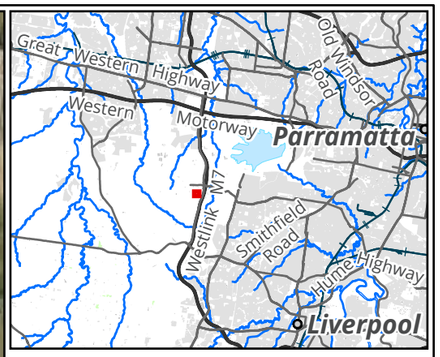

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- Assessment area
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Strahler stream order / buffers

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Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

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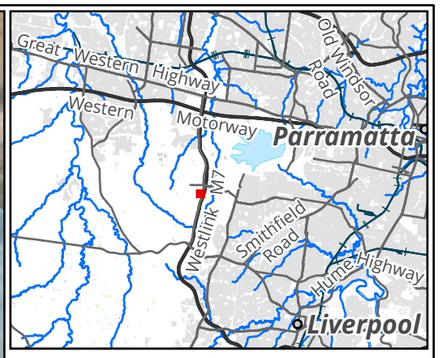

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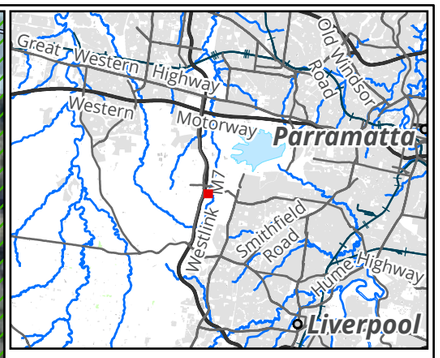

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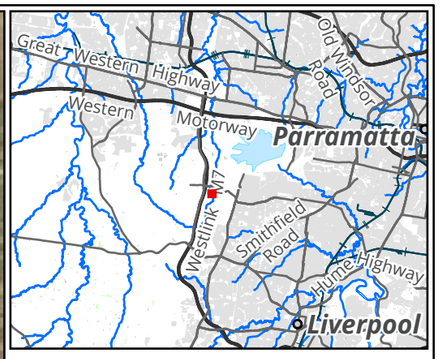

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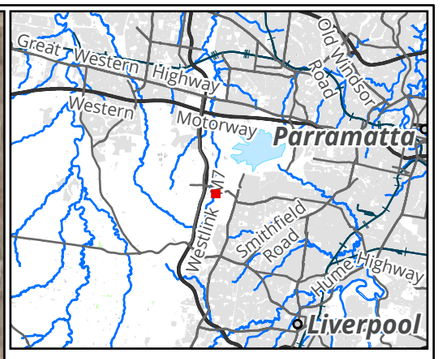

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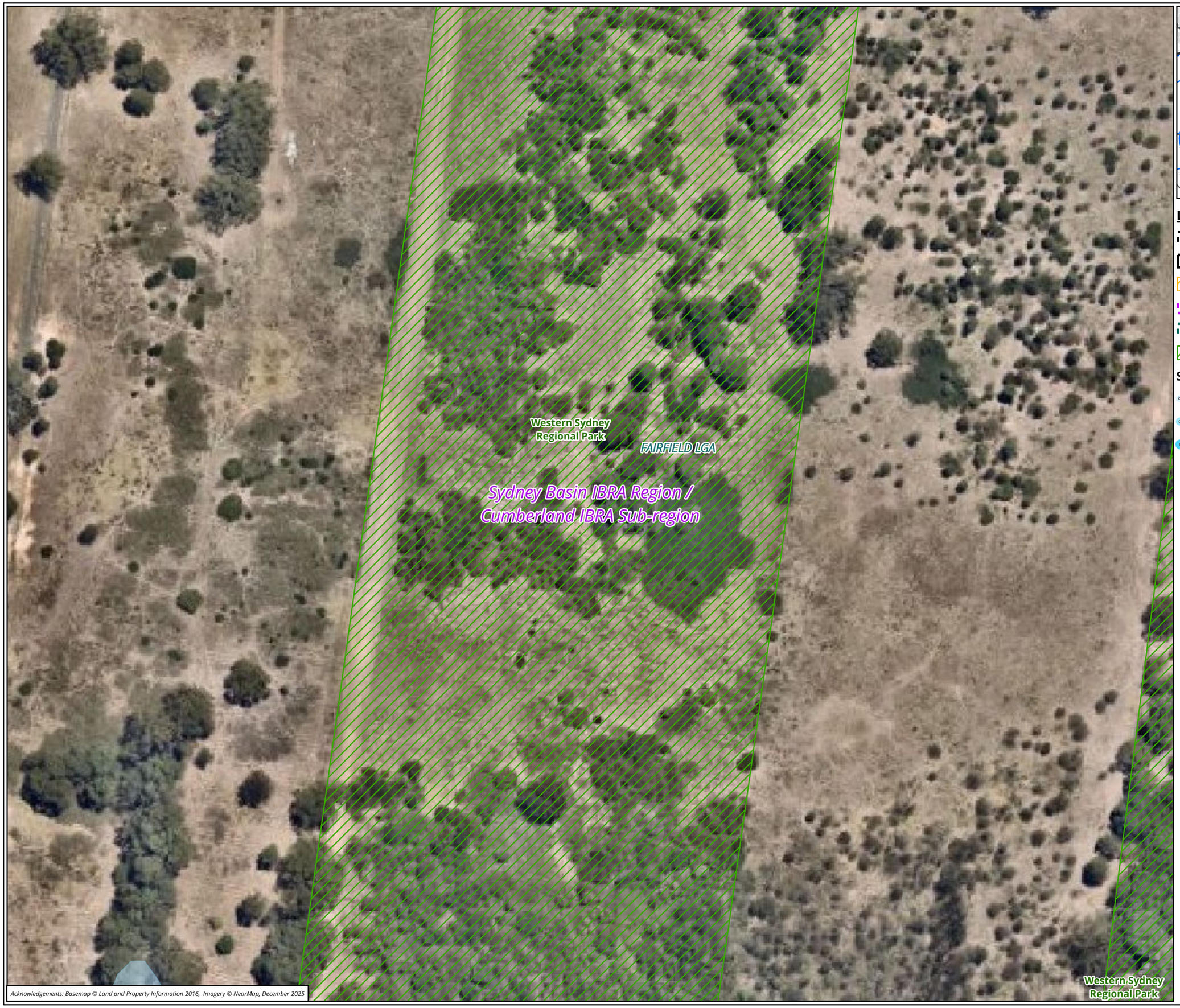

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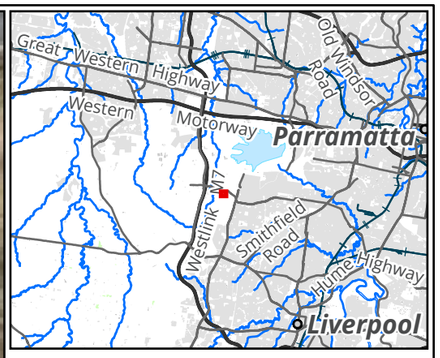

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Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

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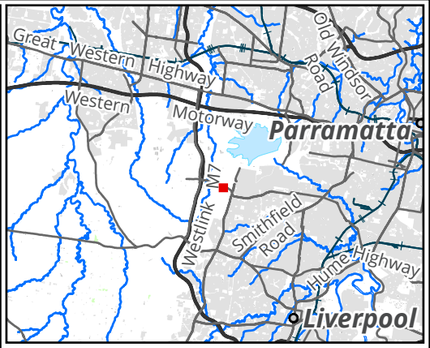

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Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

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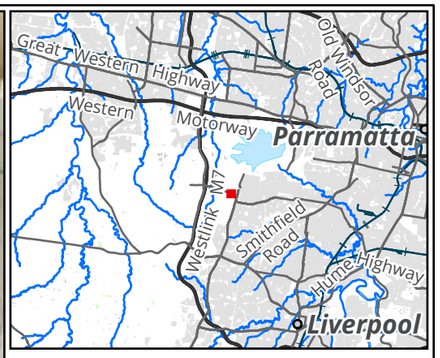

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Figure 3 Location map

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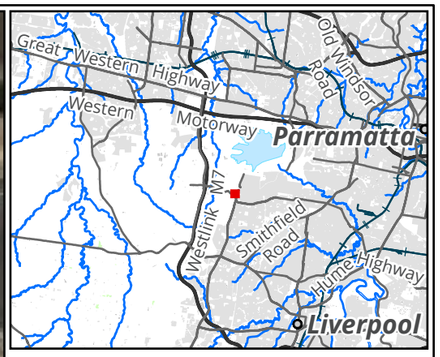

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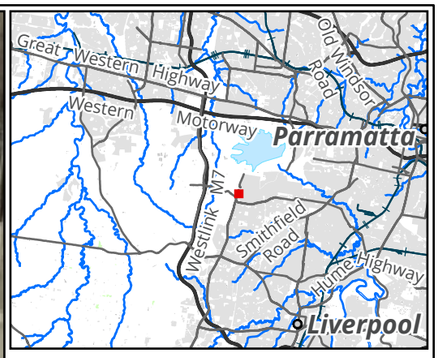

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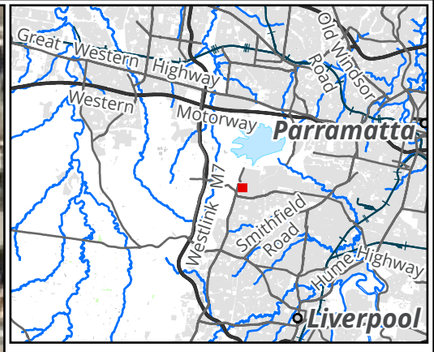

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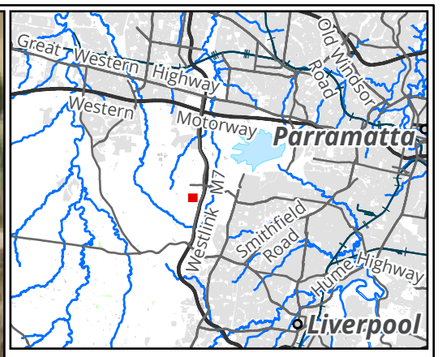

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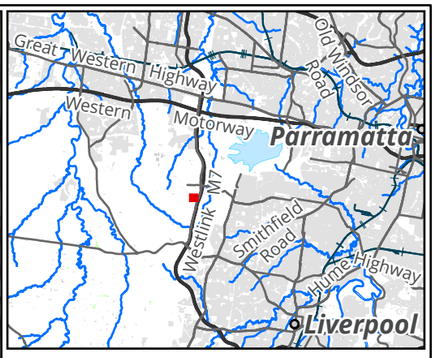

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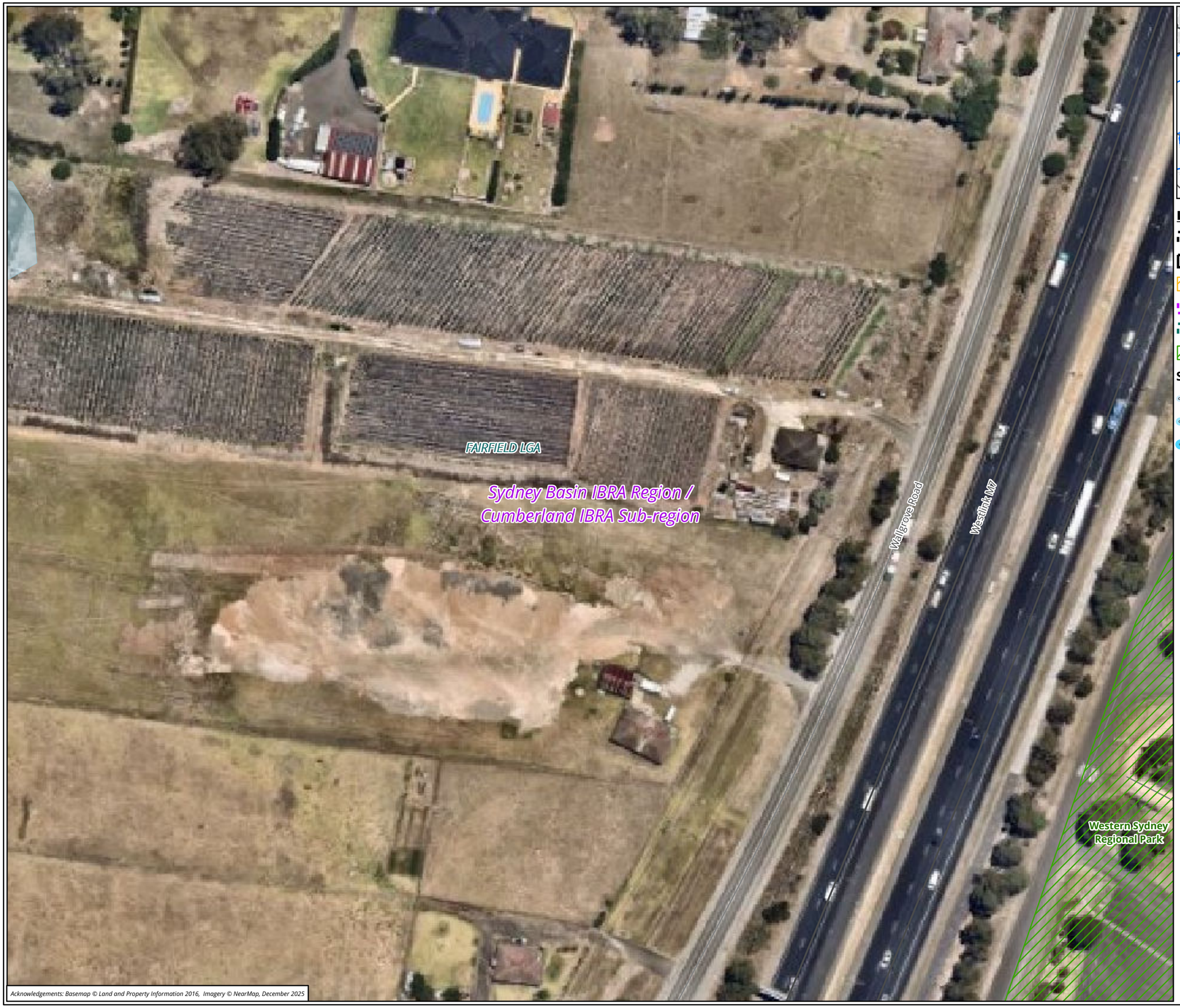

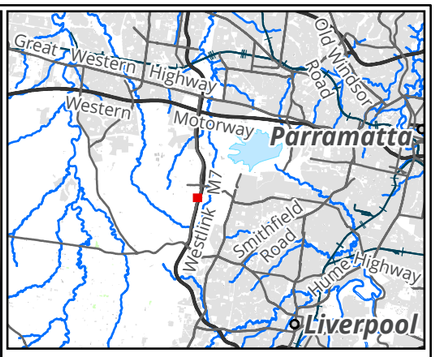

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Figure 3 Location map

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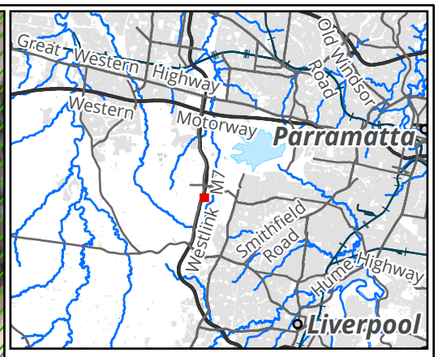

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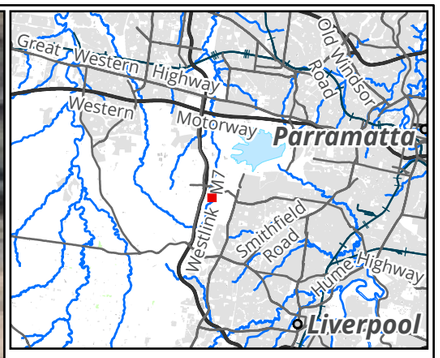

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APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEM Group

Matter: 40675, Date: 17 April 2026
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Layout: 40675_F3_LocationAA

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

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Metres

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Coordinate System: GDA2020 MGA Zone 56

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Layout: 40675_F3_LocationAA

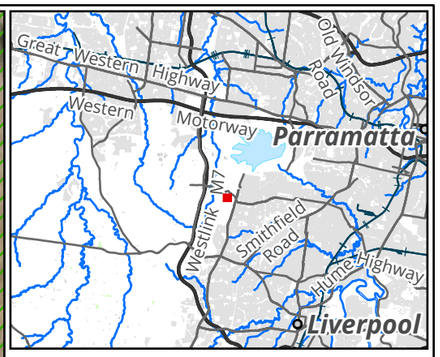

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Figure 3 Location map

0 50 Metres

N

Scale: 1:1,000 @ A3

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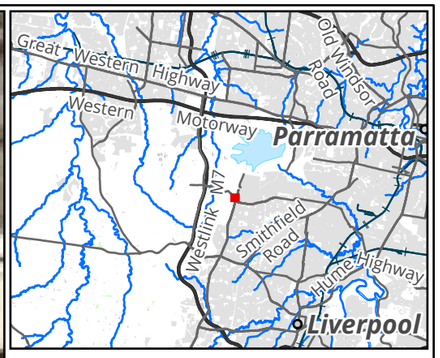

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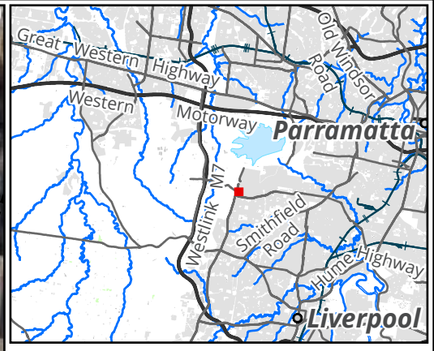

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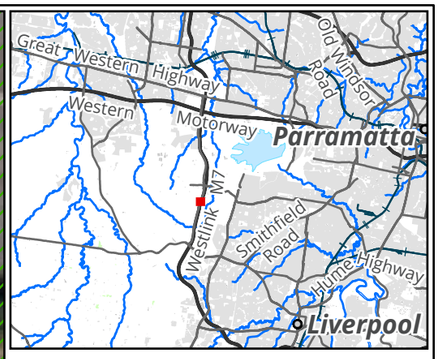

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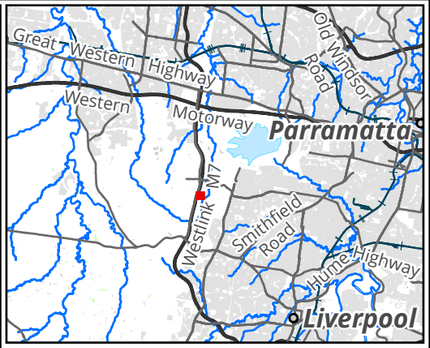

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Figure 3 Location map

0 — 50 Metres

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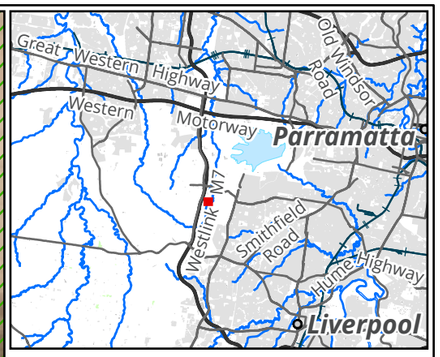

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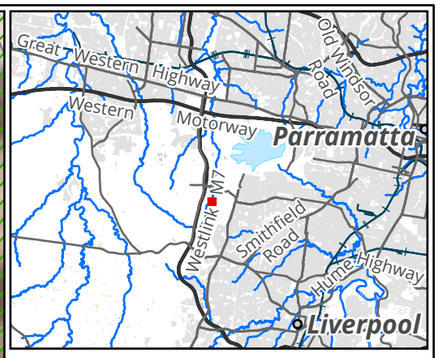

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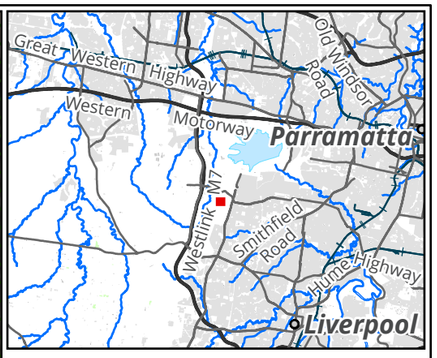

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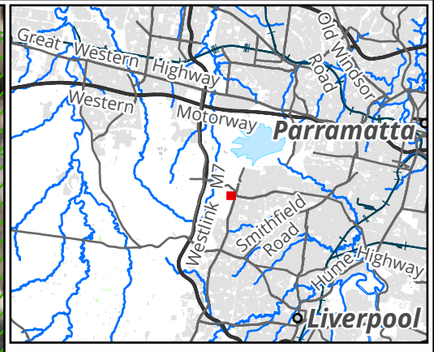

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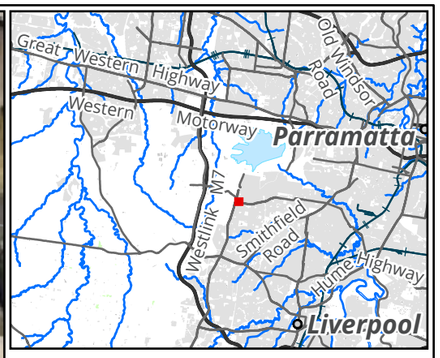

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Figure 3 Location map

0 — 50

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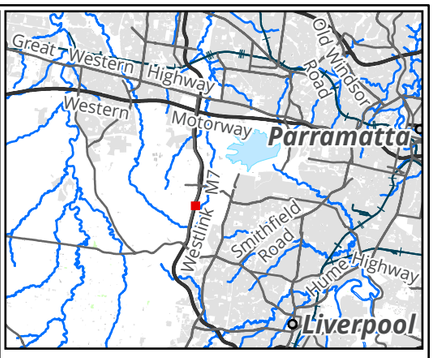

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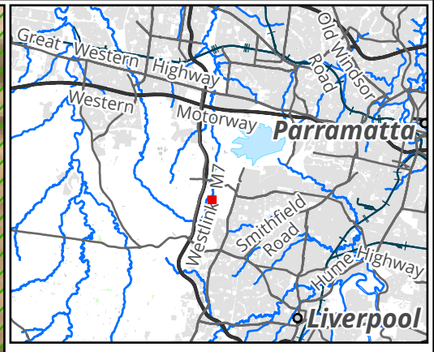

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Figure 3 Location map

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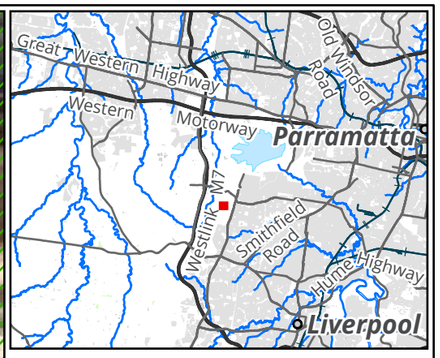

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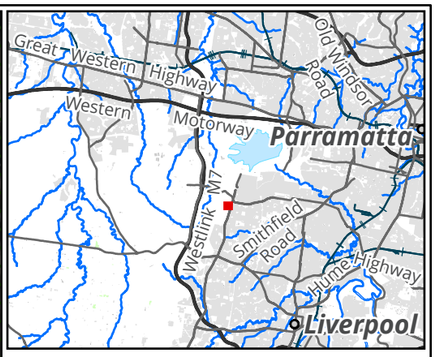

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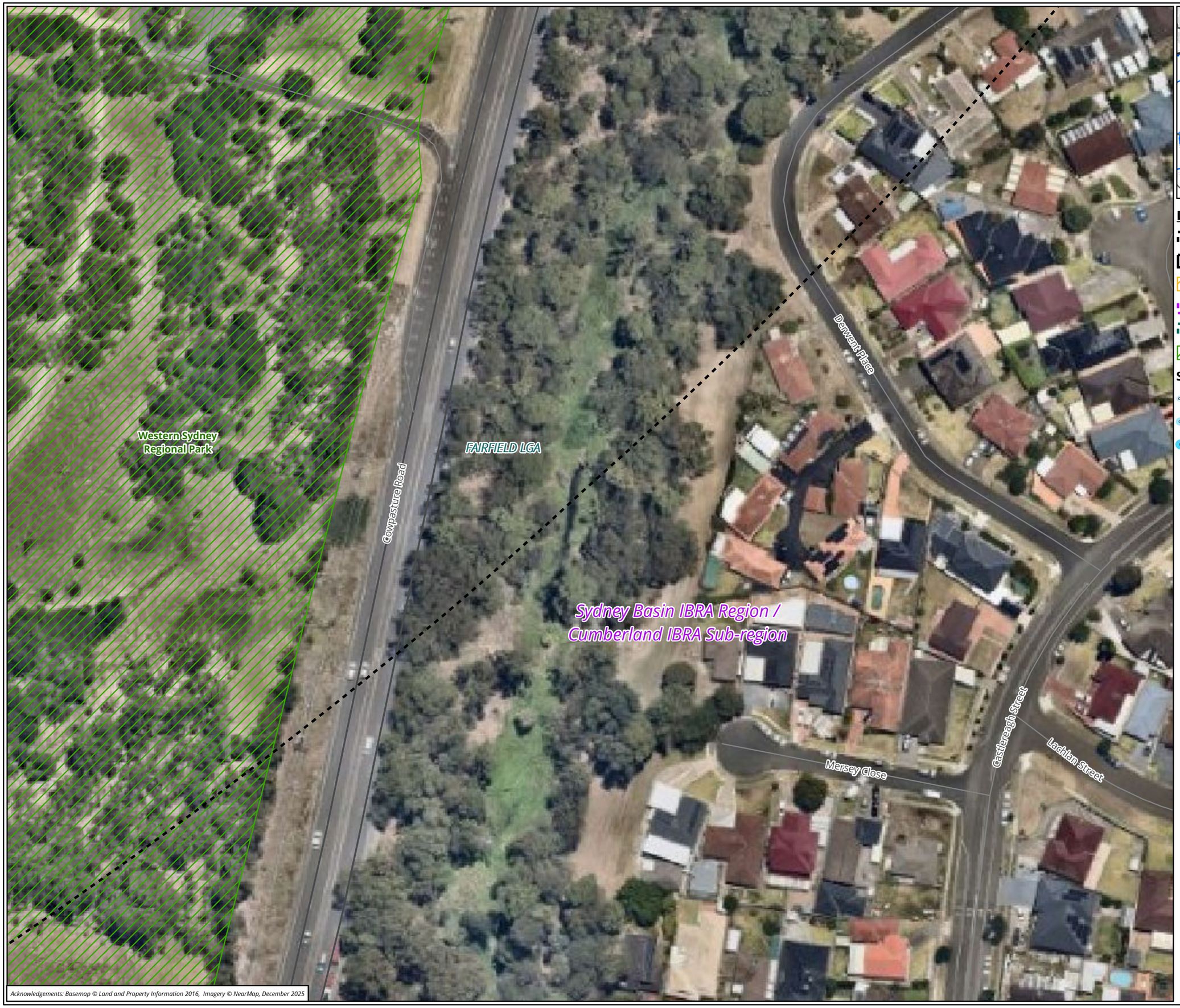

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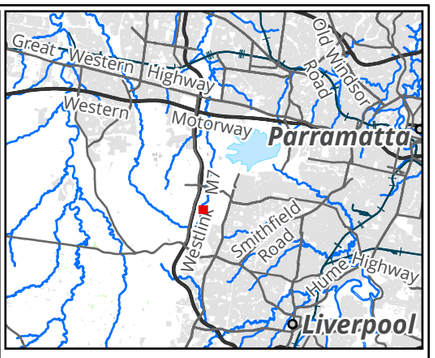

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- Local Government Area
- National Park/Reserve

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 50 N

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

biosis
APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEM Group

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Strahler stream order / buffers

- 1
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- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

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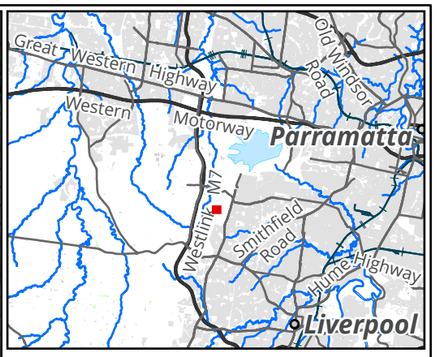

Legend

- Assessment area
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- Local Government Area
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Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50 Metres

N

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

biosis APEM Group

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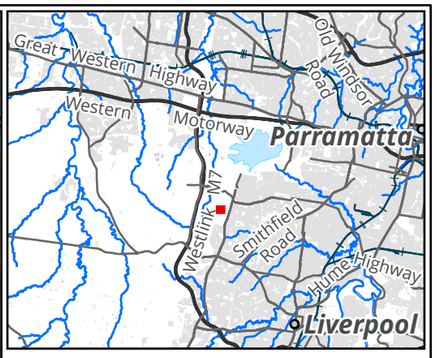

Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve

Strahler stream order / buffers

- 1
- 2
- 3

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Figure 3 Location map

0 — 50 Metres

N

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

biosis
APEM Group

Matter: 40675, Date: 17 April 2026
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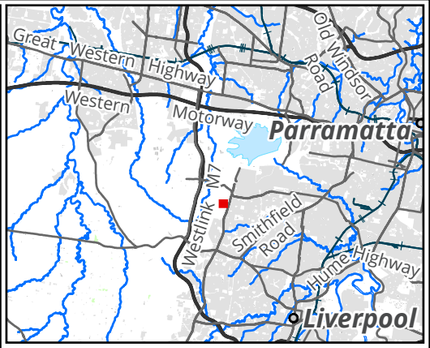
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA



Legend

- Assessment area
- Development site
- Development footprint
- IBRA Region/Sub-region
- Local Government Area
- National Park/Reserve

Strahler stream order / buffers

- 1
- 2
- 3

Figure 3 Location map

0 50

Metres

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEM Group

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Figure 3 Location map

Scale: 1:1,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

biosis
APEM Group

Matter: 40675, Date: 17 April 2026
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Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F3_LocationAA

3 Native vegetation

The subject land supports 42.19 hectares of native vegetation with varying levels of disturbance. Vegetation is patchy across the site with scattered native patches among NOG. The site is highly degraded and has been subject to previous disturbance through prior land use, including residential, agricultural and commercial uses.

3.1 Native vegetation and habitat assessment

3.1.1 Native vegetation extent

The extent of native vegetation, TECs, and vegetation integrity within the subject land was determined using the results of site investigations, previous studies undertaken at the site, such as the prior BDAR (écologique 2024), and Section 4 of the BAM (DPIE 2020a).

Figure 4 provides a map of the native vegetation extent recorded within the development site and development footprint, as assessed during field investigations undertaken in August, September and November 2024. The figure also includes all areas of native vegetation (native ground cover and areas with canopy) within the broader assessment area, as determined based on desktop vegetation mapping projects (NSW DCCEEW 2024b) and aerial imagery. Areas not shown as native vegetation cover within Figure 4, are considered cleared / non-native vegetation, and are addressed further below in Section 3.1.5.

3.1.2 Review of existing information

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

- Regional vegetation mapping:
  - The Native Vegetation of the Sydney Metropolitan Area (OEH 2016).
  - NSW State Vegetation Type Map (SVTM C2.0M2.0) (NSW DCCEEW 2024b).
- Existing site reports, including *Industrial Rezoning of the Keyhole Lands (PP-2021-3824) Biodiversity Development Assessment Report* (écologique 2024).
- Database searches.

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

3.1.3 Field investigation of biodiversity values

A systematic biodiversity assessment was conducted on 30 August 2024, 17–18 September 2024, 11 November 2024, and 11 February 2025, supported by further targeted surveys undertaken from 18–22 November 2024, 16 December 2025 and 13–15 January 2026. All surveys were completed under the terms of Biosis' Scientific Licence issued by the NSW DCCEEW under the BC Act (SL100758, expiry date 30 June 2026). Fauna survey was conducted under approval CSB 17/892 from the NSW Animal Care and Ethics Committee (expiry date 31 January 2028).

Additional prior assessment was undertaken by écologique (2024) on 12 May 2021, which have been considered herein and utilised where relevant.

Assessment in accordance with the BAM was overseen by Accredited Assessor Callan Wharfe (BAAS18138).

The development site was surveyed in accordance with the BAM (DPIE 2020a), which involved:

- The identification and mapping of PCTs according to the structural definitions held in the BioNet Vegetation Classification database (NSW DCCEEW 2025b), with reference to information provided in The Native Vegetation of the Sydney Metropolitan Area (OEH 2016) and NSW State Vegetation Type Map (SVTM C2.0M2.0) (NSW DCCEEW 2024b).
- Undertaking floristic plots within each vegetation zone in accordance with Section 4 of the BAM (DPIE 2020a), considering varying condition states and avoidance of ecotones, areas of disturbance, and edges.
- The identification of native and exotic plant species, according to the *Flora of NSW* (Harden 2002, 1993, 2000, 2002) with reference to recent taxonomic changes.
- Targeted searches for plant species of conservation significance according to *Surveying Threatened Plants and Their Habitats* (DPIE 2020b).
- Incidental observations using the "random meander" method (Cropper 1993).
- Identification of previous and current factors threatening the ecological function and survival of native vegetation within and adjacent to the development site.
- An assessment of the natural resilience of the vegetation of the site.
- Identifying and mapping fauna habitats (e.g., hollow-bearing trees, rock outcropping etc.), assessing their condition and value to threatened fauna species, and considering threatened species' habitat constraints.
- Observations of animal activity and searches for indirect evidence of fauna (such as scats, nests, burrows, hollows, tracks, scratches and diggings).
- Targeted surveys for threatened fauna species.

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

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

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

Areas of native vegetation for which a PCT could validly be assigned were identified and delineated in the field, and their condition determined and assigned. Identification of PCTs within the subject land was confirmed with reference to the community profile descriptors (and diagnostic species tests) held within the NSW BioNet Vegetation Classification database (NSW DCCEEW 2025b). Locations of floristic plots surveyed are shown on Figure 3.

Further details of targeted survey for threatened flora and fauna species are provided in Section 4.2.1 below.

3.1.4 Local data

No local data has been used for native vegetation assessment. Data previously collected by écologique (2024) was reviewed, but was not used in place of the vegetation reference data included in the BAM-C.

3.1.5 Non-native vegetation

Non-native parts of the subject land were previously mapped as Exotic vegetation and Exotic grassland, however have been reassigned during Response to Submissions phase (RtS) as:

- PCT 3320 Exotic (see Section 3.1.6).
- PCT 3320 Non-offsettable grassland (NOG, see Section 3.1.6).

These areas did not have any native over-storey or mid-storey cover and met the definition of non-native vegetation (Figure 4), however were included in as native vegetation for the purpose of determining a vegetation integrity score (VIS).

Non-native parts of the subject land now consist of cleared areas.

Areas not shown as native vegetation cover within Figure 4 and Figure 5, and which do not provide habitat for threatened species, are not included for further assessment in accordance with Section 4.1.2 of the BAM (DPIE 2020a). Non-native vegetation which does provide habitat for threatened species is required to be assessed.

Non-native vegetation has been assessed for threatened species but is not considered to be suitable for predicted ecosystem credit species or species credit species due to the degraded nature of the site.

Non-native vegetation recorded within the subject land are shown in Figure 5.

3.1.6 Plant community types

The following PCT were assessed as present within the subject land:

- PCT 3320 *Cumberland Shale Plains Woodland* in Low, Planted and Scattered Trees condition types (Table 4).
- PCT 3975 *Southern Lower Floodplain Freshwater Wetland* in Low condition (Table 5).
- PCT 4025 *Cumberland Red Gum Riverflat Forest* in Low condition (Table 6).

Table 4 to Table 6 provide detailed descriptions of the three PCTs recorded within the subject land. PCTs recorded within the subject land are shown in Figure 5.

Table 4 PCT 3320 *Cumberland Shale Plains Woodland*

PCT 3320: *Cumberland Shale Plains Woodland*	
Common name	Cumberland Shale Plains Woodland
Vegetation formation	Grassy Woodlands
Vegetation class	Coastal Valley Grassy Woodlands
Extent within subject land	41.34 ha, including: • 1.51 ha in low condition

PCT 3320: *Cumberland Shale Plains Woodland*	
	• 0.08 ha in scattered trees condition • 0.07 ha in planted condition • 2.99 ha in exotic condition • 36.68 ha in NOG condition
Condition	This community at the subject land was recorded in a low, scattered trees, planted, exotic and NOG condition states. Exotic condition includes patches of predominantly exotic vegetation comprised of a weedy mid-storey and groundcover. No canopy species are present.
Description	Cumberland Shale Plains Woodland typically exists as a tall sclerophyll open forest or woodland with mixed understorey of shrubs and a grassy groundcover. The upper stratum is dominated by Forest Red Gum and Grey Box, with a scattered occurrences of Ironbarks such as Narrow-leaved Ironbark, Stringybarks such as Thin-leaved Stringybark, and Spotted Gum *Corymbia maculata*. The understorey typically consists of diverse shrub layer, with the most dominant species being Blackthorn. Acacia species are also prevalent within the mid-storey. The ground layer consists of grasses, forbs, twiners and hardy small ferns, dominant species include Weeping Grass *Microlaena stipoides* var. *stipoides,* Kangaroo Grass *Themeda triandra,* Kidney Weed *Dichondra repens,* Blue Trumpet *Brunoniella australis,* Poison Rock Fern *Cheilanthes sieberi* subsp. *sieberi* and Twining Glycine *Glycine clandestina.* Within the subject land PCT 3320 existed in three condition states: low, scattered trees and planted. Almost all patches had no native mid-storey, except for the occasional Acacia species. Low condition PCT 3320 consisted of native canopy trees including Forest Red Gum and Grey Box with a highly exotic mid-storey including species such as Lantana, African Olive and Green Cestrum. Occurrences of native shrub species such as Hickory Wattle *Acacia implexa* were very sparse due to the high cover of exotic species. The groundcover also had a high cover of exotic species including Kikuyu, Cobblers' Pegs, Panic Veldtgrass and Blackberry. Similarly to the mid-storey, native groundcover species were scarce, existing in sporadic minor patches of Weeping Grass and Kidney Weed. Scattered Trees condition exists within the subject land as standalone paddock trees including Forest Red Gum and Grey Box with a non-existent mid-storey and a groundcover dominated by pasture species including Kikuyu, Paspalum *Paspalum dilatatum,* Prairie Grass *Bromus catharticus* and Couch *Cynodon dactylon.* Planted condition PCT 3320 exists as planted Forest Red Gum and Narrow-leaved Ironbark in garden beds in a cement car park in the southern section of the subject land. Other canopy species that are not native locally but are native within Australia include Tallowwood *Eucalyptus microcorys* and Lemon-scented Gum *Corymbia citriodora* which are planted between the tree species characteristic of PCT 3320. The mid-storey consists of exotic landscaping hedge species including Cape Leadwort *Plumbago auriculata,* Green Cestrum and Black Tea-tree *Melaleuca bracteata.* The groundcover was either non-existent due to the presence of cement or is dominated by exotic grass and forb species similar to low and scattered tree condition states. Exotic condition PCT 3320 within the subject land occurs in large, disturbed patches dominated by a predominantly weedy mid-storey and ground layer. The mid-storey within this vegetation type is dominated by Giant Reed *Arundo donax*, Lantana *Lantana camara,* African Olive *Olea europaea* subsp. *cuspidata,* Blackberry *Rubus fruticosus* sp. aggregate., and Green Cestrum *Cestrum parqui*. The groundcover consists of several weedy grass and forb species, those with the highest cover being Kikuyu *Cenchrus clandestinus*, Cobbler's Pegs *Bidens pilosa,* Bearded Oats *Avena barbata,* Fennel *Foeniculum vulgare,* Panic Veldtgrass *Ehrharta erecta* and Twiggy Turnip *Brassica fruticulosa.* NOG condition PCT 3320 within the subject land occurs in large, disturbed patches dominated by a predominantly weedy grassy groundcover. The groundcover consists of

PCT 3320: *Cumberland Shale Plains Woodland*	
	several weedy grass and forb species, those with the highest cover being Kikuyu, Cobbler's Pegs, Bearded Oats, Fennel, Panic Veldtgrass and Twiggy Turnip.
Survey effort	Ten BAM plots (two low, one scattered trees, one planted, two exotic and four NOG) were collected in this vegetation type over the course of the field assessment (Figure 6).
Justification of PCT	Patches of Cumberland Shale Plains Woodland within the subject land meets the PCT description (NSW DCCEEW 2025b) via the following: • Soil - occurs on the Blacktown and Luddenham soil landscapes. • Structure – tall open grassy woodland with occasional mid-storey and understorey varying between dense shrubs or low sparse shrub cover with an abundant cover of grasses. • Dominant species - canopy dominated by Forest Red Gum and Grey Box over groundcover containing a mix of grasses, forbs and twiners. • IBRA region and subregion – Sydney Basin region and Cumberland subregion. • NSW State Vegetation Type Map (SVTM C2.0M2.0) (NSW DCCEEW 2024b).
TEC Status	**NSW BC Act:** Low condition and scattered tree condition state patches were determined to meet the criteria for TEC *Cumberland Plain Woodlands in the Sydney Basin Bioregion* (CEEC, BC Act) due to the presence of diagnostic canopy species and due to the inclusion of fragmented and disturbed patches within the final determination description for this community (NSW Scientific Committee 2009). Exotic condition and NOG condition PCT 3320 is not associated with a TEC under the BC Act. **Commonwealth EPBC Act:** All conditions did not meet condition thresholds outlined in the Listing Advice for the EPBC Act listed community (DoEWHA 2010) as either the patch sizes did not exceed 0.5 ha and/or the native perennial understorey did not exceed the required 30% cover. Exotic condition and NOG condition PCT 3320 is not associated with a TEC under the EPBC Act. State TECs are mapped on Figure 8.
Estimate of percent cleared value of PCT (BioNet)	93.03% (NSW DCCEEW 2025b).

PCT 3320: *Cumberland Shale Plains Woodland*	
PCT 3320 – Low condition	 **Photo 1 Low condition PCT 3320 within the subject land**
PCT 3320 – Scattered Trees	 **Photo 2 Scattered Trees condition PCT 3320 within the subject land**

PCT 3320: *Cumberland Shale Plains Woodland*

PCT 3320 – Planted

Photo 3 **Planted condition PCT 3320 within the subject land**

PCT 3320 – Exotic

Photo 4 **Exotic condition PCT 3320 within the subject land**

PCT 3320: *Cumberland Shale Plains Woodland*	
PCT 3320 – NOG	

Photo 5 NOG condition PCT 3320 within the subject land

Table 5 PCT 3975 *Southern Lower Floodplain Freshwater Wetland*

PCT 3975: *Southern Lower Floodplain Freshwater Wetland*	
Common name	Southern Lower Floodplain Freshwater Wetland
Vegetation formation	Freshwater Wetlands
Vegetation class	Coastal Freshwater Lagoons
Extent within subject land	0.13 ha in low condition
Condition	This community at the subject land was recorded in a low condition state.
Description	Southern Lower Floodplain Freshwater Wetland typically exists as tall non-woody freshwater sedgeland or forbland occurring in depressions or waterways on Quaternary alluvium. An upper stratum is rarely present, however when it does occur it includes Swamp She-oak *Casuarina glauca, Melaleuca* spp. or overhanging Eucalypts. The ground layer is characteristically dominated by Couch, Water Couch *Paspalum distichum* and Broadleaf Cumbungi *Typha orientalis,* as well as less commonly *Juncus* spp. *Carex* spp. and Common Reed *Phragmites australis.* The forb Slender Knotweed *Persicaria decipiens* is also frequently present with a sparse cover. Low condition PCT 3975 exists across four dams or depressions within the southern half of the subject land. Diagnostic species such as Broadleaf Cumbungi, Slender Knotweed and Couch dominated this vegetation type. Common Reed and *Juncus usitatus* were present, although with a sparser cover. Free floating macrophyte *Azolla pinnata* was often present with a high cover and is typical of disturbed slow flowing water bodies. No trees or shrubs were present, although Eucalypt tree species were occasionally overhanging from adjacent riparian vegetation types. The vegetation was moderately disturbed and weedy with Giant Reed *Arundo donax,* Kikuyu, Cobblers' Pegs and Blackberry existing with high cover.

PCT 3975: *Southern Lower Floodplain Freshwater Wetland*	
Survey effort	One BAM plot was collected in this vegetation type over the course of the field assessment (Figure 6).
Justification of PCT	Patches of Southern Lower Floodplain Freshwater Wetland within the subject land meets the PCT description (NSW DCCEEW 2025b) via the following: • Soil - occurs on both the Blacktown and Luddenham soil landscapes. • Elevation – Occurs below 10 metres asl, however this PCT can also occur at higher elevations in lagoons with prolonged inundation. • Structure - tall freshwater sedgeland with minimal to no woody canopy species. • Dominant species – non woody freshwater wetland herbs, grasses and sedges including Broadleaf Cumbungi, Couch, Common Reed, *Juncus usitatus* and Slender Knotweed. • IBRA region and subregion – Sydney Basin region and Cumberland subregion. • Environment – PCT is known to occur in coastal floodplains, depressions and lagoons with permanent to semi-permanent inundation that are often highly disturbed.
TEC Status	**NSW BC Act:** Low condition patches of PCT 3975 in the three southern dams along the first order waterway (a tributary of Eastern Creek) are consistent with the BC Act listed EEC *Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions* due to having diagnostic species characteristic of the EEC present and, although being farm dams, are located in line with a first order natural tributary of Eastern Creek. Low condition PCT 3975 in the northernmost dam (not associated with the tributary of Eastern Creek) is not consistent with the TEC *Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions* (EEC, BC Act). Despite having diagnostic species characteristic of the EEC present, this dam is artificial and is not associated with a natural waterway or wetland. Therefore, as artificial dams associated with farm production are not included in the listing criteria for this EEC, this patch of PCT 3975 does not conform to the listing criteria under the BC Act. **Commonwealth EPBC Act:** There are no Commonwealth TECs associated with PCT 3975. State TECs are mapped on Figure 8.
Estimate of percent cleared value of PCT (BioNet)	92.99% (NSW DCCEEW 2025b).

PCT 3975: *Southern Lower Floodplain Freshwater Wetland*	
PCT 3975 – Low condition	

Photo 6 **Low condition PCT 3975 within the subject land**

Table 6 **PCT 4025 *Cumberland Red Gum Riverflat Forest***

PCT 4025: *Cumberland Red Gum Riverflat Forest*	
Common name	Cumberland Red Gum Riverflat Forest
Vegetation formation	Forested Wetlands
Vegetation class	Coastal Floodplain Wetlands
Extent within subject land	0.73 ha in low condition
Condition	This community at the subject land was recorded in a low condition state.
Description	Cumberland Red Gum Riverflat Forest typically exists as a tall sclerophyll open forest with mixed understorey of soft-leaved shrubs and dense grassy ground layer that is positioned on alluvial flats alongside streams. The upper stratum is dominated by Forest Red Gum and Cabbage Gum, with scattered occurrences of Rough-barked Apple *Angophora floribunda* over a mid-storey of Blackthorn and one or more Acacia species. The understorey consists of a high cover of Weeping Grass with scattered occurrences of Kidney Weed, Australian Basket Grass *Oplismenus aemulus* and Forest Nightshade *Solanum prinophyllum*. Within the subject land Cumberland Red Gum Riverflat Forest existed in low condition as disturbed patches along a 1st order water course that flows from east to west, transecting the southern portion of the subject land. It also occurred as a patch along the southern side of Redmayne Road. The canopy was sparse but includes the following species: Forest Red Gum, Cabbage Gum and Rough-barked Apple. The mid-storey was comprised of several exotic species with the dominant being Green Cestrum, Blackberry and Large-leaved Privet *Ligustrum lucidum.* No native shrub species were recorded. The ground layer also had a high cover and diversity of exotic species including Giant Reed, Kikuyu, Cobbler's Pegs, Rhodes

PCT 4025: *Cumberland Red Gum Riverflat Forest*	
	Grass *Chloris gayana* and Panic Veldtgrass. Native ground cover species were uncommon and consisted of scattered isolated occurrences of Weeping Grass and Kidney Weed.
Survey effort	Two BAM plots were collected in this vegetation type over the course of the field assessment (Figure 6).
Justification of PCT	Patches of Cumberland Red Gum Riverflat Forest within the subject land meets the PCT description (NSW DCCEEW 2025b) via the following: • Soil - occurs on the Blacktown and Luddenham soil landscapes. • Structure – tall sclerophyll open forest with soft-leaved shrubs and small trees with a dense grassy understorey. • Dominant species - canopy dominated by Forest Red Gum and Cabbage Gum with a mid-storey of Blackthorn and one or more Acacia species and a grassy groundcover with a high cover of Weeping Grass. • Geographic position – occurs on alluvial flats adjacent to streams and often occurs in disturbed patches with high weed invasion. Occurs in warm, moist climate at low elevation with a mean of 60 metres asl. • IBRA region and subregion – Sydney Basin region and Cumberland subregion.
TEC Status	**NSW BC Act:** Low condition state patches were determined to meet the criteria for TEC *River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions* (EEC, BC Act) due to the landscape position of these patches on alluvial flats adjacent to drainage lines and the presence of diagnostic species (NSW Scientific Committee 2011) **Commonwealth EPBC Act:** Low condition patches did not meet condition thresholds outlined in the Listing Advice for the EPBC Act listed community (DCCEEW 2020) for TEC *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria* as either the patch size did not exceed 0.5 ha and/or the total native perennial understorey had less than 30% cover. State TECs are mapped on Figure 8.
Estimate of percent cleared value of PCT (BioNet)	88.84% (NSW DCCEEW 2025b).

PCT 4025: *Cumberland Red Gum Riverflat Forest*	
PCT 4025 – Low condition	

Photo 7 Low condition PCT 4025 within the subject land

Scoping report submissions from Fairfield City Council (2024), request confirmation or rejection of *Cumberland Plain Woodland in the Sydney Basin Bioregion* 'derived native grassland', as per the NSW Scientific Committee – final determination, referencing local SEED database records. The impacts to grasslands including native derived grasslands must be assessed noting that all grassland irrespective of being native provides important habitat for native species. Several BAM plots/transects have been undertaken within grassland areas, confirming that these areas are consistent with exotic grassland, which has been entered into the BAM-C as NOG. BAM plot data is provided in Appendix 3.

Native vegetation not assigned to a PCT

Native parts of the subject land that could not be assigned to a PCT were mapped as Planted Native vegetation. Table 7 provides a detailed description of the native vegetation recorded within the subject land that cannot be assigned to a PCT. Areas of planted native vegetation recorded within the subject land are shown on Figure 5.

Table 7 Planted native vegetation

Planted natives	
Common name	Planted native vegetation
Extent within subject land	0.11 ha
Condition	This community comprises planted native vegetation that cannot be reasonably assigned to a PCT known to occur in the Cumberland IBRA subregion or is not locally native to the area.

Planted natives	
Description	Planted native vegetation within the subject land is located in scattered occurrences associated with car parks and remnant residential gardens. This vegetation is comprised of scattered occurrences of planted Tallowwood, Lemon-scented Gum, Crimson Bottlebrush *Callistemon citrinus*, Grevillea species and Melaleuca species.
Survey effort	One BAM plot was collected in this vegetation type over the course of the field assessment (Figure 6).
TEC Status	Planted native vegetation is not associated with a TEC under the BC Act or the EPBC Act.
Planted native vegetation	**Photo 8 Planted native vegetation within the subject land**

3.1.7 Threatened ecological communities

Vegetation within the subject land was found to represent three TECs listed under the NSW BC Act, as outlined in Table 8 and illustrated on Figure 8. No TECs listed under the Commonwealth EPBC Act were determined to be present within the subject land.

Table 8 Summary of BC Act TECs within the subject land

BC Act TEC	Listing status	Subject land (ha)
Cumberland Plain Woodland in the Sydney Basin Bioregion	CEEC	1.59
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	EEC	0.13
River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	EEC	0.73

3.2 Vegetation integrity assessment

3.2.1 Vegetation zones and patch size class

PCTs within the subject land were assessed and stratified, based on broad condition states, into vegetation zones in accordance with Section 4.3 of the BAM, and as described in Table 4 to Table 6 above. This resulted in five native vegetation zones identified within the development footprint and two additional non-native vegetation zones (3320_Exotic and 3302_NOG) that were added to the BAM-C for the purpose of VIS generation. Table 9 describes each of the zones, and provides details on the numbers of BAM floristic plots undertaken in each zone.

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

Native vegetation within the subject land was mapped sequentially and it was found to form part of a relatively large patch of connecting vegetation with an area of approximately 100 hectares or more (Figure 7). The connected vegetation comprises retained vegetation within the development site to the north and retained patches of vegetation to the east along a waterway associated with Eastern Creek. A smaller secondary patch was also mapped in the middle of the subject land, comprising PCT 3320 in low condition that was less than 5 hectares in size. However, as this vegetation zone falls into both patch sizes, the larger patch size has been selected for this assessment.

Patch size classes for each vegetation zone are also outlined in Table 9 below.

Table 9 Vegetation zones within the subject land

Vegetation zone	Plant Community Type	Condition	BAM plots completed	Area in subject land (ha)	Max. patch size development footprint
3320_Low	Cumberland Shale Plains Woodland	Low	3	1.51	>100
3320_Scattered Trees	Cumberland Shale Plains Woodland	Scattered Trees	1	0.08	>100
3320_Planted	Cumberland Shale Plains Woodland	Planted	1	0.07	>100
3320_Exotic	Cumberland Shale Plains Woodland	Exotic	2	2.99	>100
3320_NOG	Cumberland Shale Plains Woodland	NOG	4	36.68	>100
3975_Low	Southern Lower Floodplain Freshwater Wetland	Low	3	0.13	>100
4025_Low	Cumberland Red Gum Riverflat Forest	Low	2	0.73	>100

3.2.2 Vegetation integrity

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

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

If vegetation patch is linear and will not fit a 20 metre x 20 metre quadrat an alternative BAM plot method is used. This method is summarised below:

- A 10 metre x 100 metre quadrat and 100 metre transect for assessment of site attributes and function.
- A 10 metre x 40 metre quadrat, nested within the larger quadrat for fill floristic survey to determine composition and structure of the PCT.

The minimum number of BAM plots per vegetation zone was determined using Table 3 of the BAM (DPIE 2020a). In total, 13 BAM plots have been completed within the vegetation zones present development footprint as well as areas of non-native and planted native vegetation, details are provided in Table 10 and shown on Figure 6.

Table 10 BAM plots completed within the subject land

BAM plot reference	Vegetation zone
40675.B01	3320_Low
40675.B02	4025_Low
40675.B03	3975_Low
40675.B04	3320_Low
40675.B05	3320_NOG
40675.B06	3320_NOG
40675.B07	3320_ScatteredTrees
40675.B08	3320_NOG
40675.B09	3320_Exotic
40675.B10	3320_Planted
40675.B11	3320_NOG
40675.B12	3320_Exotic
40675.B13	Planted native vegetation
40675.B14	4025_Low
40675.BX1	3975_Low
40675.BX2	3320_Low
40675.BX3	3975_Low

Assessment of vegetation integrity was undertaken using standard benchmark data as outlined in the BAM and held in the BioNet Vegetation Classification database (NSW DCCEEW 2025b). A list of flora species was

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

3.2.3 Vegetation integrity score

Plot data was entered into the BAM calculator to determine a VI score. Plot data are presented in Appendix 3, with VI scores for each vegetation zone provided in Table 11.

Table 11 Vegetation zone integrity scores

Vegetation zone	Composition score	Structure score	Function score	VI score*	HBTs present
3320_Low	10.4	29.1	56.4	25.7	Yes
3320_Scattered Trees	2.5	0.5	9.7	2.9	Yes
3320_Planted	5.4	14.4	27.9	12.9	No
3320_Exotic	1.0	0	2.2	1.3	No
3320_NOG	0	0	0	1.0	No
3975_Low	36.9	14.5	0	23.1	No
4025_Low	8.5	18.1	24	15.5	No

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

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

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

As such, ecosystem credit offsets are not required for the following native vegetation zones:

- 3320_Scattered Trees due to its VI score of 2.9.
- 3320_Planted due to its VI score of 12.9.
- 3320_Ecotic due to its VI score of 1.3.
- 3320_NOG due to its VI score of 1.0.

3.2.4 Scattered trees

No assessment of impacts to scattered paddock trees is included in the current assessment. No scattered trees, as defined by the BAM, occur within the subject land (the Scattered Trees condition type used in this assessment has a different meaning to the paddock tree streamlined assessment module under the BAM).

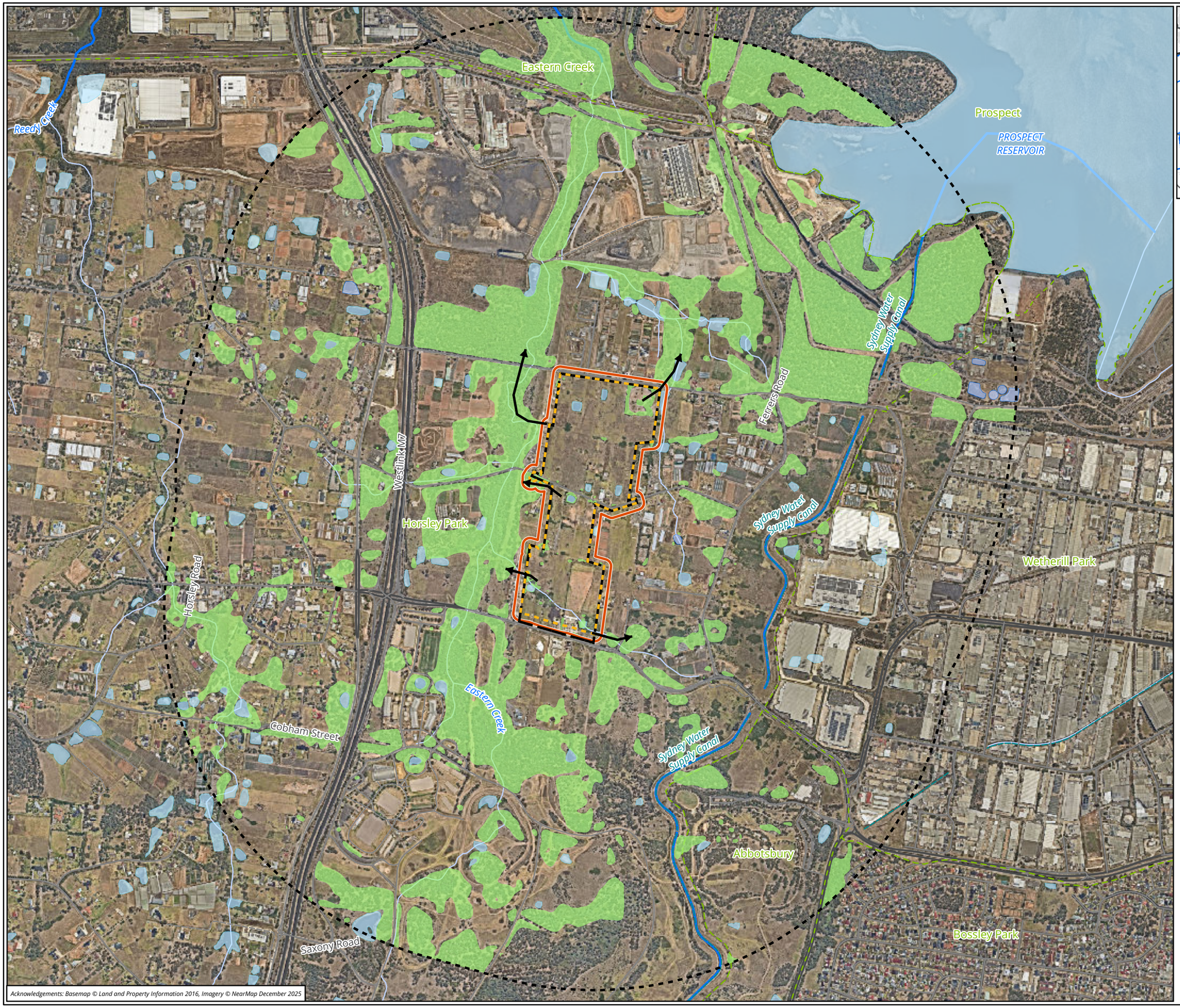

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Figure 4 Native vegetation extent

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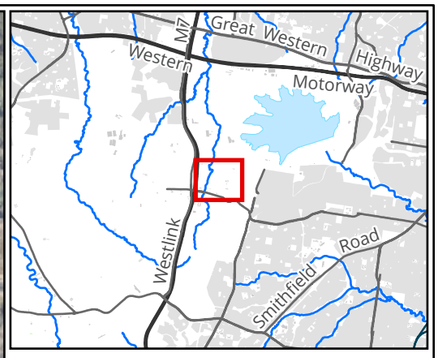
Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F4_NativeVeg



Legend

- Subject land
- Development site
- Development footprint
- Hollow-bearing Tree
- Stag
- Cleared

Vegetation communities

- 3320 - Cumberland Shale Plains Woodland (Low)
- 3320 - Cumberland Shale Plains Woodland (Planted)
- 3320 - Cumberland Shale Plains Woodland (Scattered Trees)
- 3320 - Cumberland Shale Plains Woodland (NOG)
- 3320 - Cumberland Shale Plains Woodland (Exotic)
- 3975 - Southern Lower Floodplain Freshwater Wetland (Low)
- 4025 - Cumberland Red Gum Riverflat Forest (Low)
- Planted natives

Figure 5 Vegetation within the subject land

0 50 100 150 200

Metres

Scale: 1:5,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 20 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F5_BiosisVeg

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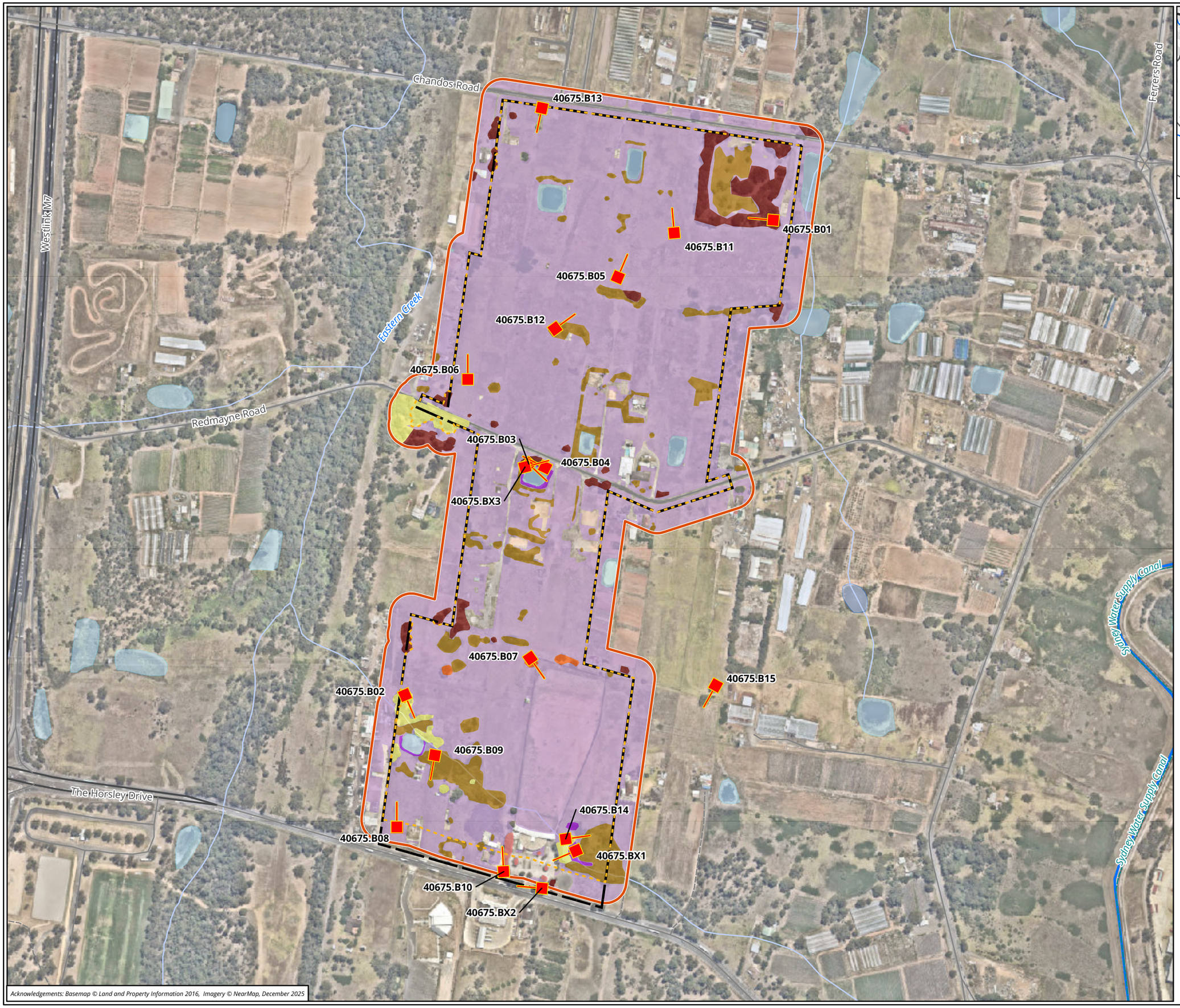

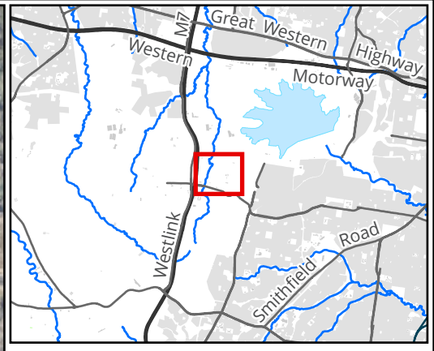

Legend

- Subject land
- Development site
- Development footprint
- BAM plot

Vegetation zones

- 3320_Low
- 3320_Planted
- 3320_Scattered Trees
- 3320_NOG
- 3320_Exotic
- 3975_Low
- 4025_Low

Figure 6 Vegetation zones and plot locations

0 50 100 150 200

Metres

Scale: 1:5,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F6_VegZones

Legend

- Subject land
- Development site
- Development footprint
- Assessment area

Patch size

- Patch 1 - ≥100ha (3320_Low, 3320_Planted, 3320_Scattered Trees, 3975_Low, 4025_Low)
- Patch 2 - <5ha (3320_Low)

Figure 7 Patch size locations

0 200 400 600

Metres

Scale: 1:15,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

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Matter: 40675, Date: 17 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F1_7.aprx
Layout: 40675_F7_PatchSize

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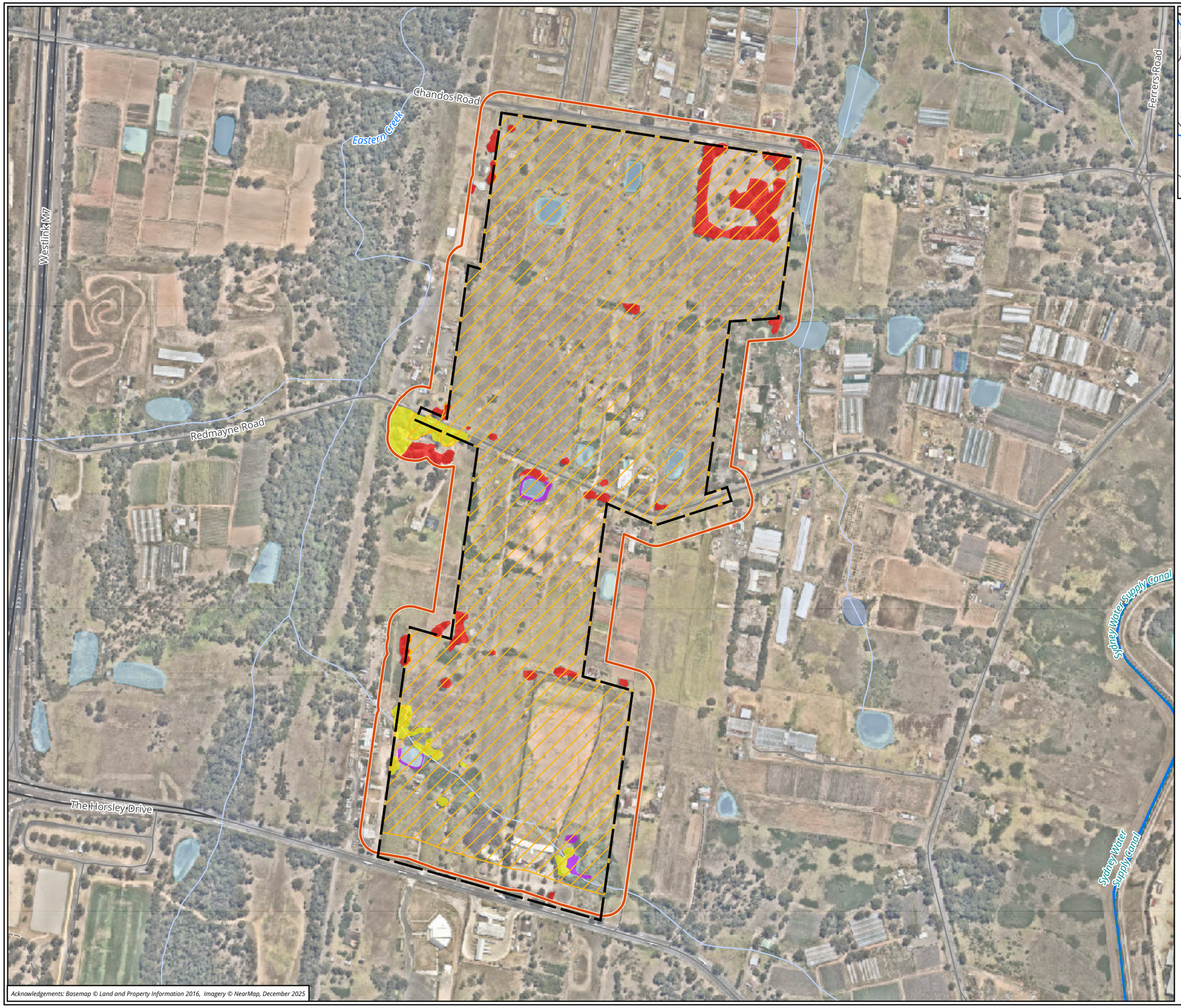

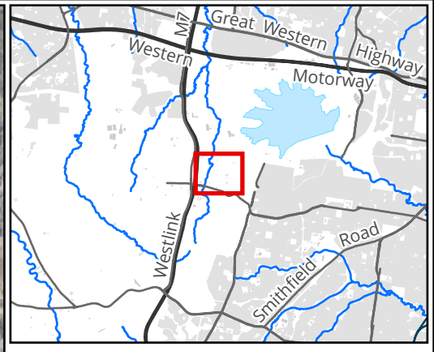

Legend

- Subject land
- Development site
- Development footprint

Threatened ecological communities

- Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)
- Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions (EEC, BC Act)
- River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)

Figure 8.1 Threatened ecological communities within the subject land

0 50 100 150 200

Metres

Scale: 1:5,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 20 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F8_TECs

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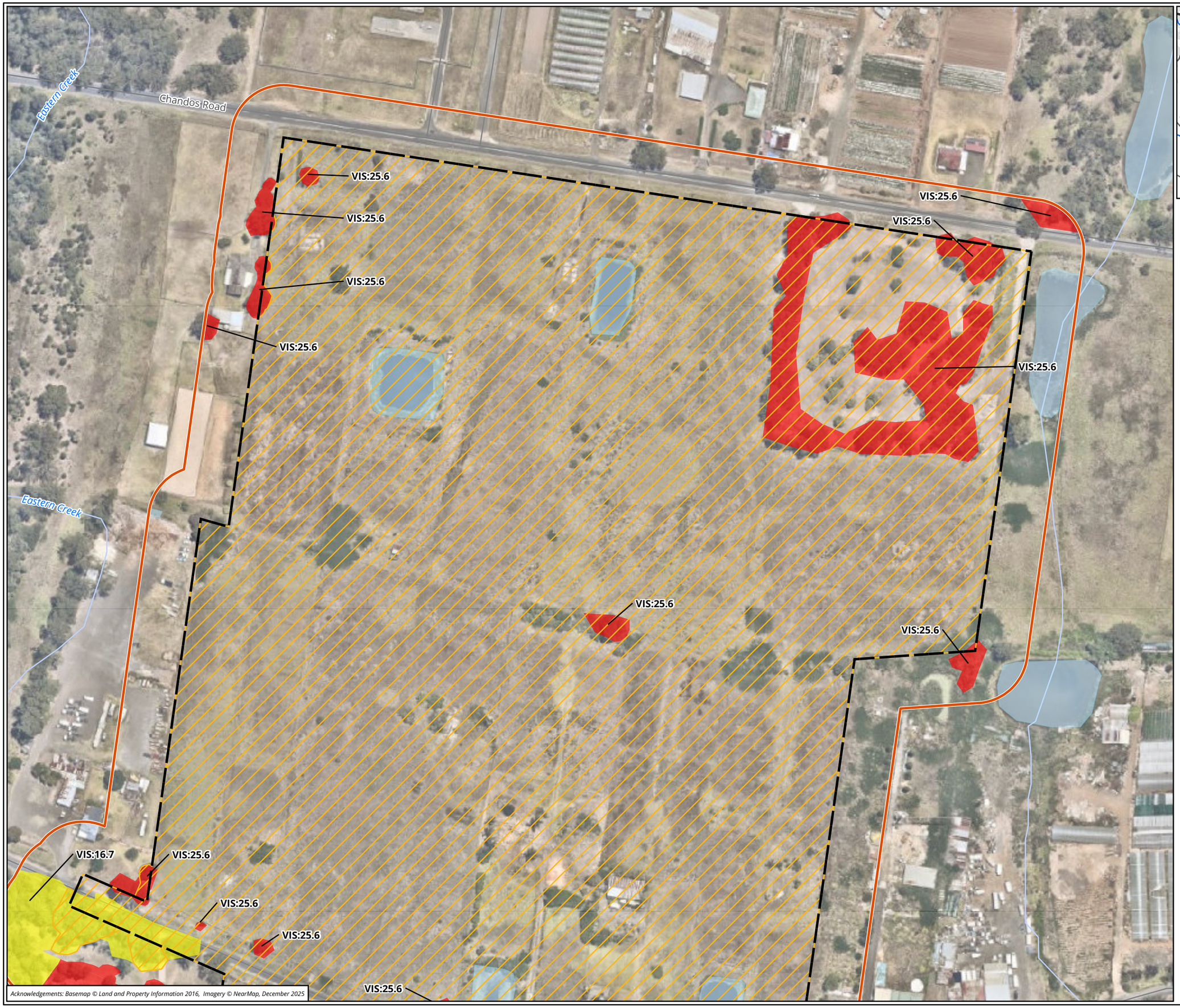

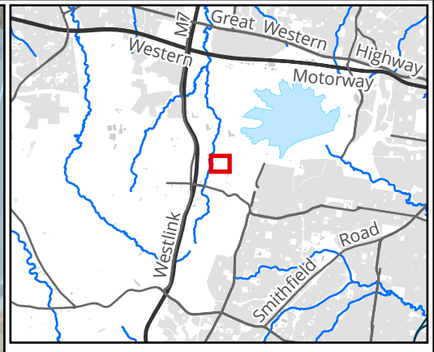

Legend

- Subject land
- Development site
- Development footprint

Threatened ecological communities

- Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)
- River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)

Figure 8.2 Threatened ecological communities within the subject land

0 50

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEM Group

Matter: 40675, Date: 20 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
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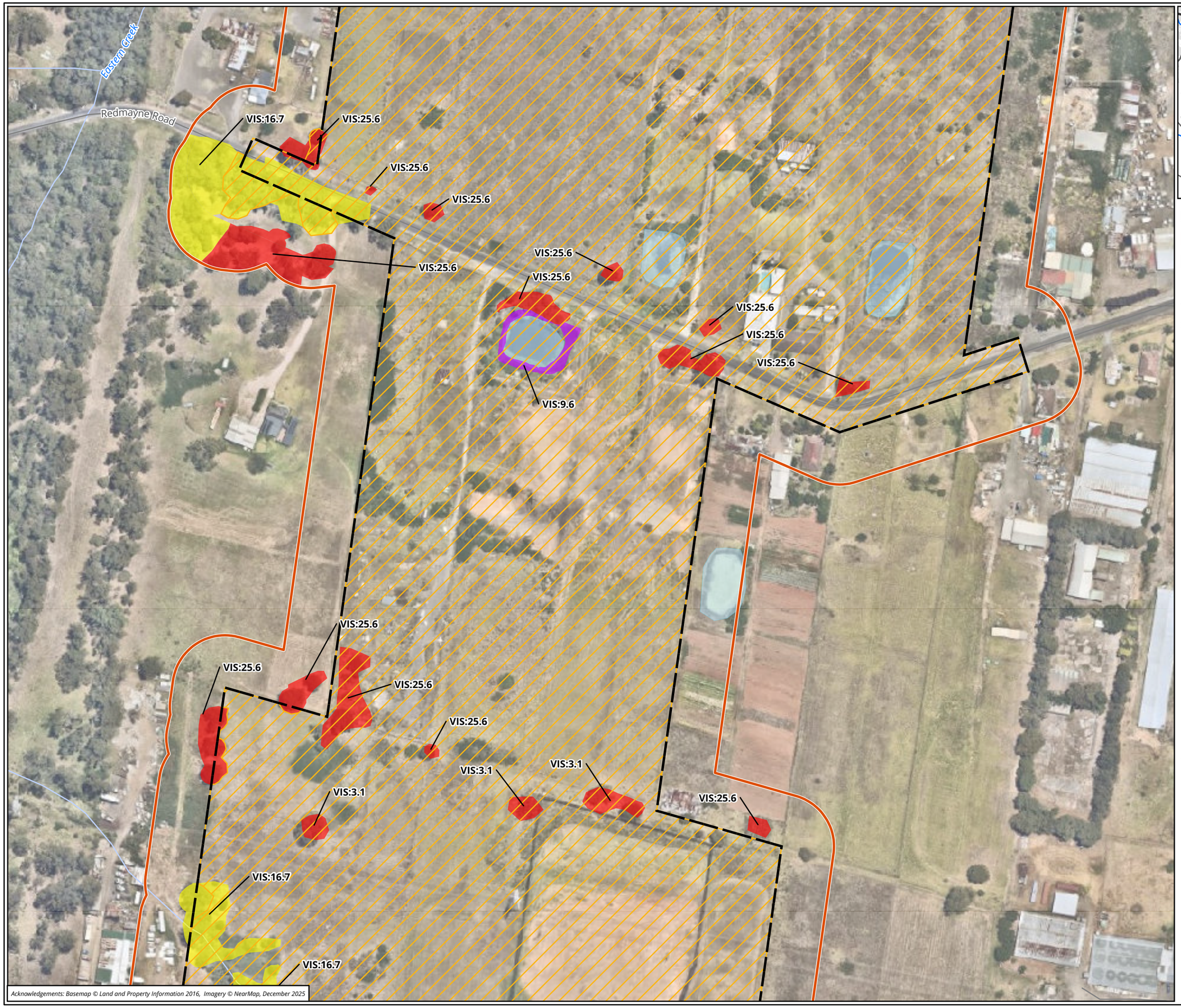

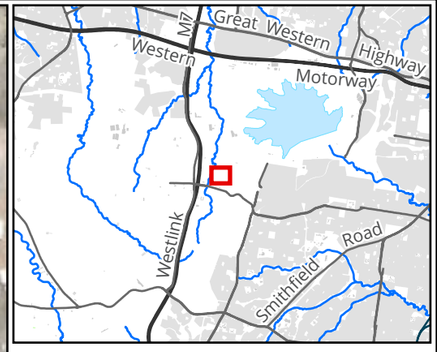

Legend

- Subject land
- Development site
- Development footprint

Threatened ecological communities

- Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)
- Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions (EEC, BC Act)
- River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)

Figure 8.3 Threatened ecological communities within the subject land

0 50

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 20 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F8_TECs

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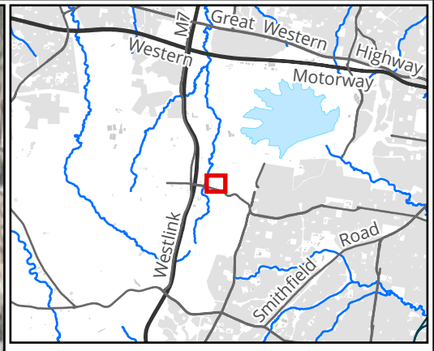

Legend

- Subject land
- Development site
- Development footprint

Threatened ecological communities

- Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)
- Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions (EEC, BC Act)
- River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)

Figure 8.4 Threatened ecological communities within the subject land

0 50

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEMGroup

Matter: 40675, Date: 20 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F8_TECs

Species name	Common name
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat
Miniopterus australis	Little Bent-winged Bat
Miniopterus orianae oceanensis	Large Bent-winged Bat
Neophema pulchella	Turquoise Parrot
Oxyura australis	Blue-billed Duck
Pandion cristatus	Eastern Osprey
Parvipsitta pusilla	Little Lorikeet
Petroica boodang	Scarlet Robin
Petroica phoenicea	Flame Robin
Pteropus poliocephalus	Grey-headed Flying-fox
Pycnoptilus floccosus	Pilotbird
Pyrrholaemus sagittatus	Speckled Warbler
Rostratula australis	Australian Painted Snipe
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat
Stagonopleura guttata	Diamond Firetail
Stictonetta naevosa	Freckled Duck
Varanus rosenbergi	Rosenberg's Goanna

4.2 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 candidate species are identified as species credit species in the TBDC. A targeted survey or an expert report is required to confirm the presence of these species on the subject land, or alternatively the species can be assumed to be present (DPIE 2020a).

Appendix 2 provides the lists of species credit species predicted to occur within the subject land based on the IBRA subregion(s) within which the project occurs, the native vegetation cover present within the 1500 metre buffer area, the PCTs present within subject land, and the patch sizes listed in Table 9.

The potential for a species to occur within the subject land was assessed in accordance with Section 5.2 of the BAM (DPIE 2020a) and species with geographical restrictions, or habitat constraints not present, were not required to be assessed. Up to 35 predicted species credit species (16 flora and 19 fauna) have been excluded from occurring within the subject land based on a lack of suitable habitat or required microhabitat features, substantial degradation of existing potential habitat, absence of important area mapping or geographical limitations. Species excluded are:

- Habitat absent:
  - Bush Stone-curlew *Burhinus grallarius* (Endangered, BC Act).
  - South-eastern Glossy Black-Cockatoo *Calyptorhynchus lathami* (Vulnerable, EPBC Act and BC Act).
  - Eastern Pygmy-possum *Cercartetus nanus* (Vulnerable, BC Act).
  - Large-eared Pied Bat *Chalinolobus dwyeri* (Endangered, EPBC Act, Vulnerable, BC Act).

  - Dwarf Kerrawang *Commersonia prostrata* (Endangered, EPBC Act and BC Act).
  - White-bellied Sea-Eagle *Haliaeetus leucogaster* (Vulnerable, BC Act).
  - Little Eagle *Hieraaetus morphnoides* (Vulnerable, BC Act).
  - Square-tailed Kite *Lophoictinia isura* (Vulnerable, BC Act).
  - Little Bent-winged Bat *Miniopterus australis* (Vulnerable, BC Act).
  - Barking Owl *Ninox connivens* (Vulnerable, BC Act).
  - Powerful Owl *Ninox strenua* (Vulnerable, BC Act).
  - Large Bent-winged Bat *Miniopterus orianae oceanensis* (Vulnerable, BC Act).
  - Squirrel Glider *Petaurus norfolcensis* (Vulnerable, BC Act).
  - Eastern Osprey *Pandion haliaetus cristatus* (Vulnerable, BC Act).
  - Grey-headed Flying-fox *Pteropus poliocephalus* (Vulnerable, EPBC Act and BC Act).
  - Magenta Lilly Pilly *Syzygium paniculatum* (Vulnerable, EPBC Act, Endangered, BC Act).
  - Masked Owl *Tyto novaehollandiae* (Vulnerable, BC Act).
- Degradation of existing habitat:
  - *Deyeuxia appressa* (Endangered, EPBC Act and BC Act).
  - *Dillwynia tenuifolia* (Vulnerable, BC Act).
  - *Hibbertia puberula* (Endangered, BC Act).
  - *Hibbertia* sp. Bankstown (Critically Endangered, EPBC Act and BC Act).
  - *Micromyrtus minutiflora* (Vulnerable, EPBC Act, Endangered, BC Act).
  - Hairy Geebung *Persoonia hirsuta* (Endangered, EPBC Act and BC Act).
  - Nodding Geebung *Persoonia nutans* (Endangered, EPBC Act and BC Act).
  - *Pimelea curviflora* var. *curviflora* (Vulnerable, EPBC Act and BC Act).
  - Brown Pomaderris *Pomaderris brunnea* (Vulnerable, EPBC Act, Endangered, BC Act).
  - Sydney Plains Greenhood *Pterostylis saxicola* (Endangered, EPBC Act and BC Act).
  - *Pultenaea parviflora* (Vulnerable, EPBC Act, Endangered, BC Act).
  - Matted Bush-pea *Pultenaea pedunculata* (Endangered, BC Act).
  - Plum-leaf Pomaderris *Pomaderris prunifolia* (Not listed, EPBC Act and BC Act).
- No important area mapping:
  - Regent Honeyeater *Anthochaera phrygia* (Critically Endangered, EPBC Act and BC Act).
  - Curlew Sandpiper *Calidris ferruginea* (Critically Endangered, EPBC Act, Endangered, BC Act).
  - Swift Parrot *Lathamus discolor* (Critically Endangered, EPBC Act, Endangered, BC Act).
  - Black-tailed Godwit *Limosa limosa* (Endangered, EPBC Act, Vulnerable, BC Act).
- Geographical limitations:
  - Tadgell's Bluebell *Wahlenbergia multicaulis* (Not listed, EPBC Act and BC Act).

A detailed assessment of potential for occurrence, and potential for impact, for all species credit species predicted to occur within the subject land is provided in Appendix 2. Species credit species considered to potentially occur within the subject land, and thus considered 'candidate species credit species' have been the subject of the targeted threatened species surveys.

Precautionary surveys for one species, South-eastern Glossy Black-Cockatoo, was undertaken outside of the associated survey window. Breeding habitat is not considered likely to be present due to the lack of suitable hollow-bearing trees within the subject land. Hollows present are small or medium and therefore not large enough to be utilised by this species for breeding. However, precautionary survey was undertaken on the cusp, but outside of, the recommended survey window, in September 2024. The species was not detected within the subject land.

No species credit species that were not predicted by the BAM Calculator (BAM-C) or BioNet to occur within the subject land were added to the assessment as candidate species credit species.

All candidate species credit species considered as part of this assessment, and their associated method of assessment, are listed in Table 13 (flora species) and Table 14 (fauna species).

Threatened flora

Habitats for threatened flora species within the subject land are largely considered degraded due to the high degree of management and prior disturbance. Open areas are typically dominated by exotic pasture grasses and herbaceous exotics. This comprises the habitats associated with all of the PCT 3320, PCT 3975 and PCT 4025 vegetation within the subject land. The vegetation occurs as isolated and edged effected patches throughout the site.

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

Table 13 Candidate flora species credit species

Species name	Common name	Survey period	Method of assessment
Acacia pubescens	Downy Wattle	Year-round	Targeted survey (Biosis and écologique (2024)
Eucalyptus benthamii	Camden White Gum, Nepean River Gum	Year-round	Targeted survey (Biosis and écologique (2024)
Eucalyptus glaucina	Slaty Red Gum	Year-round	Targeted survey (Biosis and écologique (2024)
Grevillea juniperina* subsp. *juniperina	Juniper-leaved Grevillea	Year-round	Targeted survey (Biosis and écologique (2024)
Marsdenia viridiflora* subsp. *viridiflora	Native Pear	November–February	Targeted survey (Biosis)
Maundia triglochinoides	-	November–March	Targeted survey (Biosis)
Persicaria elatior	Knotweed, Tall Knotweed	December–May	Targeted survey (écologique 2024)
Pimelea spicata	Spiked Rice-flower	Year-round	Targeted survey (Biosis)

Threatened fauna

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

Habitat for threatened fauna species within the development footprint is limited and has been subjected to prior disturbance. Hollow-bearing trees containing small and medium sized hollows are present, which may provide suitable habitat for Gang-gang Cockatoo and Southern Myotis. Waterways and dams, while degraded, may provide habitat for Green and Golden Bell Frog, a species that is quite tolerant of disturbance. There are Koala feed trees present and therefore survey for Koala was undertaken to confirm absence of this species. Leaf litter is minimal, however targeted survey was undertaken for Cumberland Plain Land Snail as a

precautionary measure due to the presence of suitable vegetation. Fauna habitat requirements are described in Appendix 2.

Table 14 provides a list of candidate fauna species credit species considered in this assessment, each species' required survey period and the relevant method of assessment. Further detail of the targeted surveys undertaken are provided below.

Table 14 Candidate fauna species credit species

Species name	Common name	Survey period	Method of assessment
Callocephalon fimbriatum	Gang-gang Cockatoo	October-January	Targeted survey
Litoria aurea	Green and Golden Bell Frog	November-March	Targeted survey
Meridolum corneovirens	Cumberland Plain Land Snail	Year-round	Targeted survey
Myotis macropus	Southern Myotis	October-March	Targeted survey
Phascolarctos cinereus	Koala	Year-round	Targeted survey

4.2.1 Threatened species survey details

Targeted threatened species surveys of the subject land were undertaken 30 August 2024, 17–18 September 2024, 11 November 2024, 18–22 November 2024, 3–4 December 2024,17-18 December 2024, 11 February 2025, 16 December 2025 and 13–15 January 2026. Weather observations for each survey date are shown in Table 15.

Table 15 Weather observations during targeted flora and fauna surveys (Sydney Olympic Park, NSW)

Survey undertaken	Survey date	Temperature (°C)		Rain (mm)
		Min.	Max.	
Flora (écologique 2024)	12/5/2021	11.3	21.4	-
Flora and habitat assessments	30/8/2024	10.3	30.3	0
Flora and habitat assessments South-eastern Glossy Black-Cockatoo	17/9/2024	7.1	22.9	0
Flora and habitat assessments South-eastern Glossy Black-Cockatoo	18/9/2024	5.1	26.7	0
Flora and habitat assessments	11/11/2024	15.5	21.5	0
Southern Myotis	18/11/2024	17.1	30.4	18.8
Gang-gang Cockatoo Cumberland Plain Land Snail Southern Myotis Koala	19/11/2024	17.5	22.4	0.4
Gang-gang Cockatoo Cumberland Plain Land Snail Southern Myotis Koala	20/11/2024	14.3	25.0	0
Southern Myotis	21/11/2024	15.7	-	0

Survey undertaken	Survey date	Temperature (°C)		Rain (mm)
		Min.	Max.	
Cumberland Plain Land Snail **Southern Myotis** **Koala**	22/11/2024	-	27.6	-
Green and Golden Bell Frog	3/12/2024	19.7	34.2	0
Green and Golden Bell Frog	4/12/2024	21.5	25.9	0
Green and Golden Bell Frog	17/12/2024	20.5	36.5	0
Green and Golden Bell Frog	18/12/2024	17.2	22.9	7.0
Cumberland Plain Land Snail	8/1/2025	17.9	20.4	3.0
Flora and habitat assessments	11/02/2025	17.3	27.6	36.8
Southern Myotis	16/12/2025	16.8	23.8	0.6
Southern Myotis	13/1/2026	18.5	28.1	3.6
Southern Myotis	14/1/2026	21.0	27.3	0.2
Southern Myotis	15/1/2026	19.9	27.0	3.6

Information from the Australia Government Bureau of Meteorology website.

Details of surveys undertaken as part of the current assessment are provided below.

Threatened flora

Targeted threatened flora surveys were undertaken in accordance with *Surveying threatened plants and their habitats* (DPIE 2020b) for:

- Downy Wattle *Acacia pubescens* (Vulnerable, EPBC Act and BC Act).
- Camden White Gum *Eucalyptus benthamii* (Vulnerable, EPBC Act, Critically Endangered, BC Act).
- Slaty Red Gum *Eucalyptus glaucina* (Vulnerable, EPBC Act and BC Act).
- Juniper-leaved Grevillea *Grevillea juniperina* subsp. *juniperina* (Vulnerable, BC Act).
- Native Pear *Marsdenia viridiflora* subsp. *viridiflora* (Not listed, EPBC Act and BC Act).
- *Maundia triglochinoides* (Vulnerable, BC Act).
- Tall Knotweed *Persicaria elatior* (Vulnerable, EPBC Act and BC Act).
- Spiked Rice-flower *Pimelea spicata* (Endangered, EPBC Act and BC Act).

Survey method and effort

Survey methods included:

- 15 m separated transect searches of areas of potential habitat in May 2021 by écologique (2024), where possible.
- 15 m separated transect searches of areas of potential habitat in November 2024 by Biosis, where possible.
- Incidental searches during vegetation mapping in August and September 2024 by Biosis.

Targeted surveys for threatened flora species were undertaken by use of parallel field traverses through areas of suitable habitat. Due to site constraints, the widths of survey transect lines were adjusted where necessary. Several factors restricted accessibility and survey coverage, including:

- Dumped rubbish: Many areas beneath trees were heavily obstructed by waste, including old vehicles, scrap metal, and other debris. These obstacles restricted physical access.
- Large weed plumes: Extensive infestations of dense exotic vegetation created areas that were inaccessible.

To address these constraints, survey efforts were modified to focus on areas that were accessible and safe to traverse. While some areas of the subject land could not be surveyed directly, the areas dominated by rubbish or dense weed infestations were highly disturbed and unlikely to provide suitable habitat for threatened flora species. Therefore, survey efforts were concentrated where conditions were more favourable and considered to be suitable for the species.

Survey effort for targeted flora surveys is shown on Figure 9.

Justification of survey method and effort

Survey guidelines followed included:

- Section 5 of the BAM to determine the potential for threatened species identified under the BAM as 'ecosystem credit species' and 'species credit species' to occur (DPIE 2020a).
- *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (DEC 2004).
- *Surveying threatened plants and their habitats NSW survey guide for the Biodiversity Assessment Method* (DPIE 2020b).

Timing of survey

Survey was conducted in relation to requirements in the TBDC survey guides, as per the timings provided in Table 17 below.

Survey personnel and relevant experience

Targeted flora surveys were undertaken by the Biosis ecologists listed in Table 16.

Table 16 Targeted flora survey personnel and relevant experience

Staff member	Role	Relevant experience
Biosis		
Kaisha Edwards	Senior Botanist, NSW Southern Regional Coordinator	Up to seven years' experience undertaking flora surveys in NSW.
Rosie Gray	Botanist	Up to three years' experience undertaking flora surveys in NSW.
Jemma Guiliano	Zoologist	Up to two years' experience undertaking flora surveys in NSW.
Jake Schwebel	Senior Botanist, NSW Northern Regional Coordinator	Up to five years' experience undertaking flora surveys in NSW.

Staff member	Role	Relevant experience
écologique		
Kathryn Duchatel	BAM Accredited Assessor, écologique (2024)	Over 25 years' experience and the following relevant qualifications: • BSc Env (Macquarie). • BAM Assessor Accreditation no: BAAS17054. • EIANZ Certified Environmental Practitioner. • Ecological Consultants Association of NSW Practicing member.

Results

Table 17 provides a summary of the results of the targeted flora surveys completed.

Table 17 Summary of targeted flora survey method and results

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
Acacia pubescens	Downy Wattle	• 15 m separated transect searches of areas of potential habitat. • Targeted survey (écologique 2024): – 12 May 2021 • Targeted survey (Biosis): – 22 November 2024 • Incidental searches (Biosis): – 30 August 2024 – 17-18 September 2024 – 11 February 2025	Not recorded during surveys.	N/A
Eucalyptus benthamii	Camden White Gum, Nepean River Gum	• 15 m separated transect searches of areas of potential habitat. • Targeted survey (écologique 2024): – 12 May 2021 • Targeted survey (Biosis): – 22 November 2024 • Incidental searches (Biosis): – 30 August 2024 – 17-18 September 2024	Not recorded during surveys.	N/A
Eucalyptus glaucina	Slaty Red Gum	• 15 m separated transect searches of areas of potential habitat. • Targeted survey (écologique 2024): – 12 May 2021 • Targeted survey (Biosis):	Not recorded during surveys.	N/A

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
		– 22 November 2024 • Incidental searches (Biosis): – 30 August 2024 – 17-18 September 2024		
Grevillea juniperina* subsp. *juniperina	Juniper-leaved Grevillea	• 15 m separated transect searches of areas of potential habitat. • Targeted survey (écologique 2024): – 12 May 2021 • Targeted survey (Biosis): – 22 November 2024 • Incidental searches (Biosis): – 30 August 2024 – 17-18 September 2024	Not recorded during surveys.	N/A
Marsdenia viridiflora* subsp. *viridiflora	Native Pear	• 15 m separated transect searches of areas of potential habitat. • Targeted survey (Biosis): – 22 November 2024	Not recorded during surveys.	
Maundia triglochinoides	-	• 15 m separated transect searches of areas of potential habitat. • Targeted survey (Biosis): – 22 November 2024	Not recorded during surveys.	N/A
Persicaria elatior	Knotweed, Tall Knotweed	• 15 m separated transect searches of areas of potential habitat. • Targeted survey (écologique 2024): – 12 May 2021	Not recorded during surveys.	N/A
Pimelea spicata	Spiked Rice-flower	• 15 m separated transect searches of areas of potential habitat. • Targeted survey (Biosis): – 22 November 2024 • Incidental searches (Biosis): – 30 August 2024 – 17-18 September 2024 – 11 February 2025	Not recorded during surveys.	N/A

Limitations

There were no limitations to these surveys.

Fauna habitat assessments

Fauna habitat assessment was undertaken to determine the presence of microhabitats and other critical habitat components (habitat constraints) suitable for all fauna species outlined in Table 14 and Appendix 2. Habitat assessments focussed on the presence of the following features within the subject land:

- Habitat trees including large and/or hollow-bearing trees, stick nests, availability of flowering shrubs and canopy/understorey feed tree species.
- Soil type and presence of cliffs, overhangs and other rocky areas.
- Condition and type of native vegetation and the presence of exotic species.
- Presence and condition of pools and waterways.
- Quantity of ground litter and woody debris.
- Searches for indirect evidence of fauna (i.e., feathers, tracks and scats).
- General degradation of the site as a result of past and current disturbances such as vegetation clearing and industrial land management practices.
- Topography and landscape morphology.

Several habitat features with potential to support threatened species credit species were identified during these habitat assessments. These features have been summarised in Table 18.

Table 18 Habitat features with potential to support threatened species credit species

Habitat feature	Presence within the development footprint
Hollow-bearing trees	Habitat trees supporting hollows of a variety of size classes from small (<50 mm diameter) through to medium (50-149 mm diameter) were present across the subject land. These trees have the potential to provide breeding resources for a range of native fauna species such as and microbats, but are sufficiently degraded or not suitable for candidate species credit species such as Squirrel Glider or Cockatoos.
Feed tree species	A variety of tree species identified as Koala use trees within the Central Coast Koala management area, which includes the subject land, were detected during the assessment.
Caves and rocky overhangs	Caves and rocky overhangs were not identified within the subject land or within 2 km of the subject land.
Rocky outcrops and sandstone crevices	The surface geology within the subject land does not support rocky outcrops, sandstone crevices, or caves.
Major and minor watercourses and waterbodies (i.e., dams)	There is a first order waterway mapped within the subject land, which may provide potential habitat for amphibians including Green and Golden Bell Frog. Artificial waterbodies (i.e., farm dams) throughout the development footprint were also identified as potential habitat for threatened amphibians. Riparian areas also have the potential to support threatened fauna species in a fragmented landscape such as the one relevant to the current project. Large old trees, more likely to support tree hollows, are more common in riparian corridors.
Woody debris and leaf litter	Woody debris and leaf litter was minimal across development footprint due to prior disturbance and land use, however some areas of leaf litter may provide potential habitat for the threatened Cumberland Plain Land Snail.

Field capture of detailed fauna habitat information allowed for confirmation of presence or absence of habitat features and microhabitats for a range of candidate threatened species across surveyed portions of the development footprint. Fauna habitat assessments were captured using ArcGIS polygons attributed with

specific habitat criteria that allowed for planning of further targeted survey for select species, or the exclusion of the potential for occurrence of various candidate species from the subject land.

Diurnal birds

Targeted diurnal bird surveys were undertaken for Gang-gang Cockatoo *Callocephalon fimbriatum* (Endangered, EPBC Act, Vulnerable, BC Act).

Survey method and effort

Surveys consisted of a 20-minute search of a 1 hectare area, with three repetitions completed. This satisfied the required survey effort required per stratification unit (PCT) for an area of up to 50 hectares (Loyn et al. 1986).

Through the completion of tasks such as vegetation mapping, habitat mapping, plot data collection, equipment set up and retrieval and targeted flora survey, a significant amount of incidental survey has also been undertaken across the subject land. Although not all incidental survey were undertaken within the prescribed survey periods for the species, they can generally be detected all year round such that incidental survey is considered to complement the targeted survey undertaken, and add confidence to the findings of this assessment.

Survey effort for diurnal birds is shown on Figure 9.

Justification of survey method and effort

Survey guidelines followed included:

- *Survey Guidelines for Australia's Threatened Birds* (DEWHA 2010a).
- *Threatened Biodiversity Survey and Assessment - Guidelines for Developments and Activities* (DEC 2004).
- Survey notes within the TBDC (NSW DCCEEW 2025c).

Timing of survey

Survey was undertaken from 19-21 November 2024 within the allowable survey period for this species as detailed in the TBDC.

Survey personnel and relevant experience

Diurnal bird surveys were undertaken by the Biosis ecologists outlined in Table 19.

Table 19 Targeted diurnal bird survey personnel and relevant experience

Staff member	Role	Relevant experience
Rachel Moore	Zoologist	Up to three years' experience undertaking fauna survey in NSW.
Trevor Coombes	Graduate Zoologist	Up to one years' experience undertaking fauna survey in NSW.

Results

Table 20 provides a summary of the results of the diurnal bird surveys completed.

Table 20 Summary of diurnal bird survey method and results

Species Name	Common name	Survey method	Survey results	Species Polygon (ha) or count
Callocephalon fimbriatum	Gang-gang Cockatoo	• Habitat searches. • Transect searches (1 ha 20 minute area search per 50 ha) through areas containing large hollow-bearing trees undertaken on three occasions.	Not recorded during surveys.	N/A

Limitations

There were no limitations to this survey.

Precautionary survey and habitat assessment – Glossy Black-Cockatoo

Targeted diurnal bird surveys were undertaken for South-eastern Glossy Black-Cockatoo *Calyptorhynchus lathami lathami* (Vulnerable, EPBC Act and BC Act).

Survey method and effort

Surveys consisted of a 20-minute search of a 1 hectare area, with three repetitions completed. This satisfied the required survey effort required per stratification unit (PCT) for an area of up to 50 hectares (Loyn et al. 1986).

Through the completion of tasks such as vegetation mapping, habitat mapping, plot data collection, equipment set up and retrieval and targeted flora survey, a significant amount of incidental survey has also been undertaken across the subject land and study area. Although not all incidental survey was undertaken within the prescribed survey periods for the species, the species can generally be detected all year round such that incidental survey is considered to complement the targeted survey undertaken, and add confidence to the findings of this assessment.

Survey effort for Glossy Black-Cockatoo is shown on Figure 9.

Justification of survey method and effort

Survey guidelines followed included:

- *Survey Guidelines for Australia's Threatened Birds* (DEWHA 2010a).
- *Threatened Biodiversity Survey and Assessment - Guidelines for Developments and Activities* (DEC 2004).
- Survey notes within the TBDC (NSW DCCEEW 2025c).

Timing of survey

Survey was conducted on 17-18 September 2024, within the timing requirements in the TBDC survey guides at the time of being undertaken. However, following completing of all surveys, an update to these requirements was posted by DCCEEW, resulting in the survey window (April-August) being inconsistent with the period of survey. This is not considered to be of concern as surveys were undertaken as a precautionary measure only for detecting foraging birds as the subject land lacks large hollow-bearing trees required to support breeding habitat.

Survey personnel and relevant experience

Diurnal bird surveys were undertaken by the Biosis ecologists outlined in Table 19.

Table 21 Targeted diurnal bird survey personnel and relevant experience

Staff member	Role	Relevant experience
Tara Lillicot	Zoologist	Over 2.5-years' experience in environmental consulting including over 1.5-years' experience conducting fauna surveys with various techniques including Koala SAT and snail surveys, call/playback surveys for threatened amphibians and birds, bat ultrasonic detection and harp trapping, reptile and mammal spotlighting, and stag-watching for threatened cockatoos. Zoological experience also includes a further two-years' experience in captive animal research, handling and husbandry.

Results

Table 20 provides a summary of the results of the diurnal bird surveys completed.

Table 22 Summary of diurnal bird survey method and results

Species Name	Common name	Survey method	Survey results	Species Polygon (ha) or count
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	• Habitat searches. • Transect searches (1 ha 20 minute area search per 50 ha) through areas containing large hollow-bearing trees. • No suitable hollows.	Not recorded during surveys.	N/A

Limitations

There were no limitations to this survey method, however survey was undertaken one month following the completion of the recommended survey window for this species due to changes in survey requirements following completion of the field survey.

Frogs

Targeted amphibian surveys were undertaken for Green and Golden Bell Frog *Litoria aurea* (Vulnerable, EPBC Act, Endangered, BC Act).

Survey method and effort

Detailed habitat assessments were undertaken for waterways and other water bodies considered to potentially provide habitat to the candidate frog species. Suitable habitat included dams, seasonally inundated wet areas, drainage lines and overflows where grasses, sedges and rushes were present amongst shallow, still water.

The following methodology was implemented during each survey:

- An initial five-minute period of passive listening, at the start of the transect, to detect and identify calling frogs present at the site.
- At each 50 m interval along the transect a five-minute passive listening period (call detection) was completed followed by two minutes of call playback and an additional two minutes of listening for each of the species.
- Each interval was followed by a slow walking visual spotlighting inspection for five minutes where suitable habitat was searched with torches.
- Pro-rata survey effort was applied where appropriate for small waterbodies, where habitat less than 500 m in length was present.

Nocturnal frog surveys were undertaken at all suitable habitat areas, including seasonally wet areas and permanent water bodies within or adjacent to the subject land. Frog surveys were undertaken over four nights.

The Sydney Olympic Park site for Green and Golden Bell Frog was used as a reference site prior to surveys being undertaken within the subject land. Green and Golden Bell Frogs were confirmed to be calling by experienced representative, Kerry Darcovich (Senior Manager Environment & Ecology), from Sydney Olympic Park.

Survey effort for Green and Golden Bell Frog is shown on Figure 9.

Justification of survey method and effort

Survey guidelines followed included:

- *Survey Guidelines for Australia's Threatened Frogs* (DEWHA 2010b).
- *NSW Survey Guide for Threatened Frogs: A Guide for the Survey of Threatened Frogs and their Habitats for the Biodiversity Assessment Method* (DPIE 2020c).
- *Significant Impact Guidelines for the Vulnerable Green and Golden Bell Frog* (*Litoria aurea*) (DEWHA 2009).
- *Environmental Impact Assessment Guideline: Green and Golden Bell Frog* (NPWS 2003).

Timing of survey

Survey was conducted on 3–4 December 2024 and 17–18 December 2024, within the allowable survey period for this species as detailed in the TBDC.

Survey personnel and relevant experience

Frog surveys were undertaken by the Biosis ecologists outlined in Table 23.

Table 23 Targeted frog survey personnel and relevant experience

Staff member	Role	Relevant experience
Bret Stewart	Senior Associate Zoologist	Up to 17 years' experience undertaking fauna survey in NSW.
Jemma Giuliano	Zoologist	Up to two years' experience undertaking fauna surveys in NSW.
Rachel Moore	Zoologist	Up to three years' experience undertaking fauna survey in NSW.

Staff member	Role	Relevant experience
Trevor Coombes	Graduate Zoologist	Up to one years' experience undertaking fauna survey in NSW.

Results

Table 24 provides a summary of the results of the frog surveys completed.

Table 24 Summary of frog survey method and results

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
Litoria aurea	Green and Golden Bell Frog	• Habitat searches. • Call detection at 50 m intervals along transects in suitable habitat for a minimum of two hours, repeated over four nights. • Call playback. • Spotlighting.	Not recorded during surveys	N/A

Limitations

There were no limitations to this survey.

Gastropods

Targeted gastropod surveys were undertaken for Cumberland Plain Land Snail *Meridolum corneovirens* (Endangered, BC Act).

Survey method and effort

Targeted surveys for Cumberland Plain Land Snail were undertaken over three person hours on two occasions, including one diurnal litter search and one nocturnal spotlighting search. Active searches for live Cumberland Plain Land Snails were undertaken in suitable habitat such as beneath leaf litter at the base of trees and any other shelter sites that may be present within the subject land.

Survey effort for gastropods (snails) is shown on Figure 9

Justification of survey method and effort

Survey guidelines followed included:

- *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (DEC 2004).
- *Environmental impact assessment guidelines: Cumberland Plain Large Land Snail* (NPWS 2000).
- Survey notes in the TBDC (NSW DCCEEW 2025c).

Timing of survey

Diurnal survey was undertaken on 20 and 22 November 2024 within the allowable survey period for this species as detailed in the TBDC. Nocturnal survey was undertaken on 8 January 2025 within the allowable survey period for this species as detailed in the TBDC.

Survey personnel and relevant experience

Gastropod surveys were undertaken by the Biosis ecologists outlined in Table 25.

Table 25 Targeted gastropod survey personnel and relevant experience

Staff member	Role	Relevant experience
Joel Nicholson	Senior Zoologist – Field Coordinator	Up to four years' experience undertaking fauna survey in NSW.
Rachel Moore	Zoologist	Up to three years' experience undertaking fauna survey in NSW.
Ruby Adams	Graduate Ecologist	Up to one years' experience undertaking fauna survey in NSW.
Trevor Coombes	Graduate Zoologist	Up to one years' experience undertaking fauna survey in NSW.

Results

Table 26 provides a summary of the results of the gastropod surveys completed.

Table 26 Summary of gastropod survey method and results

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
Meridolum corneovirens	Cumberland Plain Land Snail	• Search potential habitat, including leaf litter, coarse woody debris, stones and detritus. • Modified SAT survey approach for standardisation, including 30 focal points for each survey point. • Area search across suitable habitat at a slow walking pace, spotlighting the ground and other low objects for active snails. • Diurnal and nocturnal searches.	Not recorded during surveys.	N/A

Limitations

There were no limitations to this survey.

Microbats

Targeted microbat surveys were undertaken for Southern Myotis *Myotis macropus* (Vulnerable, BC Act).

Survey method and effort

Echolocation call detection alone is not a suitable method for detecting the presence of Southern Myotis due to the similarity of their calls with other non-threatened species. As a result, three methods were employed to determine the presence of this species.

Active trapping of microbats was undertaken using harp traps deployed within the subject land near waterways to target Southern Myotis. Four harp traps were set for a total of four nights each and checked each evening and morning for trapped individuals. The primary objective of trapping was to determine the presence and breeding status of the bats within the subject land, if captured. If bats were captured, they were to be assessed for species, sex and breeding status before dawn, prior to being collected and re-released that evening. No bats were captured by the harp traps.

All buildings and structures (including houses, sheds and piles of sheet metal) were subject to roost searches where Biosis ecologists checked the inside of structures for the presence of roosting microbats during the day, as well as the outside of structures for the presence of guano or staining that might indicate use. A total of 36 buildings or structures were checked briefly (Table 29) during initial field investigations, of which 12 buildings or structures were checked for up to 30 minutes each during follow up formal roost searches (Table 29). The remainder of the buildings or structures had been demolished prior to follow-up survey (Table 29).

Active detection near waterbodies (up to six total) and outside buildings and/or structures (dusk fly-out searches, up to 11 total) was undertaken over four nights for up to two hours each night as a supplementary method.

Survey effort for microbats is shown on Figure 9.

Justification of survey method and effort

Survey guidelines followed include:

- *'Species Credit' Threatened Bats and their Habitats: NSW Survey Guide for the Biodiversity Assessment Method* (DPIE 2021).
- *Survey Guidelines for Australia's Threatened Bats* (DEWHA 2010c).

Timing of survey

Harp trapping was undertaken from 18-22 November 2024, with roost searches and active detection being undertaken on 16 December 2025 and 13–15 January 2026. Survey was undertaken within the allowable survey period for this species as detailed in the TBDC.

Survey personnel and relevant experience

Microbat surveys were undertaken by the Biosis ecologists outlined in Table 27.

Table 27 Targeted microbat survey personnel and relevant experience

Staff member	Role	Relevant experience
Erin Parker	Zoologist	Up to three years' experience undertaking fauna surveys in NSW.
Hugh Smylie	Graduate Ecologist	Up to one years' experience undertaking fauna surveys in NSW.

Staff member	Role	Relevant experience
Jake Schwebel	Senior Botanist, NSW Northern Regional Coordinator	Up to five years' experience undertaking fauna surveys in NSW.
Rachel Moore	Zoologist	Up to three years' experience undertaking fauna survey in NSW.
Trevor Coombes	Graduate Zoologist	Up to one years' experience undertaking fauna survey in NSW.

Results

Table 28 provides a summary of the results of the microbat surveys completed.

Table 28 Summary of microbat survey method and results

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
Myotis macropus	Southern Myotis	• Harp trapping, including four harp traps set up across the subject land near waterbodies. • Roost searches. • Active detection across four nights.	Not recorded during surveys.	N/A

The following structures were assessed as part of the microbat roost searches and active detection (Table 29). No buildings or structures had any sign of use by microbats.

Table 29 Summary of microbat roost searches and active detection

Site ID	Address	Structure reference	Type	Condition	Photo
A	203-209 Chandos Road	-	-	No structures present at the time of assessment.	-
B	187-201 Chandos Road	MB.B01	Shed	Small pump shed. Sheet metal with no fully enclosed areas. No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	 **Photo 9 MB.B01 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
		MB.B02	Shed	Small shed. Derelict with lots of rubbish present. No crevices that could be used by bats. No sign of use by microbats. Active search not required as roost searches considered sufficient.	 **Photo 10 MB.B02 structure**
C	171-185 Chandos Road	-	-	No visible structures.	-

Site ID	Address	Structure reference	Type	Condition	Photo
D	155-169 Chandos Road	-	Rubbish	Garbage area, no clear use by microbats during initial field investigations. Garbage had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 11 Garbage area at 155-169 Chandos Road** **Photo 12 Garbage area at 155-169 Chandos Road**
E	137-153 Chandos Road	-	-	No visible structures.	-

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Site ID	Address	Structure reference	Type	Condition	Photo
F	157-165 Redmayne Road	-	-	No visible structures.	-
G	167-183 Redmayne Road	-	-	No visible structures.	-
H	185-193 Redmayne Road	MB.H01	Pergola	Pergola. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 13 MB.H01 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
		MB.H02	Shed	Large derelict shed. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 14 MB.H02 structure**
		MB.H03	Shed	Small shed. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 15 MB.H03 structure**
		MB.H04	Building	Building. No sign of use by microbats during initial field investigations.	No specific image available but can be seen in background of Photo 15 above.

Site ID	Address	Structure reference	Type	Condition	Photo
				Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	
		MB.H05	Building	Building. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 16 MB.H03 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
I	195-201 Redmayne Road	MB.I01	Shipping container	Shipping container. No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	 **Photo 17 MB.I01 structure**
		MB.I02	Shed	Large derelict shed. Lots of weeds growing around in it. No good flyaway entry. No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	 **Photo 18 MB.I02 structure**

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Site ID	Address	Structure reference	Type	Condition	Photo
		MB.I03	Building	New rendered home that was occupied at the time of the assessment. Solid structure with no entry points. No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	**Photo 19 MB.I03 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
		MB.I04	Building	Older brick home that was occupied at the time of the assessment. Some small vents/gaps. No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	 **Photo 20 MB.I04 structure** **Photo 21 MB.I04 vents**

Site ID	Address	Structure reference	Type	Condition	Photo
J	203-213 Redmayne Road	MB.J01	Shed	Small pump shed. No suitable internal cavities. Shed in poor condition, made of tin. No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	 **Photo 22 MB.J01 structure**
K	136-142 Redmayne Road	MB.K01	Shed	Poor condition open-sided shed. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 23 MB.K01 structure**

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Site ID	Address	Structure reference	Type	Condition	Photo
		MB.K02	Shed	Shed overgrown with weeds. Unlikely fauna habitat. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 24 MB.K02 structure**
		MB.K03	Cubby house	Cubby house. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 25 MB.K03 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
		MB.K04	Shed	Shed. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 26 MB.K04 structure**
		MB.K05	Shed	Shed. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 27 MB.K05 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
		MB.K06	Shed	Shed. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 28 MB.K06 structure**
		MB.K07	Shed	Shed. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 29 MB.K07 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
		MB.K08	Chicken coop	Chicken coop. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 30 MB.K08 structure**
		MB.K09	Shed	Metal open-shed structures. Exposed with no closed-in areas for roosting. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 31 MB.K09 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
L	144-150 Redmayne Road	MB.L01	Shed	Small shed. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 32 MB.L01 structure**
		MB.L02	Car port	Car port. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 33 MB.L02 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
		MB.L03	Building	Brick house with solid construction. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	No image available but portion of building can be seen to left of car port in Photo 33 above.
		MB.L04	Shed	Large shed with limited access for microbats. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 34 MB.L04 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
		MB.L05	Shed	Large tin shed containing miscellaneous items. Well-lit inside with minimal locations for roosting. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 35 MB.L05 structure**
		MB.L06	Scrap metal	Scrap metal. Not suitable for microbats. No sign of use by microbats during initial field investigations. Scrap metal had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 36 MB.L06 scrap metal**

Site ID	Address	Structure reference	Type	Condition	Photo
M	152-170 Redmayne Road	MB.M01	Shed	Open-sided shed with minimal roosting locations. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 37 MB.M01 structure**
		MB.M02	Building	Large building. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 38 MB.M02 structure**
		MB.M03	Shed	Shed. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able	No image available.

Site ID	Address	Structure reference	Type	Condition	Photo
				to be undertaken as a result in the December 2025 to January 2026 period.	
		MB.M04	Shed	Large shed in good condition and actively used. No sign of use by microbats during initial field investigations. Structure had been removed following initial field investigations and prior to detailed microbat survey. No follow up roost search or active detection was able to be undertaken as a result in the December 2025 to January 2026 period.	 **Photo 39 MB.M04 structure**
Q	1671 The Horsley Drive	-	-	No structures present at the time of assessment.	-

Site ID	Address	Structure reference	Type	Condition	Photo
R	1667 The Horsley Drive	MB.R01	Culvert	Culverts (several). No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	 **Photo 40 MB.R01 structure**
		MB.R02	Shed	Open-sided shed with minimal roosting potential. No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	 **Photo 41 MB.R02 structure**

Site ID	Address	Structure reference	Type	Condition	Photo
		MB.R03	Shed	Several derelict tin sheds in a cluster containing piles of equipment. Lacks internal roosting areas suitable for microbats. No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	

Photo 42 MB.R03 structure

Site ID	Address	Structure reference	Type	Condition	Photo
					Photo 43 MB.R03 structure **Photo 44 MB.R03 structure**
S	1657 The Horsley Drive	MB.S01	Building and associated sheds	Building and associated sheds. No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	No image available.

Site ID	Address	Structure reference	Type	Condition	Photo
T	1647 The Horsley Drive	MB.T01	Building	Golf driving range and entrance building. Actively used. No sign of use by microbats. Active search undertaken at dusk to confirm not in use.	 **Photo 45 MB.T01 structure**

Limitations

There were no limitations to this survey.

4.2.2 Incidental flora and fauna surveys

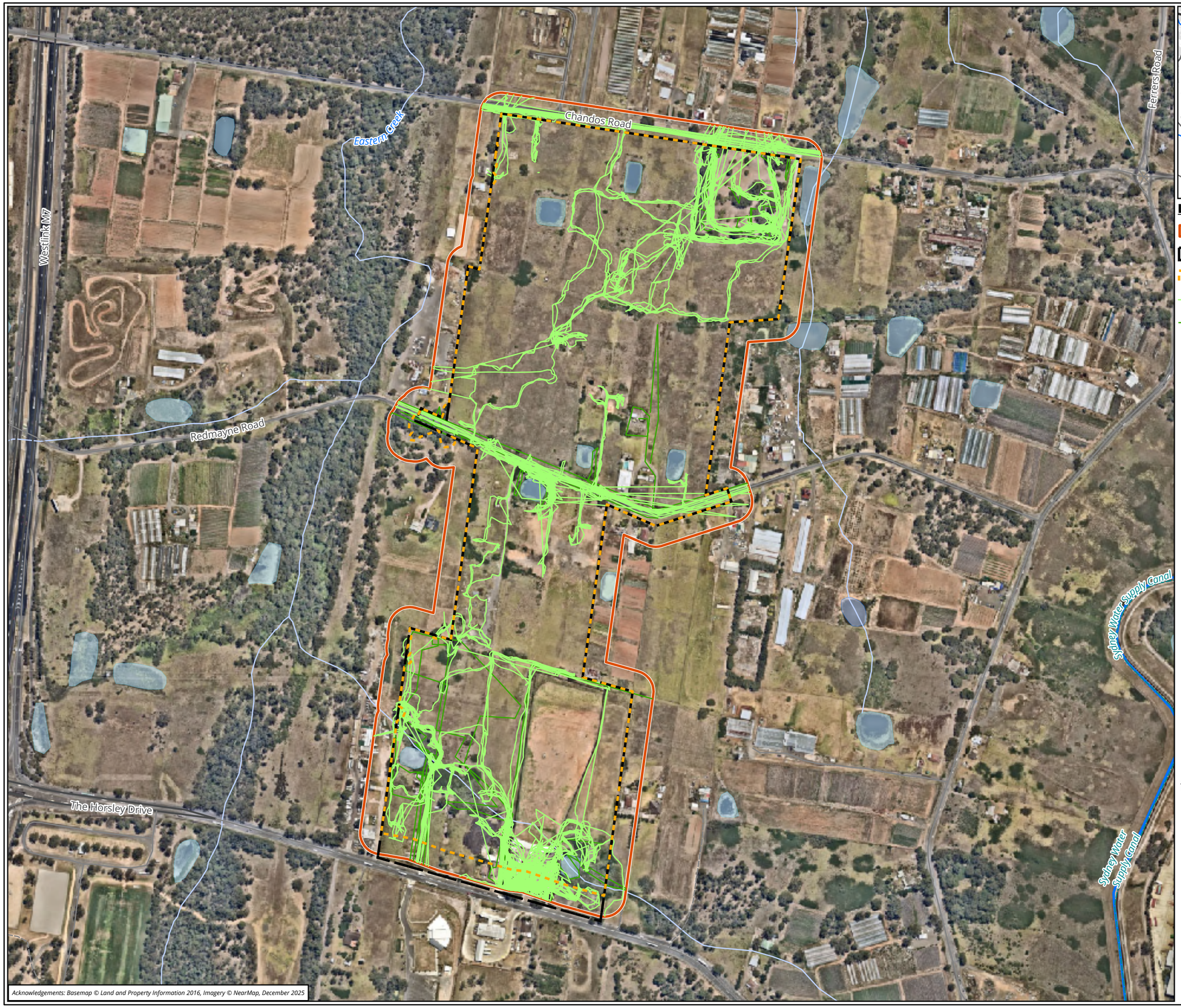
One threatened ecosystem credit species, Greater Broad-nosed Bat, was recorded during surveys. As impacts to this species are offset through ecosystem credits, no further assessment or species polygons are required.

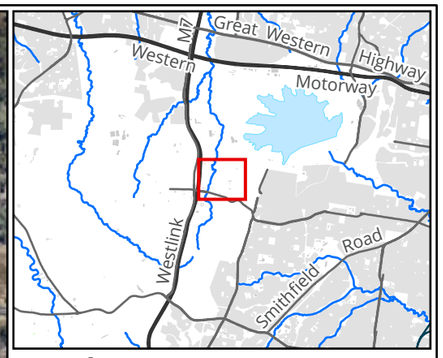
Long-eared Bat *Nyctophilus* spp. was detected via acoustic echolocation call detection survey during active searches of waterbodies. It is noted that analysis results for calls of Long-eared Bat were not recorded with any degree of certainty and have been listed as species complex identifications. There are no threatened Long-eared Bat species of relevance to the locality and as such this detection is not addressed further. Non-threatened Long-eared Bats recorded in the locality include Lesser Long-eared Bat *Nyctophilus geoffroyi* and Gould's Long-eared Bat *Nyctophilus gouldi*. Eastern Free-tailed Bat *Ozimops rideii* was also recorded via acoustic echolocation call detection survey during active searches, which is not a threatened species and is therefore not addressed further.

Additional threatened fauna recorded during the targeted surveys are provided in Table 30 and shown on Figure 9.

Table 30 Summary of incidental fauna surveys

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
Scoteanax rueppellii	Greater Broad-nosed Bat	• Call detection during active searches in December 2025 to January 2026.	Species recorded	Ecosystem species





Legend

- Subject land
- Development site
- Development footprint
- Survey tracks (Biosis)
- Survey tracks (écologique)

Figure 9.1 Target flora / fauna species survey effort - Flora

0 50 100 150 200

Metres

Scale: 1:5,000 @ A3

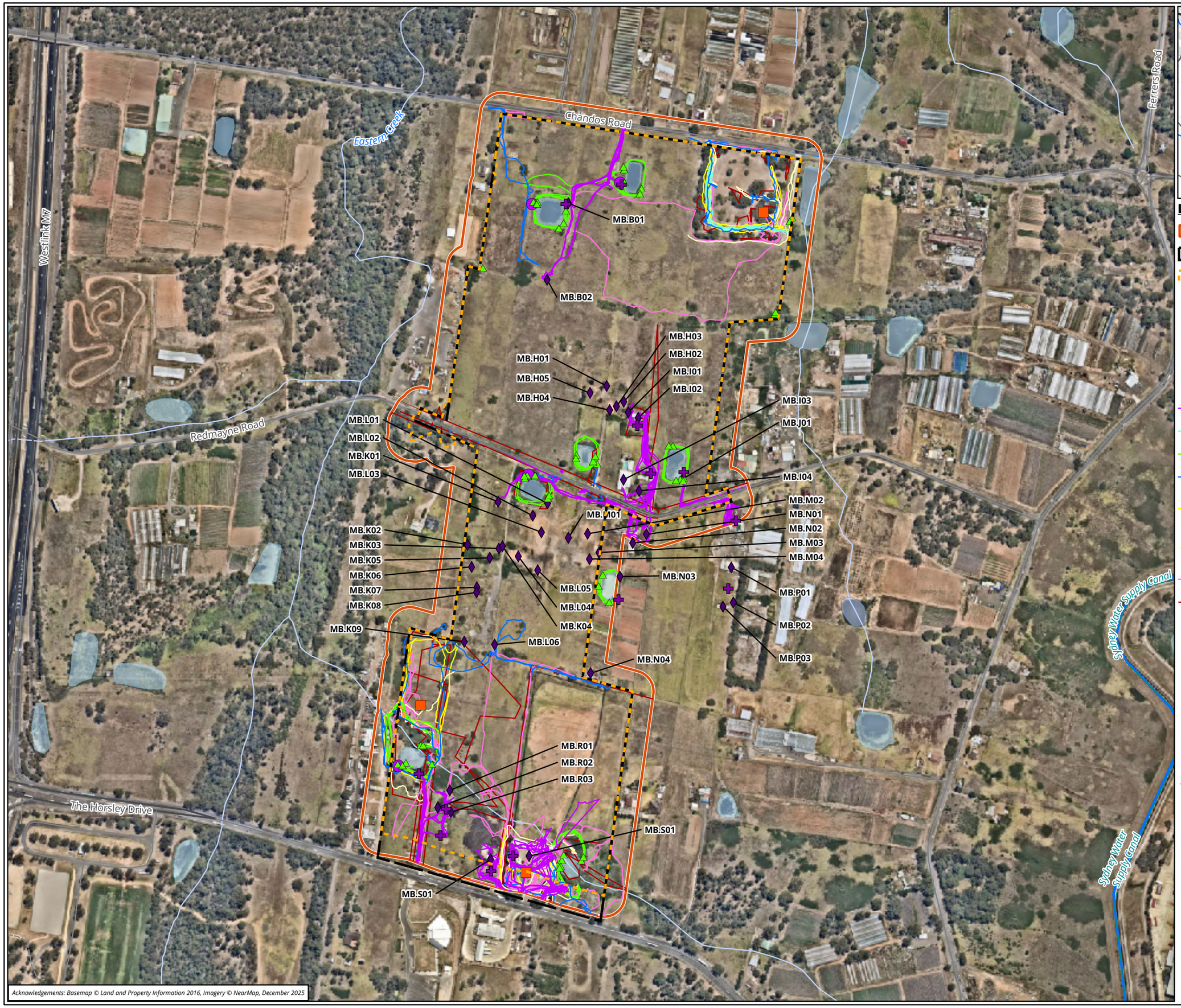
Coordinate System: GDA2020 MGA Zone 56

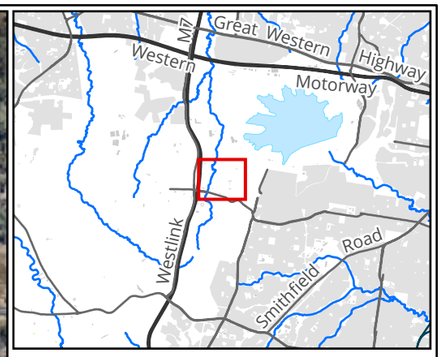
N

biosis

APEM Group

Matter: 40675, Date: 20 April 2026,
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F9_TargetedFF





Legend

- Subject land
- Development site
- Development footprint
- Microbat active detection (Biosis)
- Koala SAT and Snail diurnal surveys (Biosis)
- Frog call playback (Biosis)
- Harp trap (Biosis)
- Microbat roost search (Biosis)
- Koala spotlighting (Biosis)
- Frog spotlighting (Biosis)
- Snail nocturnal surveys (Biosis)
- Gang-gang Cockatoo survey (Biosis)
- Glossy Black-Cockatoo survey (Biosis)
- Flora survey tracks (Biosis)
- Survey tracks (écologique)

Figure 9.2 Target flora / fauna species survey effort - Fauna

0 50 100 150 200

Metres

Scale: 1:5,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis

APEM Group

Matter: 40675, Date: 20 April 2026,
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F9_TargetedFF

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Stage 2 — Impact assessment (Biodiversity Values)

5 Avoid and minimise impacts

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

5.1 Actions to avoid/minimise project impacts

The project occurs within a highly disturbed footprint, which has been subject to substantial degradation. The development site is significantly degraded and largely consists of NOG. This infrastructure is being located within an area that has low condition vegetation and habitats for threatened entities. The primary reason for the development is to establish an industrial estate within the development site which is consistent with the recent rezoning secured under the Keyhole Lands Planning Proposal (which has in-principle support from Council). Given the strategic location of the subject land and its inclusion as a priority urban investigation the development cannot be located elsewhere.

The principal means to reduce impacts on biodiversity values within the development site is to avoid and/or minimise the removal of native vegetation and fauna habitat. By removing the existing infrastructure, the project allows for new land uses within this historically cleared and degraded site. This reuse effectively results in the avoidance of impacts to new, previously unimpacted sites, by utilising this already impacted land for new purposes.

Impacts associated with the clearing of native vegetation and/or threatened species habitat can be said to be largely avoided and minimised by:

- Locating the proposed modification within an area that lacks significant biodiversity values.
- Where native vegetation and threatened species habitat is impacted, it is within areas that have low vegetation integrity scores (less than 40), and primarily disturbs areas of NOG and exotic vegetation.
- Avoids any areas that are mapped on the important habitat map.
- Does not include any identified breeding habitat for candidate threatened species (such as nest trees or caves).

The main impacts to native vegetation associated with the project are associated with scattered patches of native vegetation, associated with a TEC, throughout the development footprint. These fragmented patches of vegetation are highly degraded and are present within a matrix of NOG and exotic vegetation. The native vegetation within development site is mostly considered to be degraded following a long history of clearing and weed infestation within the area. The project would necessitate the removal of vegetation and therefore, impacts to the low condition native vegetation is unavoidable. The final proposal footprint (including construction and operation) as well as demonstrating indirect impact zones where applicable is shown in Figure 10.

Native species relevant to the TECs present within the subject land are to be utilised in landscaping (Habit8 2026). TECs to be impacted within the subject land include:

- *Cumberland Plain Woodland in the Sydney Basin Bioregion* (CEEC, BC Act).
- *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (EEC, BC Act).

- *River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (EEC, BC Act).

Native flora species relevant to the above TECs and their associated PCTs that are suitable for landscaping and revegetation purposes are provided in Table 31 below.

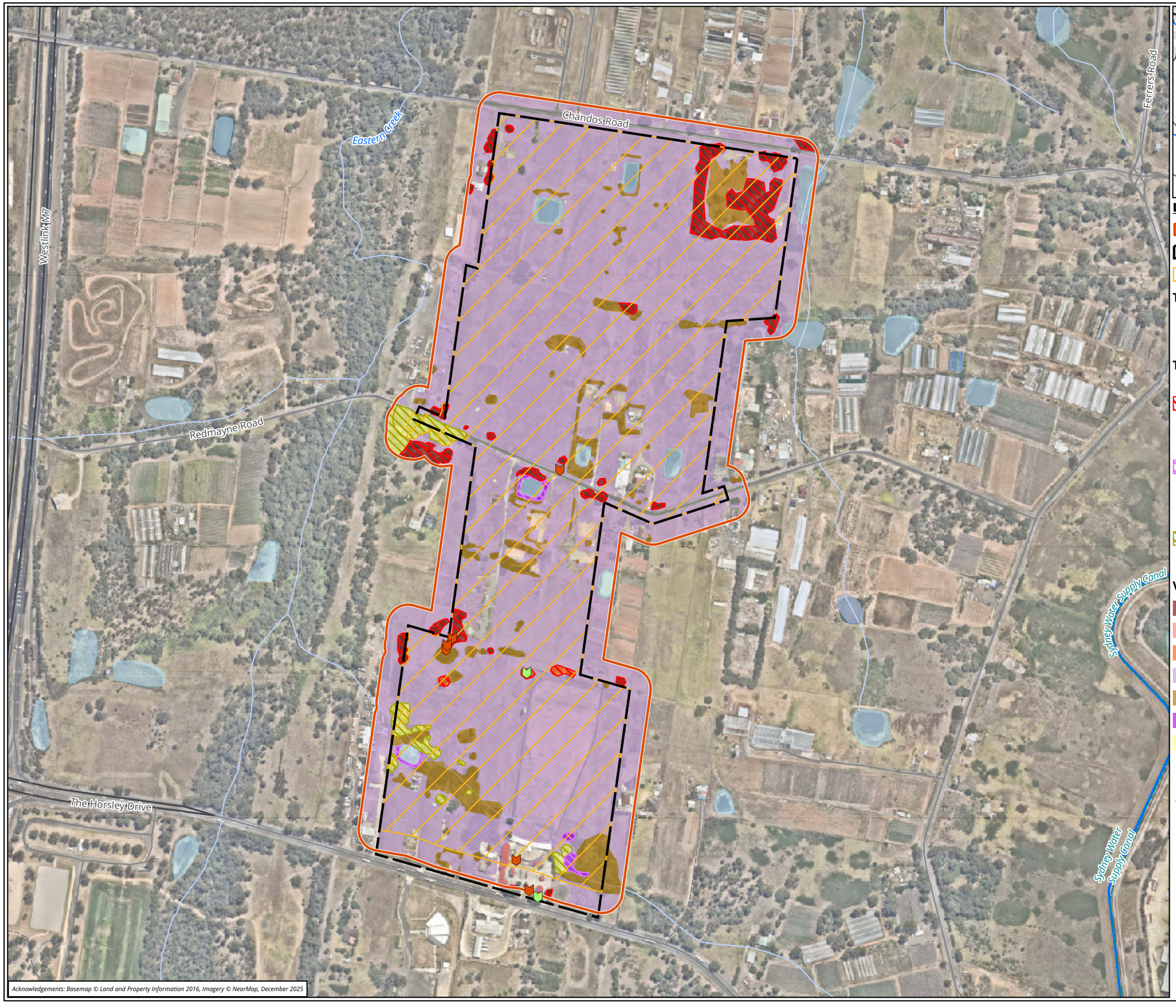
Table 31 Suitable flora species for planting associated with TECs present in the subject land per growth form, where X indicates proposed utilisation of the species in landscape planting (Habit8 2026)

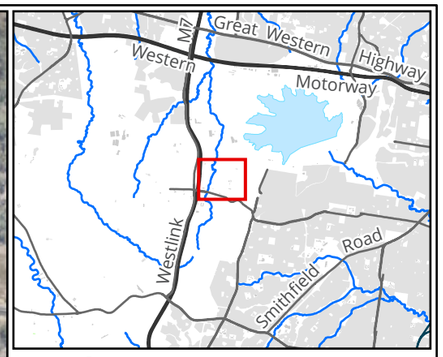
Scientific name	Common name	Cumberland Plain Woodland	Freshwater Wetlands on Coastal Floodplains	River-flat Eucalypt Forest
Trees				
Acacia parramattensis	Sydney Green Wattle	X	-	X
Angophora floribunda	Rough-barked Apple	X	-	X
Angophora subvelutina	Broad-leaved Apple	X	-	X
Casuarina glauca	Swamp Oak	X	X	X
Eucalyptus amplifolia	Cabbage Gum	X	-	-
Eucalyptus crebra	Narrow-leaved ironbark	X	X	-
Eucalyptus moluccana	Grey Box	X	X	-
Eucalyptus tereticornis	Forest Red Gum	X	X	X
Melaleuca styphelioides	Prickly-leaved Tea Tree	X	X	X
Small trees and shrubs				
Acacia floribunda	White Sally Wattle	X	-	X
Bursaria spinosa	Blackthorn	X	-	X
Dodonaea viscosa	Hop Bush	X	-	X
Glochidion ferdinandi	Cheese Tree	X	-	X
Indigofera australis	Native Indigo	X	-	X
Kunzea ambigua	Tick Bush	X	-	X
Melaleuca decora	-	X	X	X
Melaleuca ericifolia	Swamp Paperbark	-	X	-
Melaleuca linariifolia	Flax-leaved Paperbark	X	X	X
Melaleuca nodosa	Prickly-leaved Paperbark	X	-	X
Melaleuca thymifolia	Thyme Honey-myrtle	X	-	-
Melia azedarach	White Cedar	X	-	X

Scientific name	Common name	Cumberland Plain Woodland	Freshwater Wetlands on Coastal Floodplains	River-flat Eucalypt Forest
Grasses, sedges, rushes and groundcovers				
Carex appressa	Tall Sedge	X	X	X
Dianella caerulea	Blue Flax-lily	X	-	X
Dianella revoluta	Blueberry Lily	X	-	-
Dichondra repens	Kidney Wweed	X	-	X
Eragrostis elongata	Clustered Lovegrass	X	-	
Juncus usitatus	Common Rush	X	X	X
Lomandra longifolia	Spiny-headed mat-rush	X	-	X
Machaerina articulata	Jointed Twig-rush		X	
Poa labillardieri	Tussock Grass	X	-	X
Rytidosperma racemosum	Wallaby Ggrass	X	-	X
Scaevola albida	Pale fan-flower	X	-	X
Themeda australis	Kangaroo Grass	X	-	X
Viola hederacea	Native Violet	X	-	X
Climbers				
Kennedia rubicunda	Dusky Coral Pea	X	-	X
Pandorea pandorana	Wonga Vine	X	-	X

Impacts to the southern boundary of the development site are currently avoided, as represented by the mapped “areas of avoidance” on Figure 11. However, it is understood that this area will be subsequently removed to allow for road access and widening for the proposed development. This is to be assessed under a separate Part 5 assessment at a later date.

Recommendations are provided in Section 7 of this BDAR which include measures to mitigate residual impacts after all measures to avoid and minimise impacts have been considered.





Legend

- Subject land
- Development site
- Development footprint

Tree/Stag

- Hollow-bearing Tree
- Stag

Threatened ecological communities

- Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)
- Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions (EEC, BC Act)
- River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)

Vegetation zones

- 3320_Low
- 3320_Planted
- 3320_Scattered Trees
- 3320_NOG
- 3320_Exotic
- 3975_Low
- 4025_Low

Figure 10 Final development footprint

0 50 100 150 200

Metres
Scale: 1:5,000 @ A3
Coordinate System:
GDA2020 MGA Zone 56

N

biosis
APEM Group

Matter: 40675, Date: 20 April 2026,
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
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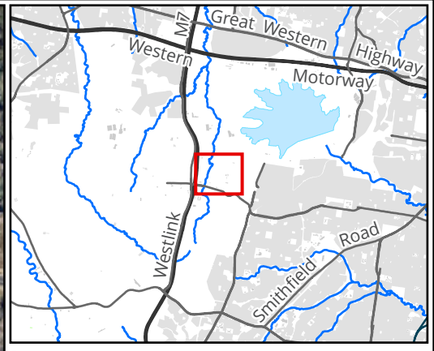

Legend

- Subject land
- Development site
- Development footprint
- Areas of avoidance

Figure 11 Alternate options and avoidance

0 50 100 150 200

Metres
Scale: 1:5,000 @ A3
Coordinate System:
GDA2020 MGA Zone 56

N

biosis
APEM Group

Matter: 40675, Date: 20 April 2026,
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F11_AltOptionsAvoidance

6 Impacts that are unable to be avoided

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

6.1 Direct impacts

Direct impacts include vegetation clearing calculated from the area of proposed lot boundaries, roads and easements for service infrastructure.

The AIA (CPS 2025) has been reviewed following RtS and the development footprint has been revised to include areas of TPZ located outside of the development site, for which a portion of TPZ overlaps with the development site along Redmayne Road, on the understanding that while the tree will not be directly impacted, indirect impacts may result in degradation and subsequent decline in condition of these trees. These additional impacts have been considered herein as part of the development footprint and will be offset accordingly.

Direct impacts arising from the project include:

- Removal of 1.15 ha of TEC *Cumberland Plain Woodlands in the Sydney Basin Bioregion* (CEEC, BC Act).
- Removal of 0.08 ha of TEC *Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions* (EEC, BC Act)
- Removal of 0.47 ha of TEC *River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions* (EEC, BC Act)
- Removal of 33.28 ha of native vegetation comprising:
  - Up to 1.07 ha of low condition PCT 3320 (VI Score 25.7).
  - Up to 0.08 ha of scattered trees condition PCT 3320 (VI Score 2.9).
  - Up to 0.04 ha of planted condition PCT 3320 (VI Score 12.9).
  - Up to 2.72 ha of exotic condition PCT 3320 (VI Score 1.3).
  - Up to 28.78 ha of NOG condition PCT 3320 (VI Score 1.0).
  - Up to 0.13 ha of low condition PCT 3975 (VI Score 12.1).
  - Up to 0.47 ha of low condition PCT 4025 (VI Score 15.5).
- Removal of two hollow-bearing trees and five stag trees providing habitat for non-threatened hollow-reliant native fauna.
- Removal of 1.65 ha of foraging habitat for Grey-headed Flying-fox.

These impacts will be permanent and will occur from the outset of the development. Mitigation measures outlined in Section 7 below will help to minimise the potential impacts to biodiversity values that remain present within the subject land.

A summary of PCTs/zones directly impacted is demonstrated in Table 32.

Table 32 Summary of direct impacts to vegetation

Zone	PCT	TEC	Area within subject land (ha)	Area impacted development footprint (ha)	VI Score
3320_Low	Cumberland Shale Plains Woodland	Cumberland Plain Woodlands in the Sydney Basin Bioregion	1.51	1.07	25.7
3320_Scattered Trees	Cumberland Shale Plains Woodland	Cumberland Plain Woodlands in the Sydney Basin Bioregion	0.08	0.08	2.9
3320_Planted	Cumberland Shale Plains Woodland	Cumberland Plain Woodlands in the Sydney Basin Bioregion	0.07	0.04	12.9
3320_Exotic	Exotic vegetation does not conform to a PCT but has been entered into the BAM-C as PCT 3320_Exotic for the purpose of VIS generation.	-	2.99	2.72	1.3
3320_NOG	NOG (Exotic grassland) vegetation does not conform to a PCT but has been entered into the BAM-C as PCT 3320_NOG for the purpose of VIS generation.	-	36.64	28.78	1.0
3975_Low	Southern Lower Floodplain Freshwater Wetland	Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	0.13	0.13	23.1
4025_Low	Cumberland Red Gum Riverflat Forest	River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South	0.73	0.47	15.5

Zone	PCT	TEC	Area within subject land (ha)	Area impacted development footprint (ha)	VI Score
		East Corner Bioregions			
Planted native	Planted native vegetation does not conform to a PCT	-	0.11	0.08	-

6.1.1 Loss of hollow bearing trees

Two hollow-bearing trees containing two medium (50-149 millimetre) hollows will be removed from the development footprint. An additional five dead "stag" trees representing potential habitat for non-threatened microbats will also be removed. Compensatory habitat, such as installation of nest boxes, is not considered necessary as no threatened fauna species reliant on hollows were recorded within the subject land, no candidate species credit species reliant on hollows will be impacted by the development, and nest boxes cannot be installed within the subject land due to absence of retained native vegetation. Accordingly, suitable mitigation measures regarding preclearance surveys have been recommended, and all hollow-bearing trees, including stags, will be offset as part of vegetation removal.

6.2 Indirect impacts

Potential indirect impacts arising from the project are outlined and addressed in Table 33.

Table 33 Assessment of indirect impacts

Indirect impact (Describe impact, e.g., transport of weeds and pathogens form the site to adjacent vegetation)	**Impacted entities** (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	**Extent** (ha or zone reference)	**Frequency**	**Duration** (long-term/ short-term/ medium-term)	**Project phase/ timing of impact** (e.g. construction, operation, rehabilitation)	**Likelihood and consequences**
Inadvertent impacts on adjacent habitat or vegetation	PCT 3320, PCT 4025	Up to 8.92 ha of indirect impacts to native vegetation, including: • Up to 0.44 ha of low condition PCT 3320. • Up to 0.03 ha of planted condition PCT 3320. • Up to 0.27 ha of exotic condition PCT 3320. • Up to 7.91 ha of NOG condition PCT 3320. • Up to 0.26 ha of low condition PCT 4025.	Ongoing	Medium-term	Construction / Operation	Impacts to adjacent vegetation during construction and operational phase can be prevented or minimised through appropriate exclusion fencing, implementation of a Construction Environmental Management Plan (CEMP) detailing best practice environmental protection measures, strict water quality practices and stormwater controls, and by ensuring any lighting is directed towards the developed area, rather than towards the adjacent retained habitats.
Reduced viability of adjacent habitat due to edge effects	PCT 3320, PCT 4025	Up to 8.92 ha of indirect impacts to native vegetation, including: • Up to 0.44 ha of low condition PCT 3320.	Ongoing	Medium-term	Construction / Operation	Adjacent habitats are currently subject to a high degree of edge effects due to prior clearing and surrounding existing residential and agricultural land use. Since little (1.67 ha) native vegetation is to be removed from the subject land, an increase to edge effects is not expected to occur to the remnant vegetation surrounding the subject land, as a result of the

Indirect impact (Describe impact, e.g., transport of weeds and pathogens form the site to adjacent vegetation)	**Impacted entities** (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	**Extent** (ha or zone reference)	**Frequency**	**Duration** (long-term/ short-term/ medium-term)	**Project phase/ timing of impact** (e.g. construction, operation, rehabilitation)	**Likelihood and consequences**
		• Up to 0.03 ha of planted condition PCT 3320. • Up to 0.27 ha of exotic condition PCT 3320. • Up to 7.91 ha of NOG condition PCT 3320. • Up to 0.26 ha of low condition PCT 4025.				proposed development. This is primarily due to the already fragmented state of these small vegetation patches. The removal of vegetation from the development footprint will result in minimal new interfaces for the remaining vegetation patches from which edge effects may occur.
Reduced viability of adjacent habitat due to noise, dust or light spill	PCT 3320, PCT 4025	Up to 8.92 ha of indirect impacts to native vegetation, including: • Up to 0.44 ha of low condition PCT 3320. • Up to 0.03 ha of planted condition PCT 3320. • Up to 0.27 ha of exotic condition PCT 3320. • Up to 7.91 ha of NOG condition PCT 3320.	Ongoing	Medium-term	Construction / Operation	It is predicted that adjacent habitats will be impacted in a small way by noise, dust and light spill, during construction and operation of the future development of the subject land. However, this will be managed via best practices outlined in a CEMP. The subject land also already occurs as a residential area, with larger agricultural and industrial development also occurring within the assessment areas. As such, light and noise pollution is most likely moderate. This will likely not substantially increase due to the proposed future development.

Indirect impact (Describe impact, e.g., transport of weeds and pathogens form the site to adjacent vegetation)	**Impacted entities** (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	**Extent** (ha or zone reference)	**Frequency**	**Duration** (long-term/ short-term/ medium-term)	**Project phase/ timing of impact** (e.g. construction, operation, rehabilitation)	**Likelihood and consequences**
		• Up to 0.26 ha of low condition PCT 4025.				
Transport of weeds and pathogens from the site to adjacent vegetation	PCT 3320, PCT 4025	Up to 8.92 ha of indirect impacts to native vegetation, including: • Up to 0.44 ha of low condition PCT 3320. • Up to 0.03 ha of planted condition PCT 3320. • Up to 0.27 ha of exotic condition PCT 3320. • Up to 7.91 ha of NOG condition PCT 3320. • Up to 0.26 ha of low condition PCT 4025.	Ongoing	Medium-term	Construction / Operation	Weeds occurring within the subject land are common with those occurring within adjacent vegetation to be retained. Increased transport of pathogens and weeds is unlikely to occur but will be managed by biosecurity measures outlined in the CEMP.
Increased risk of starvation, exposure and loss of shade or shelter	PCT 3320, PCT 4025	Up to 8.92 ha of indirect impacts to native vegetation,	Ongoing	Medium-term	Construction / Operation	The habitat present in the subject land is considered marginal for most fauna species given the disturbed condition, however is potential foraging habitat for Grey-headed Flying-fox. The proposed future development will not result in an increased risk of starvation,

Indirect impact (Describe impact, e.g., transport of weeds and pathogens form the site to adjacent vegetation)	**Impacted entities** (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	**Extent** (ha or zone reference)	**Frequency**	**Duration** (long-term/ short-term/ medium-term)	**Project phase/ timing of impact** (e.g. construction, operation, rehabilitation)	**Likelihood and consequences**
		including: • Up to 0.44 ha of low condition PCT 3320. • Up to 0.03 ha of planted condition PCT 3320. • Up to 0.27 ha of exotic condition PCT 3320. • Up to 7.91 ha of NOG condition PCT 3320. • Up to 0.26 ha of low condition PCT 4025.				exposure and loss of shade or shelter to native species due to the small total area of vegetation being removed, and it's very small proportion of the commensurate habitats available in the immediate vicinity.
Loss of breeding habitats	N/A	N/A	N/A	N/A	N/A	Two hollow-bearing trees and 5 stag trees, representing potential breeding habitat for non-threatened fauna, will be impacted by the proposed future development. Retained vegetation in adjacent lots provides higher quality habitat and will not be reduced by the proposed works.
Trampling of threatened flora species	N/A	N/A	N/A	N/A	N/A	No threatened flora species were found, or are considered likely to occur, within the subject land, and thus trampling of threatened flora species is unlikely.

Indirect impact (Describe impact, e.g., transport of weeds and pathogens form the site to adjacent vegetation)	**Impacted entities** (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	**Extent** (ha or zone reference)	**Frequency**	**Duration** (long-term/ short-term/ medium-term)	**Project phase/ timing of impact** (e.g. construction, operation, rehabilitation)	**Likelihood and consequences**
Inhibition of nitrogen fixation and increased soil salinity	N/A	N/A	N/A	N/A	N/A	Any future excavations or soil disturbance resulting from the future development of the subject land would be largely restricted to areas having undergone significant previous disturbance through grazing and vehicular traffic. As such it is not considered likely that the future development of the subject land would result in substantial changes to the level of nitrogen fixation or soil salinity in the locality.
Fertiliser drift	N/A	N/A	N/A	N/A	N/A	The site has a long history of grazing over its total extent. Exotic species dominance indicates a pattern of pasture improvement utilising super-phosphate. The proposal will cease these activities and not contribute to fertiliser drift into surrounding areas with future practices. No fertiliser is proposed to be used.
Rubbish dumping	N/A	N/A	N/A	N/A	N/A	Standard environmental controls for the development would ensure potential impacts are minimised. Works would follow an approved Waste Management Plan.
Wood collection	N/A	N/A	N/A	N/A	N/A	Future development proposed within the subject land is unlikely to increase access to any retained vegetation, beyond current access capacity. Based on the future industrial use of the subject land, future landholders are not expected to be likely to undertake wood collection within the retained vegetation to a level that it will have a detrimental effect.

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Indirect impact (Describe impact, e.g., transport of weeds and pathogens form the site to adjacent vegetation)	**Impacted entities** (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	**Extent** (ha or zone reference)	**Frequency**	**Duration** (long-term/ short-term/ medium-term)	**Project phase/ timing of impact** (e.g. construction, operation, rehabilitation)	**Likelihood and consequences**
						Unauthorised access and collection of wood is expected to be minimal.
Removal and disturbance of rocks, including bush rock	N/A	N/A	N/A	N/A	N/A	The subject land does not support bush rock.
Increase in predators	N/A	N/A	N/A	N/A	N/A	The subject land already occurs within a semi-urbanised setting with pets, such as dogs *Canis familiaris* and cats *Felis cattus*, common. The subject land is already largely cleared. The remaining vegetation clearance proposed by the development, and proposed land use, is unlikely to increase predatory species populations.
Increase in pest animal populations	N/A	N/A	N/A	N/A	N/A	The proposal occurs in a semi-urbanised area with impacts including introduced domestic pets such as cats currently occurring within the locality. Pest animals such as Rats *Rattus rattus* and European Rabbit *Oryctolagus cuniculus* are also widely spread within the region and are likely to occur across the locality. The proposal will not result in an increase in available habitat for these species and is unlikely to lead to an increase in pest animal populations. Suitable waste disposal implemented during and post construction will further reduce the resources available for pest species.
Changed fire regimes	N/A	N/A	N/A	N/A	N/A	The proposal occurs in a semi-urbanised area. Appropriate asset protection zones and fire

Indirect impact (Describe impact, e.g., transport of weeds and pathogens form the site to adjacent vegetation)	**Impacted entities** (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	**Extent** (ha or zone reference)	**Frequency**	**Duration** (long-term/ short-term/ medium-term)	**Project phase/ timing of impact** (e.g. construction, operation, rehabilitation)	**Likelihood and consequences**
						mitigation systems will be implemented for the future development and the proposal will not result in an increased risk of fire.
Disturbance to specialist breeding and foraging habitat, e.g., Beach nesting for shorebirds	N/A	N/A	N/A	N/A	N/A	Mapped Important Areas for does not occur for any threatened species within the subject land, however there is Swift Parrot important habitat mapped within 10 km of the subject land. The proposal will impact 1.67 ha of native vegetation, none of which is important habitat.
Fragmentation of movement corridors	N/A	N/A	N/A	N/A	N/A	Movement corridors are currently restricted in width and availability through the locality. The project will result in the removal of 1.67 ha of native vegetation that is scattered throughout the subject land. The removal of vegetation is unlikely to fragment movement corridors to the west and north of the subject land, which will remain intact and not be fragmented.

6.3 Prescribed impacts

Identification and assessment of prescribed biodiversity impacts are outlined and addressed in Table 34. There are not considered to be any potential prescribed impacts associated with the proposed development.

Table 34 Identification of prescribed impacts

Prescribed impact	Description of relevant habitat features associated with prescribed impacts	Threatened species likely to utilise habitat features associated with prescribed impact	Importance of habitat feature to impacted species
Karst, caves, crevices, cliffs, rocks and other geological features of significance	No areas of geological significance occur within the subject land.	The development will not impact on threatened species or ecological communities associated with karst, caves, crevices or cliffs.	N/A
Occurrences of human-made structures and non-native vegetation	There are various residential dwellings and agricultural buildings occurring throughout the subject land. Non-native vegetation is the dominant vegetation within the subject land.	Threatened microbat species may utilise human-made structures, however no threatened microbats were recorded within the subject land. Pre-clearance surveys should be undertaken prior to the removal of human-made structures.	The structures create the potential for roosting habitat for threatened microbat species. Non-native vegetation can provide potential foraging habitat for threatened raptor species (such as kites and eagles) and bats.
Corridors or other areas of connectivity linking habitat for threatened entities	The subject land is located adjacent to the following vegetated areas: • Eastern Creek riparian corridor to the west. • Remnant native vegetation to the east (along The Horsley Drive). • Remnant native vegetation to the northeast (on the northern side of Chandos Road).	Green and Golden Bell Frog may utilise corridors along riparian areas as foraging and dispersal habitat. Cumberland Plain Land Snail, Gang-gang Cockatoo and Koala may also utilise vegetation, which is present within vegetation corridors. These species have not been detected within the subject land.	The vegetated areas create potential foraging habitat for ecosystem a candidate bird and bat species. The project will not result in the isolation or fragmentation in habitat connectivity for any threatened or non-threatened fauna species.
Water bodies or any hydrological processes that sustain threatened entities	There is one mapped first order watercourse that occurs within the subject land which under the current masterplan would be realigned. Several farm dams will be decommissioned.	Green and Golden Bell Frog and Southern Myotis may utilise corridors along riparian areas as foraging and dispersal habitat. These species have not been detected within the subject land.	The water bodies create potential foraging habitat for microbat species such as Southern Myotis.
Protected animals that may use the proposed wind farm development site as	There are no wind turbines involved in this project.	N/A	N/A

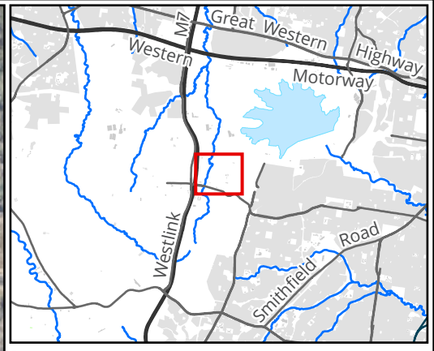
Prescribed impact	Description of relevant habitat features associated with prescribed impacts	Threatened species likely to utilise habitat features associated with prescribed impact	Importance of habitat feature to impacted species
a flyway or migration route			
Where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community	Current residential use of the development site means that vehicles in the area are common but will likely be increased by the development of the subject land. Traffic will be increased and comprise larger vehicles than presently occur at this locality.	Green and Golden Bell Frog and Koala may be subject to vehicle strike during movements within the site. These species have not been detected within the subject land.	Threatened entities that are likely to use the subject land are moderately (Green and Golden Bell Frog and Koala) to highly mobile species (bats and birds). Vehicle strikes are not considered to represent a high risk to any threatened entities above that which currently exists.

6.4 Impacts considered uncertain

There are no impacts considered uncertain.

6.5 Impacts to Groundwater Dependent Ecosystems (GDE)

Assessment of the potential for the subject land to support groundwater dependant ecosystems (GDEs) was undertaken using the Australian Government's Bureau of Meteorology Groundwater Dependant Ecosystems Atlas (BOM 2019). The subject land is not mapped as supporting GDEs associated with an aquifer in Appendix 8 of the Risk Assessment Guidelines for Groundwater Dependent Ecosystems (DPI 2012). The subject land is not mapped as having Groundwater Vulnerability (Fairfield LEP 2013).



Legend

- Subject land
- Development site
- Development footprint
- Indirect impacts to native vegetation

Figure 12 Estimated zones of indirect impacts

0 50 100 150 200

Metres

Scale: 1:5,000 @ A3

Coordinate System:
GDA2020 MGA Zone 56

N

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Matter: 40675, Date: 20 April 2026,
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F12_IndirectImpacts

7 Mitigation and management of impacts

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

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

Identification of measures for mitigating impacts related to:

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

Table 35 Measures to mitigate and manage impacts

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
Protection of biodiversity during construction	A CEMP is to be implemented that would include the following sub-plans or protocols: • Vegetation management plan (VMP) that includes retention of native vegetation within landscaping. • Vegetation clearance protocol. • Hollow-bearing tree removal specification. • Fauna injury protocol. • Dam Decommissioning Plan. • Weed Management Plan.	Mitigate risk of impact to environmental controls during project construction.	Ongoing/throughout earthworks.	Construction contractor.

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
Displacement of resident fauna	Any hollow-bearing trees marked for removal must be removed according to a two-stage vegetation clearance protocol to ensure no injury or loss of fauna, where hollow-bearing trees to be inspected immediately prior to removal, by a qualified ecologist.	No direct impact to resident fauna during vegetation removal.	Immediately prior to vegetation removal.	Qualified ecologist and construction contractor.
	Any human-made structures to be removed must be inspected prior to removal, by a qualified ecologist, to confirm absence of resident fauna (e.g., roosting microbats). If bats are detected, demolition of structures must be postponed until bats are relocated (preferably through use of passive roost exclusions),	No direct impact to resident fauna during removal of human-made structures.	Prior to removal of human-made structures.	Qualified ecologist and construction contractor.
	All dams must be inspected immediately prior to and during decommissioning, by a qualified ecologist, to confirm absence of resident fauna.	Mitigate impacts to resident fauna.	Immediately prior to and during dam decommissioning.	Qualified ecologist and construction contractor.
Indirect impacts on native vegetation and habitat	Install appropriate stormwater and erosion controls on site.	No further degradation to retained vegetation and habitats.	Ongoing/Throughout construction.	Construction contractor.
	Installation of appropriate exclusion fencing must be undertaken around trees and vegetation to be retained to clearly delineate the clearing limits in the study area: • The radius of the TPZ is calculated for each tree by multiplying its diameter at breast height by 12, in accordance with the	No further degradation to retained vegetation and habitats.	Before and throughout construction.	Construction contractor.

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	Standards Australia Committee (2009). • A TPZ should not be less than 2 m, or greater than 15 m, except where crown protection is required (Council of Australian Standards 2009) • This would include appropriate signage such as 'No Go Zone' or 'Environmental Protection Area'. • Identify the location of any 'No Go Zones' in site inductions and a CEMP.			
	Reduction of impacts resulting from external lighting is to be applied, adapted from Part 4 (good lighting design principles) of the *Dark Sky Planning Guideline* (DPE 2016), including: • Install light fitting shields with an opaque cover, mounted horizontally across the top of the lighting module. These shielding attachments allow only the downward projection of light. • Direct lights downwards and avoid shining directly onto the public amenities, which have the potential to reflect light skywards. • Utilise low beam angles that are close to vertical where possible to minimise light glare. • A fauna sensitive lighting plan is to be prepared in accordance with the	No indirect impact to fauna in retained vegetation and habitats.	Ongoing.	Construction contractor.

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	National Light Pollution Guidelines for wildlife (awe.gov.au) and will consider light and noise spill into the Riparian Area of Eastern Creek.			
	All material stockpiles, vehicle parking and machinery storage must be located within cleared areas proposed for clearing, and not in areas of native vegetation that are to be retained.	No further degradation to retained vegetation and habitats.	Ongoing/Throughout construction.	Construction contractor.
	Removal or substantial pruning of trees must be supported by an Arboriculture Report prepared by an arborist with a minimum AQF level 5.	No further degradation to retained vegetation and habitats.	Ongoing/Throughout construction.	Arborist and construction contractor.
	Where appropriate, native vegetation cleared from the study area must be mulched for re-use on the site, to stabilise bare ground.	No further degradation to retained vegetation and habitats.	Ongoing/Throughout construction.	Construction contractor.
	Works areas must be wet down to reduce dust generation during construction.	No further degradation to retained vegetation and habitats.	Ongoing/Throughout construction.	Construction contractor.
	Implement hygiene measures to prevent the spread of weeds and pathogens into the site, or from the site into the surrounding locality.	No further spread of weeds or pathogens as a result of construction works.	Ongoing/Throughout construction.	Construction contractor.
Mitigating prescribed biodiversity impacts	Works are to be restricted to daylight hours.	Reduce impacts to nocturnal species.	Ongoing/throughout construction.	Construction contractor.
	Implementation and signage of reduced speed limits on access roads associated with the project.	Mitigate risk to common disturbance-tolerant mobile fauna species.	Ongoing/throughout construction.	Construction contractor.

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	Implementation of temporary stormwater controls during construction to ensure that discharges to the drainage channels are consistent with existing conditions.	Mitigate risk of impact to waterways during project construction.	Prior to construction works commencing	Construction contractor.
	Sediment and erosion control measures must be implemented (e.g., silt fences, sediment traps). These should conform to relevant guidelines, should be maintained throughout the construction period and should be carefully removed following the completion of works.	Mitigate risk of impact to waterways during project construction.	Prior to construction works commencing	Construction contractor.
Adaptive management strategies proposed to monitor and respond to impacts on biodiversity values that are uncertain	Implementation of an appropriate CEMP during works.	Mitigate risk of impact to environmental controls during project construction.	Ongoing/throughout earthworks.	Construction contractor.

7.1 Adaptive management strategy

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

8 Impact summary

8.1 TECs and threatened species

This section outlines the impact summary for the project which has identified and assessed impacts on TECs and threatened species that are at risk of a Serious and Irreversible Impact (SAII) including:

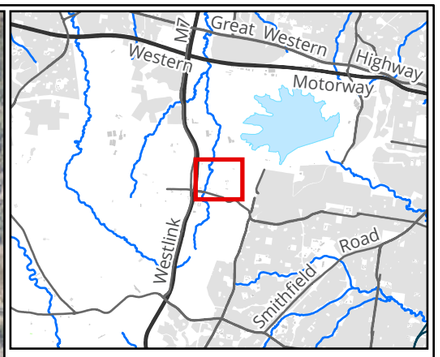
- Addressing all criteria for each TEC listed as at risk of an SAII present on the subject land.
- Addressing all criteria for each threatened species at risk of an SAII present on the subject land.
- Documenting assumptions made and/or limitations to information.
- Documenting all sources of data, information, references used or consulted.
- Clearly justifying why any criteria could not be addressed.
- Identification of impacts requiring offset.
- Identification of impacts not requiring offset.
- Identification of areas not requiring offset.

8.2 Serious and irreversible impacts

In accordance with Clause 6.7 of the BC Regulation an impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because:

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

PCT 3320 is considered to meet the above principles and may be impacted by the development. A detailed SAII assessment is provided in Appendix 5. Figure 13 shows the extent of TECs at risk of an SAII within the subject land.



Legend

- Subject land
- Development site
- Development footprint

SAII entities

- Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)

Figure 13 Serious and irreversible impacts (SAII)

0 50 100 150 200

Metres

Scale: 1:5,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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Matter: 40675, Date: 20 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F13_SAII

8.3 Identification of impacts requiring offset

8.3.1 Impacts to native vegetation (ecosystem credits)

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

(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.
(c) ≥20, where the PCT does not represent a TEC and is not associated with threatened species habitat.

On this basis, offsets are required for vegetation zones 3320_Low, 3975_Low and 4025_Low as they have a vegetation integrity score greater than 15.The offset requirement for the proposal was calculated using the BAM Calculator. Table 36 provides a summary of the ecosystem credit offsets required for impacts from proposed development at the subject land. Figure 14 shows the location of impacts requiring offset, impacts not requiring offset and areas not requiring assessment.

Table 36 Offsets required (ecosystem credits)

Vegetation zone	Area (ha)	Impact	VI score	Offset required	TEC	HBTs	Credit requirement
3320_Low	1.07	Clearance	25.7	Yes	Yes	Yes	17
3975_Low	0.13	Clearance	23.1	Yes	Yes	Yes	2
4025_Low	0.47	Clearance	15.5	Yes	Yes	No	4
TOTAL							**23**

8.3.2 Impacts to threatened species and their habitat

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

The offset requirement for the proposal was calculated using the BAM Calculator. No species credit offsets are required for impacts from the proposed development at the subject land.

8.4 Identification of impacts not requiring offset

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

- Up to 31.54 ha of direct impacts to native vegetation, including:
  - Up to 0.08 ha of scattered trees condition PCT 3320.
  - Up to 0.04 ha of planted condition PCT 3320.
  - Up to 2.72 ha of exotic condition PCT 3320.
  - Up to 28.77 ha of NOG condition PCT 3320.
- Up to 8.92 ha of indirect impacts to native vegetation, including:
  - Up to 0.44 ha of low condition PCT 3320.
  - Up to 0.03 ha of planted condition PCT 3320.

  - Up to 0.27 ha of exotic condition PCT 3320.
  - Up to 7.91 ha of NOG condition PCT 3320.
  - Up to 0.26 ha of low condition PCT 4025.
- Up to 0.11 ha of direct and indirect impacts to Planted natives.
- Up to 1.65 ha of direct impacts and 0.74 ha of indirect impacts to foraging habitat for Grey-headed Flying-fox.

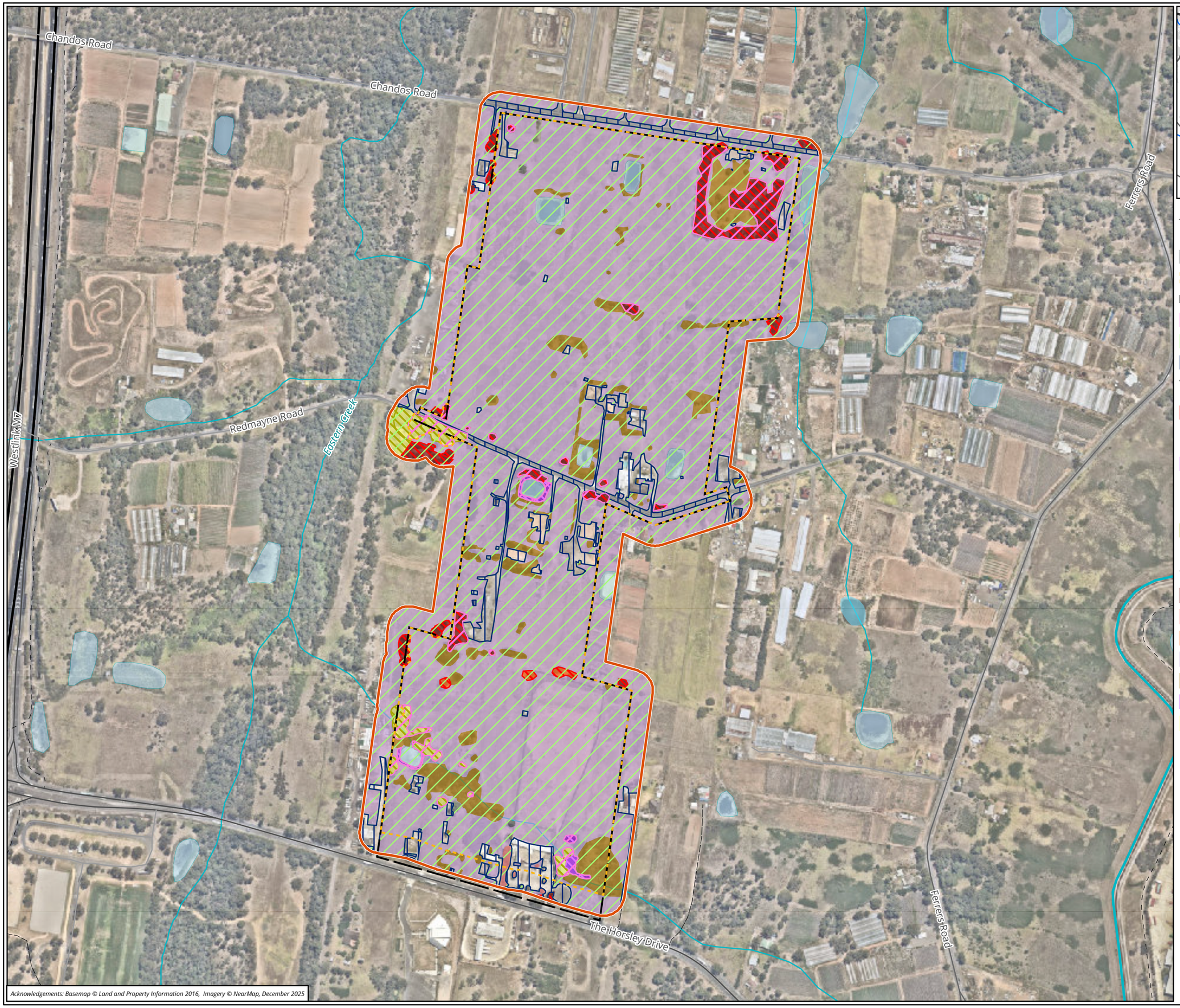
Figure 14 shows the location of impacts requiring offset, impacts not requiring offset and areas not requiring assessment.

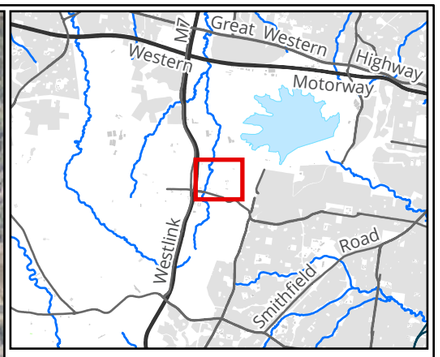
8.5 Identification of areas not requiring assessment

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

- Up to 3.09 ha of land containing cleared areas within the subject land.

Figure 14 shows the location of impacts requiring offset, impacts not requiring offset and areas not requiring assessment.





Legend

Subject land

Development site

Development footprint

Impact

Impact requiring offset

Impact not requiring offset

Area not requiring assessment

Threatened ecological communities

Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)

Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions (EEC, BC Act)

River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)

Vegetation zones

3320_Low

3320_Planted

3320_Scattered Trees

3320_NOG

3320_Exotic

3975_Low

4025_Low

Figure 14.1 Impacts requiring offsets, not requiring offset, not requiring assessment

0 50 100 150 200

Metres

Scale: 1:5,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

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Matter: 40675, Date: 20 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
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Layout: 40675_F14_Offsets

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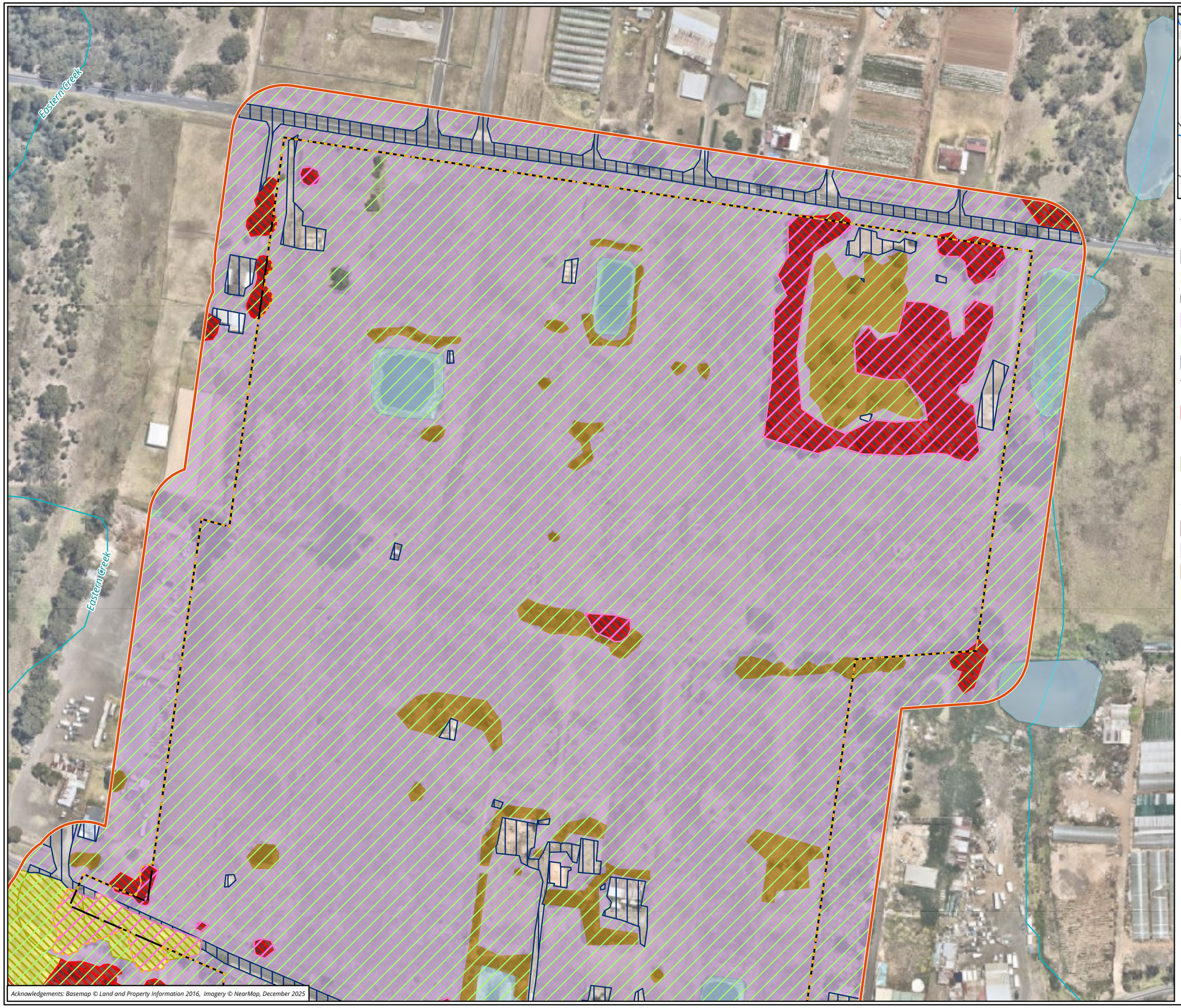
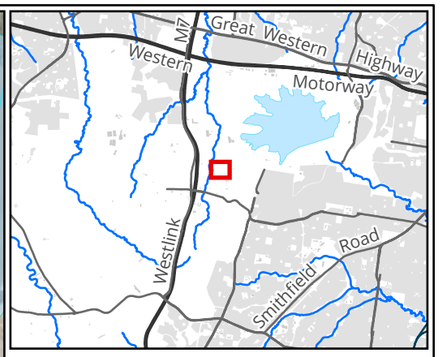




Legend

Subject land

Development site

Development footprint

Impact

Impact requiring offset

Impact not requiring offset

Area not requiring assessment

Threatened ecological communities

Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)

River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)

Vegetation zones

3320_Low

3320_NOG

3320_Exotic

4025_Low

Figure 14.2 Impacts requiring offsets, not requiring offset, not requiring assessment

0 50

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

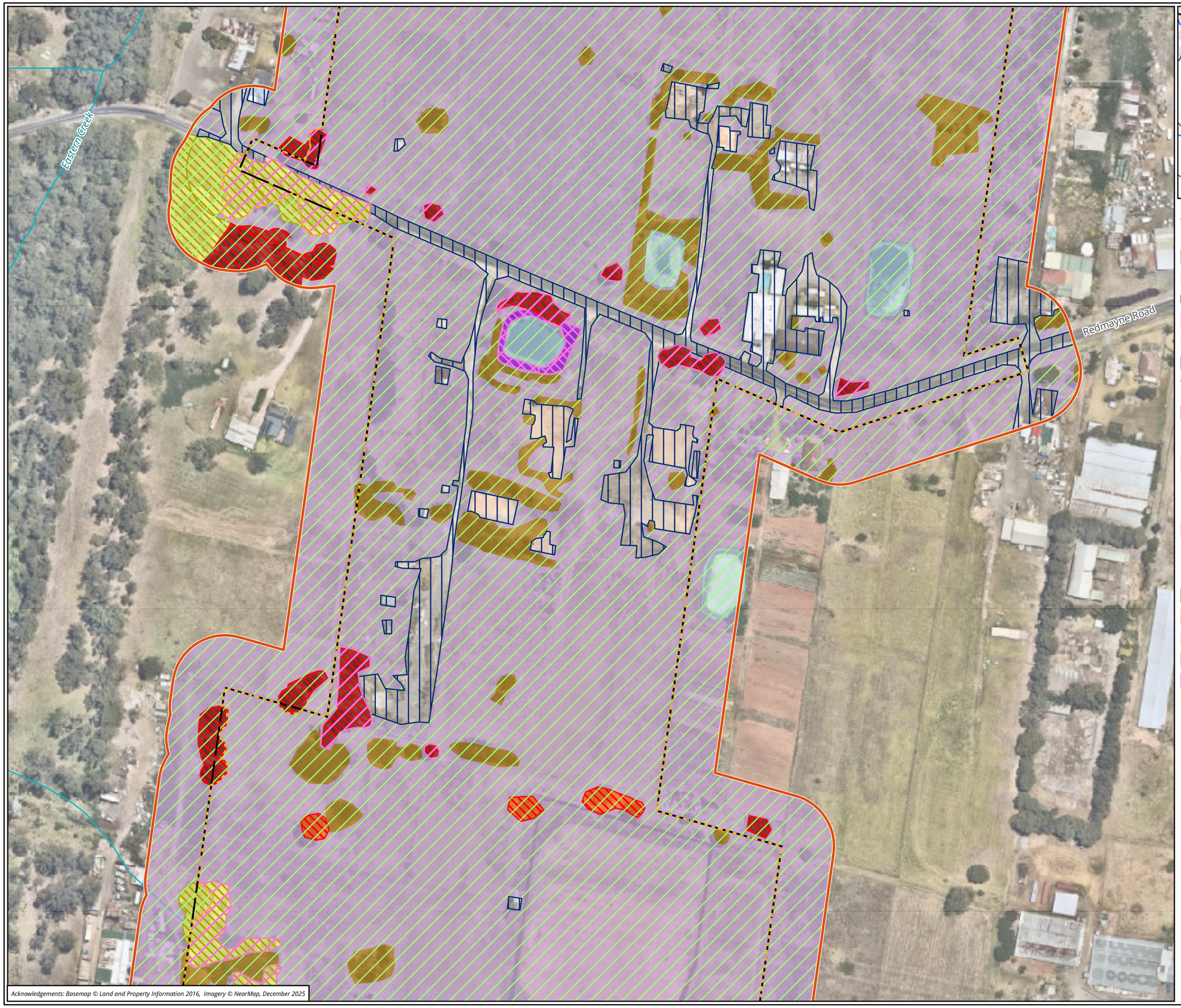
N

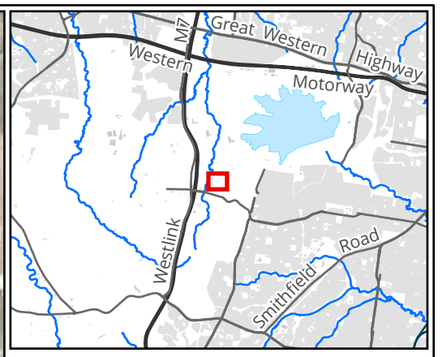
biosis

APEM Group

Matter: 40675, Date: 20 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F14_Offsets

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025





Legend

- Subject land
- Development site
- Development footprint

Impact

- Impact requiring offset
- Impact not requiring offset
- Area not requiring assessment

Threatened ecological communities

- Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)
- Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions (EEC, BC Act)
- River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)

Vegetation zones

- 3320_Low
- 3320_Scattered Trees
- 3320_NOG
- 3320_Exotic
- 3975_Low
- 4025_Low

Figure 14.3 Impacts requiring offsets, not requiring offset, not requiring assessment

0 50

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis
APEM Group

Matter: 40675, Date: 20 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
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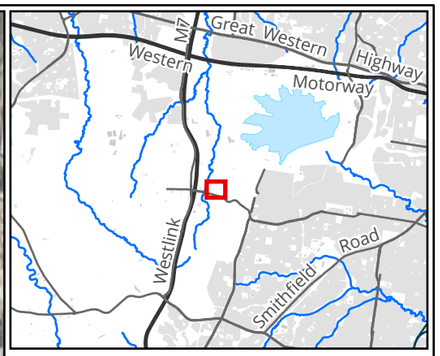

Legend

- Subject land
- Development site
- Development footprint

Impact

- Impact requiring offset
- Impact not requiring offset
- Area not requiring assessment

Threatened ecological communities

- Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)
- Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions (EEC, BC Act)
- River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)

Vegetation zones

- 3320_Low
- 3320_Planted
- 3320_Scattered Trees
- 3320_NOG
- 3320_Exotic
- 3975_Low
- 4025_Low

Figure 14.4 Impacts requiring offsets, not requiring offset, not requiring assessment

0 50

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

N

biosis APEM Group

Matter: 40675, Date: 20 April 2026
Prepared for CH, Prepared by HL, Last edited by: hliswoyo
Location: P:\40600s\40675\Mapping\40675_Canopy_Estate_BDAR_F8_14.aprx
Layout: 40675_F14_Offsets

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap, December 2025

Matter of NES	Project specifics	Potential for significant impact
	• White-throated Needletail *Hirundapus caudacutus* (Vulnerable, EPBC Act). • Black-tailed *Godwit Limosa limosa* (Endangered, EPBC Act, Vulnerable, BC Act). • Eastern Curlew *Numenius madagascariensis* (Critically Endangered, EPBC Act). • Grey Plover *Pluvialis squatarola* (Vulnerable, EPBC Act). • Common Greenshank *Tringa nebularia* (Endangered, EPBC Act and BC Act). The subject land does not provide important habitat for any of these species. While there are some farm dams within the subject land, these are of poor quality and unlikely to provide habitat for any shorebirds. Native vegetation within the subject land is degraded in nature and unlikely to support migratory species.	
National Heritage Places	There are no National Heritage Places mapped within the subject land.	A significant impact is unlikely to result from the project.
Wetlands of international importance (Ramsar sites)	The subject land does not flow directly into a Ramsar site and the development is not likely to result in a significant impact.	The project will not result in changes to the ecological character of any Ramsar site. A significant impact is unlikely to result from the project.

9.2 *Environmental Planning and Assessment Act 1979* / Environmental Planning and Assessment Regulation 2021

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

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

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

Threatened species and communities listed under the BC Act relevant to the subject land are provided in Section 4 and Appendix 2. A summary of impacts to threatened species, populations and communities present or assumed present within the subject land is provided in Section 4.2.5.

9.3 State Environmental Planning Policies

9.3.1 State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 2: Vegetation in non-rural areas

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

This chapter applies to land zoned RU2, R1, Zone R2 and Zone SP1 in the Fairfield LGA as defined in Clause 2.3. Consent is required for clearance of vegetation within land zones and LGAs to which this chapters applies. As the subject land is zoned E4 General Industrial, this chapter does not apply to this project.

No further consideration is required.

Chapter 3: Koala Habitat Protection 2020

This chapter applies to land zoned RU1, RU2 or RU3 that is greater than 1 hectare in size and does not form part of an asset protection zone (APZ). The subject land is currently zoned as E4 General Industrial under the Fairfield City LEP, and is therefore does not apply to this project.

No further consideration is required.

Chapter 4: Koala Habitat Protection 2021

Similar to Chapter 2, this chapter also aims to encourage the conservation and management of areas of natural vegetation that provide habitat for Koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.

The subject land is located within the Fairfield City Council (Council) LGA. Fairfield City Council is listed under Schedule 2, Chapter 4 of Biodiversity and Conservation SEPP, and is therefore subject to the requirements laid out by the policy. Specifically, this means before a consent authority may grant consent to a DA, it must satisfy itself whether or not the land is potential Koala habitat and core Koala habitat.

The subject land does not have an approved Koala Plan of Management (KPoM).

A Council is not prevented from granting consent to a development application for consent to carry out development on land if:

- The land does not have an approved KPoM applying to the land, or
- The Council is satisfied that the land is not core Koala habitat.

The study area supports five Koala feed trees for the Central Coast Koala Management Area which includes the Fairfield City LGA, as defined in Schedule 3 of the SEPP. The following Koala use tree species were recorded within the subject land:

- *Angophora* spp.
- Grey Box *Eucalyptus moluccana*

- Forest Red Gum *Eucalyptus tereticornis*
- Narrow-leaved Ironbark *Eucalyptus crebra*
- Tallowwood *Eucalyptus microcorys*

As the vegetation in the study area has been identified as potential Koala habitat, determination of whether the land constitutes core Koala habitat is required.

Core Koala habitat means:

- An area of land which has been assessed by a suitably qualified and experienced person as being highly suitable Koala habitat and where Koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or
- An area of land which has been assessed by a suitably qualified and experienced person as being highly suitable Koala habitat and where Koalas have been recorded as being present in the previous 18 years.

Approximately six records of Koala have been recorded within 10 kilometres of the subject land, between 2006 and 2024, with the nearest record being 7.1 kilometres from the subject land (NSW DCCEEW 2025d). A modified Koala SAT survey (Phillips & Callaghan 2011) was undertaken within the subject land to determine Koala activity. No signs (scats, urine stains, scratches, fur) and/or individual Koalas were located during survey. Therefore, the vegetation in the study area does not constitute core Koala habitat as defined under Biodiversity and Conservation SEPP.

No further consideration is required.

9.3.2 State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 2: Coastal Management

The State Environmental Planning Policy (Resilience and Hazards) 2021 aims to promote a co-ordinated approach to land use planning in the coastal zone of NSW in a manner consistent with the objects of the *Coastal Management Act 2016* (CM Act). The SEPP, including Chapter 2 Coastal Management, has replaced the now repealed:

- SEPP No. 14 Coastal Wetlands
- SEPP No. 26 Littoral Rainforests
- SEPP No. 71 Coastal Protection
- SEPP Coastal Management

The CM Act and Resilience and Hazards SEPP provide maps for Coastal Wetlands and associated Proximity Area, Coastal Environment Area and Coastal Use Area. Development consent cannot be granted within these areas unless the Consent Authority is satisfied that the proposed development will not significantly impact on areas mapped as Coastal Wetlands, Coastal Wetlands Proximity Area, Coastal Environment Area, or Coastal Use Area.

The subject land is not within a 'coastal zone' as defined by clause 6 of this policy, including Coastal Wetlands and Coastal Wetlands Proximity Area. Therefore, the CM Act and Resilience and Hazards SEPP do not apply to this project.

9.4 Other Environmental Planning Instruments

9.4.1 Fairfield Local Environmental Plan 2013

Local Environmental Plans (LEPs) are created by Councils in consultation with their community and guide planning decisions for LGAs. They apply either to the whole or part of a LGA and make provision for the protection or utilisation of the environment through zoning of land and development controls. Fairfield LEP is relevant to the subject land.

The subject land is currently zoned as E4 General Industrial under the Fairfield LEP. The relevant objectives of E4 zoning are:

- To provide a range of industrial, warehouse, logistics and related land uses.
- To ensure the efficient and viable use of land for industrial uses.
- To minimise any adverse effect of industry on other land uses.
- To encourage employment opportunities.
- To enable limited non-industrial land uses that provide facilities and services to meet the needs of businesses and workers.
- To ensure development is not likely to detrimentally affect the viability of nearby business centres.

The project is consistent with the objectives of E4 zoning in the Fairfield LEP (2013).

9.4.2 Fairfield CityWide Development Control Plan 2013 / Draft Keyhole Estate Development Control Plan 2023

DCPs are developed by Council and provide detailed planning and design guidelines to support the planning controls in the LEP. DCPs identify additional development controls and standards for addressing development issues at a local level and can be applied more flexibly than a LEP. The Fairfield DCP is relevant to the LGA and has been prepared in accordance with Division 6 of the EP&A Act and with Part 3 of the Environmental Planning and Assessment Regulation 2000. The DCP provides more detailed provisions than the LEP for development within the Fairfield LGA. In addition, a site-specific DCP (Keyhole Estate DCP) has been prepared and is relevant to the subject site.

Under s79(c) of the Act, the consent authority is required to take into consideration the relevant provisions of the DCP in determining applications for development in the LGA. Section 3.3.4 (Assessment requirements) of the Fairfield DCP details the requirements for biodiversity assessments. An assessment against these is provided in Table 38 below.

Table 38 Biodiversity assessment requirements detailed in the Fairfield DCP

Control	Assessment of proposed development
a) Description of the plant and potential animal species located on the site. Areas of the City identified with Biodiversity significance comprise the Cumberland Plain Woodland Critically Endangered Ecological Community.	Included in Section 3.1.6 (PCTs) and Section 4 (Threatened species) of this BDAR.
b) Development impacting on native vegetation will generally be required to submit a report prepared by a qualified consultant. The report will need to address criteria contained in the '7 Part Test' (see	Satisfied through the provision of a BDAR. Requirement for 7-part test is exceeded by the preparation and provision of a BDAR.

Control	Assessment of proposed development
c.3.2.7). In the event the '7 Part Test' indicates there is potential for a significant impact than a species impact statement will need to be prepared.	
c) Where applicable consideration must be given to the local Conservation Significance Assessment prepared by Council as part of the Fairfield Biodiversity Strategy 2010. Conservation significance has been assessed as either, High, Moderate or Low. The Biodiversity Strategy provides an important basis for the assessment. Any "7 part Test" shall reference the impact of development in relation to the Biodiversity Strategy.	Satisfied through the provision of a BDAR. Requirement for 7-part test is exceeded by the preparation and provision of a BDAR.
d) Information on measures to mitigate potential impacts of development on the area with biodiversity significance.	Included in Section 5 (Avoid and minimise impacts) and Section 7 (Mitigation and management of impacts) of this BDAR.
e) Provision of a landscape plan detailing new vegetation to be provided on the site. Note this should include locally occurring indigenous vegetation.	Provision of a landscape plan is a requirement of the SEARS (Table 3). The preparation of a VMP has been included in Section 7 (Mitigation and management of impacts) of this BDAR accordingly.
f) Consideration of the potential impacts of the proposal on movement of native fauna through the site.	Included in Section 6.3 (Prescribed Impacts) of this BDAR.
g) A number of areas of the City with Biodiversity significance have also been zoned E2 Environmental Protection, E3 Environmental Management or W2 Waterways Recreation. Where applicable, the report will also need to address the objectives of these zones.	Development site is to be zoned as E4 General Industrial from 10 January 2025. Land zoning is therefore not included as an area of biodiversity significance.

Section 6.1 (Biodiversity and Riparian Land) of the Keyhole Estate DCP details development controls applicable to biodiversity. An assessment of the proposed development against these controls is provided in Table 39.

Table 39 Biodiversity and Riparian Land controls from the Keyhole Estate DCP

Control	Assessment of proposed development
(a) Clearing of native vegetation shall consider the relevant triggers of any relevant Federal or State Legislation such as the NSW Biodiversity and Conservation Act 2016.	Addressed by this BDAR which satisfies assessment under the BC Act and EPBC Act.
(b) A Biodiversity Development Assessment Report must be prepared, as required under the State legislation, that describes how the development has avoided or minimised environmental impacts and the results of the BAM assessment and calculations.	Addressed by this BDAR. Avoidance and minimisation is described in Section 5.
(c) Any unavoidable impacts on biodiversity from development shall be offset through the retirement of a credit obligation as calculated by the BAM, and as required by the relevant State or Federal legislation.	Addressed by this BDAR. Credit offset reports are included in Section 10. These detail the calculated offset credit obligation for the project.
(d) Any future development on waterfront land as defined by the Water Management Act 2000 (WM Act) must consider the Natural Resource Access Regulator (NRAR) 'guidelines for controlled activities on water front land – Riparian Corridors' 2018. Waterfront land within the DCP area is shown in Appendix C. Development within a riparian corridor must comply with the relevant controls	Addressed by this BDAR. Refer to Section 9.8.

Control	Assessment of proposed development
outlined in the Water Management Act 2000 (WM Act).	
(e) Council may require Development applications proposing removal or substantial pruning of trees to be supported by an Arboriculture Report prepared by an arborist with a minimum AQF level 5.	This requirement has been included in Section 7 (Mitigation and management of impacts) of this BDAR accordingly.
(f) A Fauna sensitive lighting plan shall be submitted for Future development stages in the DCP works area which will consider light and noise spill into the Riparian Area of Eastern Creek. The plan must follow the National Light Pollution Guidelines for wildlife (awe.gov.au).	This requirement has been included in Section 7 (Mitigation and management of impacts) of this BDAR accordingly.
(g) A vegetation management plan shall be provided to Council in relation to any future DA and associated BDAR, for the Eastern Creek corridor and is to be provided to Councils satisfaction addressing the following matters: **i. Subsequent amendments to the VMP required for future development stages in the DCP area.** **ii. On-going habitat management, weed management and native flora plantings** **iii. A qualified and experienced ecologist detailing management methods, timeframes and outcomes, including key performance indicators, to undertake the VMP.** **iv. Any revegetation of woodland riparian area is to be planted with appropriate species, with local provenance using appropriate species from vegetation communities identified by an ecologist.** **v. All Vegetation Management Plan works shall be maintained throughout the demolition, construction and operational phase of the development in accordance with the approved plan and conditions to ensure restoration of environmental amenity.** **vi. A biosecurity management plan covering the extent of works is to be provided to Council for assessment and approval prior to the issue of a Construction Certificate**	The preparation of a VMP has been included in Section 7 (Mitigation and management of impacts) of this BDAR accordingly.

9.5 *Local Land Services Act 2013* and *Local Land Services Amendment Act 2016*

The subject land is zoned E4. The subject land is classed as Land excluded from the LLS Act on the Transitional native vegetation regulatory map viewer (NSW DCCEEW 2025e). As the subject land is not within a rural area, the LLS Act does not apply to the development with respect to clearing of native vegetation.

9.6 Biodiversity Conservation Act 2016

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

Threatened species and communities listed under the BC Act relevant to the subject land are provided in Section 4 and Appendix 2. A summary of impacts to threatened species, populations and communities present or assumed present within the subject land is provided in Section 4.2.5.

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

9.7 Biosecurity Act 2015

The *Biosecurity Act 2015* (Biosecurity Act) provides for the identification, classification and control of priority weeds with the purpose of determining if a biosecurity risk is likely to occur. A biosecurity risk is defined as the risk of a biosecurity impact occurring, which for weeds includes the introduction, presence, spread or increase of a pest into or within NSW or any part of the State. A pest plant has the potential to; harm or reduce biodiversity or out-compete other organisms for resources, including food, water, nutrients, habitat and sunlight.

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

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

Up to 12 priority weeds for the Greater Sydney LLS Region have been recorded in the subject land and are listed in Table 40, along with their associated Duty. Mitigation measures included Section 7, specifically the development of a Weed Management Plan as part of a CEMP, will assist with ensuring the appropriate treatment and disposal of priority weed material.

Table 40 Priority weeds within the subject land

Scientific name	Common name	Relevant biosecurity duty
Anredera cordifolia	Madeira Vine	General Biosecurity Duty
Arundo donax	Giant Reed	**Regional Recommended Measure** Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land.
Asparagus aethiopicus	Asparagus Fern	**Regional Recommended Measure – Exclusion zone** Whole of region: Land managers should mitigate the risk of the plant being introduced to their land. Within exclusion zone: Land managers should eradicate the plant from the land and keep the land free of the plant. Notify local control authority if found.
Asparagus asparagoides	Bridal Creeper	General Biosecurity Duty
Asparagus plumosus	Climbing Asparagus Fern	General Biosecurity Duty
Cestrum parqui	Green Cestrum	**Regional Recommended Measure** Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land.
Lantana camara	Lantana	General Biosecurity Duty

Scientific name	Common name	Relevant biosecurity duty
Lycium ferocissimum	African Boxthorn	General Biosecurity Duty
Olea europaea* subsp. *cuspidata	African Olive	**Regional Recommended Measure - core infestation area** Whole of region: Land managers should mitigate the risk of the plant being introduced to their land. Within core infestation area: Land managers should mitigate spread of the plant from their land.
Opuntia stricta	Common Prickly Pear	General Biosecurity Duty
***Rubus fruticosus* sp. agg.**	Blackberry complex	General Biosecurity Duty
Senecio madagascariensis	Fireweed	General Biosecurity Duty

9.8 Water Management Act 2000

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

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

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

DCCEEW Water recommends riparian widths based on watercourse order under the Strahler method in order to protect waterways from damage such as erosion (Strahler 1964). The watercourses mapped within the subject land are classified as Strahler One order streams, which require a riparian corridor width of 10 metres from the 'top of bank' on either side (DPE 2022e). The proposed development is SSD and is therefore exempt from the requirement to obtain a Controlled Activity Approval for activities on or under waterfront land. Therefore, works proposed within the mapped riparian corridor will be assessed as part of the EIS. The riparian corridor matrix of the NSW Natural Resources Access Regular (NRAR) (2022e) defines that first order waterways) should have a Vegetated Riparian Zone (VRZ) of 10 metres, and that allowable works include cycleways and paths, detention basins, stormwater outlet structures, stream realignment and any road crossings.

9.9 Fisheries Management Act 1994

The FM Act provides for the protection and conservation of aquatic species and their habitat throughout NSW. Impacts to threatened species, populations and communities, and critical habitats listed under the FM Act must be assessed through an Assessment of Significance process.

No predicted habitat for threatened aquatic species is mapped on the DPI spatial data portal within the subject land. No records of threatened aquatic species have been recorded within 10 kilometres of the subject land on the BioNet Atlas of NSW (NSW DCCEEW 2025d), however one species, Macquarie Perch *Macquaria australasica*, was predicted by the Protected Matters Search Tool (PMST).

As there is no mapped key fish habitat within the subject land or records within 10 kilometres, the project is unlikely to result in impacts to fish passage.

The waterway present in the subject land is classified as a first order stream (Strahler 1964), under the *Water Management Act 2000* (WM Act). Instream woody debris is proposed to be removed and therefore a permit under Part 7 of the FM Act is recommended. NSW DPI is required to assess all projects that involve structures that span the full width of a waterway (including pipe crossings) or modifies the velocity or quantity of water. As the waterway does not support aquatic ecological communities, fish passage is unlikely to be impacted by works. A permit under Part 7 of the FM Act to temporarily obstruct fish passage during construction (Section 219), and for dredging or reclamation works (Section 201), should be obtained.

10 Biodiversity credit report

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

BAM Credit Summary Report

Proposal Details

Assessment Id
00051083/BAAS18138/24/00051084

Proposal Name
Canopy Estate BDAR - Final RtS

BAM data last updated *
09/04/2026

Assessor Name
Callan Wharfe

Report Created
07/05/2026

BAM Data version *
Current classification (live - default) (94)

Assessor Number
BAAS18138

BAM Case Status
Finalised

Date Finalised
07/05/2026

Assessment Revision
5

BOS entry trigger

Assessment Type
Major Projects

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

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

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

Cumberland Red Gum Riverflat Forest												
7	4025_Low	River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	15.5	15.5	0.47	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		4
											Subtotal	**4**
Cumberland Shale Plains Woodland												
1	3320_Low	Cumberland Plain Woodland in the Sydney Basin Bioregion	25.7	25.7	1.1	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	17
2	3320_Scattered	Cumberland Plain Woodland in the Sydney Basin Bioregion	2.9	2.9	0.08	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	0
3	3320_Planted	Cumberland Plain Woodland in the Sydney Basin Bioregion	12.9	12.9	0.04	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	0

4	3320_Exotic	Cumberland Plain Woodland in the Sydney Basin Bioregion	1.3	1.3	2.7	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	0
5	3320_NOG	Cumberland Plain Woodland in the Sydney Basin Bioregion	1	1.0	28.8	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	0
											Subtotal	**17**
Southern Lower Floodplain Freshwater Wetland												
6	3975_Low	Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	23.1	23.1	0.13	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		2
											Subtotal	**2**
											Total	**23**

Species credits for threatened species

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

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Appendices

Appendix 1 Survey methods

Appendix 1.1 Nomenclature

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

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

Appendix 1.2 Permits and licences

The flora and fauna assessment was conducted under the terms of Biosis' Scientific Licence issued by NSW DCCEEW (SL100758, expiry date 30 June 2026). The BAM Assessment and quality review of the BDAR was carried out by Accredited Assessor Callan Wharfe (BAAS18138) and Matthew Hyde.

Appendix 1.3 Limitations

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

The field survey was conducted in winter, spring and summer during appropriate weather conditions. Seasonal surveys were undertaken to satisfy the timings provided in the TBDC. Surveys undertaken, combined with habitat assessments and desktop analysis are considered sufficient to reach the conclusions herein regarding this and all other species' likelihood of occurrence within the subject land.

Database searches, and associated conclusions on the likelihood of species to occur within the assessment area, are reliant upon external data sources and information managed by third parties.

Appendix 2 BAM Candidate species assessment

Appendix 2.1 Threatened flora species assessment

Table A 1 Threatened flora species assessment

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Acacia pubescens **Downy Wattle**	VU	VU	Yes	A spreading shrub primarily confined to the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers at Barden Ridge, Oakdale and Mountain Lagoon. Grows in Cooks/River Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland, usually within roadside and bushland remnants. Grows on shale, sandstone, alluvium and gravely soils, often including ironstone.	Medium	Yes	Yes	No impact	Potential habitat for this species within the subject land occurs within PCT 3320. The closest record for this species exists approximately 150m from the subject land and was recorded in 1997. Targeted surveys for this species were undertaken within the development footprint in May 2021 (écologique 2024) during the approved survey period for the species and no individuals were recorded. Based on the absence of this species within the development footprint, the Downy Wattle does not require any further consideration.
Commersonia prostrata **Dwarf Kerrawang**	EN	EN	Yes	Ground hugging shrub with populations sparsely distributed in the Southern Highlands, Southern Tablelands and the North Coast. Grows in gullies, along drainage lines and in disturbed	Low	No	No	No impact	Dwarf Kerrawang is associated with PCT 3975. However, PCT 3975 within the subject land is highly disturbed and weedy and provides low quality potential habitat for this species. Furthermore, this species has not been previously recorded within 10

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Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				areas in a variety of communities including Coastal Freshwater Wetlands of the Sydney Basin Bioregion, New England Dry Sclerophyll Forests, Temperate Montane Grasslands and Subalpine Grasslands. Grows in sand or peat soils.					km of the subject land and is not known or predicted to occur within the subject land. The closest predicted habitat is mapped near Picton (DCCEEW 2000). Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, Dwarf Kerrawang does not require any further consideration.
***Cynanchum elegans* White-flowered Wax Plant**	EN	EN	No	Climbing vine restricted to eastern NSW from Brunswick Heads to Gerroa in the Illawarra region. Grows in rainforest gully scrub and scree slope on the edge of dry rainforests in a variety of communities including Coastal Floodplain Wetlands, Maritime Grasslands, Coastal Valley Grassy Woodlands and Northern Hinterland Wet Sclerophyll Forests.	Low	No	No	No impact	Potential habitat for the White-flowered Wax Plant of dry rainforests does not occur within the subject land. There are no recent close records near the subject land, the closest record is approximately 3100m away and was recorded in 1993. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial

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Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of recent nearby records, the White-flowered Wax Plant does not require any further consideration.
Deyeuxia appressa	EN	EN	Yes	Erect, perennial grass, endemic to NSW. Restricted to two records, one in 1930 at Herne Bay south of Bankstown and the other in 1941 from Killara near Hornsby. Grows on wet ground in Sydney Coastal Dry Sclerophyll Forests and Eastern Riverine Forests.	Low	No	No	No impact	*Deyeuxia appressa* is associated with PCTs 3320 and 4025, however habitat information is minimal for this species due to its rarity (OEH 2024). PCTs 3320 and 4025 within the subject land are also highly disturbed and weedy and provides low quality potential habitat for this species. Furthermore, this species has not been previously recorded within 10 km of the subject land. This species is highly restricted and is only known from two pre-1942 records in the Sydney region and has not been detected since (OEH 2024). Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									development footprint and the absence of nearby records, *Deyeuxia appressa* does not require any further consideration.
Dillwynia tenuifolia	-	VU, E2	Yes	Low, spreading shrub restricted to the Cumberland Plain in Western Sydney. Grows in scrubby or heathy areas within a variety of communities including Castlereagh Ironbark Forest, Shale Gravel Transition Forest, Castlereagh Scribbly Gum Woodland and Sydney Hinterland Dry Sclerophyll Forests. Grows on tertiary alluvium, laterised clays and in shale-sandstone transitions. An endangered population of this species occurs at Kemps Creek, in the Greater Sydney Area.	Low	No	No	No impact	*Dillwynia tenuifolia* is associated with PCT 3320 and prefers to grow in shrubby, heathy vegetation. However, PCT 3320 within the subject land is also highly disturbed and weedy and provides low quality potential habitat for this species. There are no previous records close to the subject land, the closest record is approximately 7km away. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, *Dillwynia tenuifolia* does not require any further consideration.
Eucalyptus benthamii **Camden White Gum**	VU	CE	Yes	The Camden White Gum is a large tree species which grows on deep alluvial sandy soils. This eucalypt is known from two major subpopulations; one	Medium	Yes	Yes	No impact	Potential habitat for Camden White Gum within the subject land occurs within PCT 3320. However, there have been no previous records within 10km of the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				in the Kedumba Valley of the Blue Mountains National Park, and the other in Bents Basin State Recreation Area.					Targeted surveys for this species were undertaken within the development footprint in May 2021 (écologique 2024) during the approved survey period for the species and no individuals were recorded. Based on the absence of this species within the development footprint, the Camden White Gum does not require any further consideration.
Eucalyptus glaucina **Slaty Red Gum**	VU	VU	Yes	Medium sized tree, confined to the north coast of NSW at Casino as well as Taree to Broke, west of Maitland. Grows in a variety of communities including Hunter - Macleay Dry Sclerophyll Forests, Coastal Floodplain Wetlands, Northern Hinterland Wet Sclerophyll Forests and Coastal Valley Grassy Woodlands. Grows on deep, moderately fertile, well watered soils.	Medium	Yes	Yes	No impact	Potential habitat for Slaty Red Gum within the subject land occurs within PCT 3320. However, there have been no previous records within 10km of the subject land. Targeted surveys for this species were undertaken within the development footprint in May 2021 (écologique 2024) during the approved survey period for the species and no individuals were recorded. Based on the absence of this species within the development footprint, the Slaty Red Gum does not require any further consideration.
Grevillea juniperina **subsp. *juniperina*** **Juniper-leaved Grevillea**	-	VU	Yes	Spreading to erect medium sized shrub endemic to Western Sydney with a distribution spanning from Blacktown, Erskine Park,	Medium	Yes	Yes	No impact	Potential habitat for Juniper-leaved Grevillea within the subject land occurs within PCTs 3320 and 4025. There are 212 previous records within 10km of the subject land, with

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Londonderry and Windsor and outlying populations at Kemps Creek and Pitt Town. Grows at elevations <50 m in Cumberland Plain Woodland, Castlereagh Ironbark Forest, Castlereagh Scribbly Gum Woodland, Shale/Gravel Transition Forest, Sydney Sand Flats Dry Sclerophyll Forests and Coastal Valley Grassy Woodlands. Grows in sandy to clay loam soils and red pseudolateritic gravels derived from Wianamatta Shale and Tertiary Alluvium.					the closest record being approximately 4.5 km away. Targeted surveys for this species were undertaken within the development footprint in May 2021 (écologique 2024) during the approved survey period for the species and no individuals were recorded. Based on the absence of this species within the development footprint, the Juniper-leaved Grevillea does not require any further consideration.
Hibbertia puberula	-	EN	Yes	Shrublet with a distribution extending from Wollemi National Park south to Morton National Park and the south coast near Nowra. Grows in a variety of communities including Southern Tableland Dry Sclerophyll Forests, Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Heath Swamps, Coastal Valley Grassy Woodlands and Sydney Coastal Heaths. Grows on sandy soils, occasionally on clay soils.	Low	No	No	No impact	*Hibbertia puberula* is associated with PCT 3320. However, PCT 3320 within the subject land is also highly disturbed and weedy and provides low quality potential habitat for this species. There are no previous records within 10km of the subject land. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									development footprint and the absence of nearby records, *Hibbertia puberula* does not require any further consideration.
Hibbertia sp. Bankstown	CE	CE	Yes	Prostrate shrub with one population restricted to Bankstown Airport. Grows in a highly modified habitat with surrounding native vegetation composition reminiscent of Castlereagh Ironbark Forest or Castlereagh Scribbly Gum Woodland and associated with Cumberland Dry Sclerophyll Forests, Sydney Sand Flats Dry Sclerophyll Forests, and Coastal Floodplain Wetlands. Grows in sandy tertiary alluvial soils with a high silt content.	Low	No	No	No impact	*Hibbertia sp. Bankstown* is associated with PCT 4025. However, PCT 4025 within the subject land is also highly disturbed and weedy and provides low quality potential habitat for this species. There are no previous records close within 10km of the subject land and this species has a highly restricted distribution. The only known population occurs in Bankstown LGA. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, *Hibbertia sp. Bankstown* does not require any further consideration.
Marsdenia viridiflora* subsp. *Viridiflora* – *endangered population	-	E2	Yes	A twining climber to 4m high that's grows in vine thickets and open shale woodland. Recent records occur in Prospect,	Medium	Yes	Yes	No impact	Native Pear is associated with PCTs 4025 and 3320. However, both PCTs within the subject land are highly disturbed and weedy and provides

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
***Marsdenia viridiflora* R. Br. subsp. *viridiflora* population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas** **Native Pear**				Bankstown, Smithfield, Cabramatta Creek and St Marys within the Sydney area.					low quality potential habitat for this species. There are no previous records within 10km of the subject land. Targeted surveys for this species were undertaken within the development footprint in November 2024 (current assessment) during the approved survey period for the species and no individuals were recorded. Initial surveys also did not incidentally record this species. Based on the absence of this species within the development footprint, the Native Pear does not require any further consideration.
Maundia triglochinoides	-	VU	Yes	Perennial sedge restricted to coastal NSW from Wyong extending northwards to southern Queensland. Grows in shallow freshwater channels, lagoons, creeks, dams or swamps in a variety of communities including Coastal Floodplain Wetlands, Coastal Swamp Forests, Coastal Freshwater Lagoons, Coastal Heath Swamps and Coastal Valley Grassy Woodlands. Grows in heavy clay, low nutrient soils.	Medium	Yes	Yes	No impact	*Maundia triglochinoides* is associated with PCTs 4025 and 3320. However, both PCTs within the subject land are highly disturbed and weedy and provides low quality potential habitat for this species. There are no previous records within 10km of the subject land. Therefore, targeted surveys for this species were required. Targeted surveys for this species were undertaken within the development footprint in May 2021 (écologique 2024) outside of the approved survey

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Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									period for the species. No individuals were recorded. Targeted surveys for this species were undertaken within the development footprint in November 2024 (current assessment) during the approved survey period for the species and no individuals were recorded. Based on the absence of this species within the development footprint, the *Maundia triglochinoides* does not require any further consideration.
Micromyrtus minutiflora	VU	EN	Yes	Slender, spreading shrub restricted to the western edge of the Cumberland Plain between Richmond and Penrith. Grows in Cumberland Dry Sclerophyll Forests and Sydney Sand Flats Dry Sclerophyll Forests including Castlereagh Scribbly Gum Woodlands, Castlereagh Ironbark Forests, and Shale/Gravel Transition Forests. Grows in tertiary alluvium and consolidated river sediments.	Low	No	No	No impact	*Micromyrtus minutiflora* is associated with PCT 3320. However, PCT 3320 within the subject land is highly disturbed and weedy and provides low quality potential habitat for this species. There are no previous records within 10km of the subject land. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records,

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Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									Micromyrtus minutiflora does not require any further consideration.
Persicaria elatior **Tall Knotweed**	VU	VU	Yes	Erect herb found growing in south-eastern NSW at Moutn Dromedary, Moruya State Forest near Turlinjah, Upper Avon River catchment north of Robertson, Bermagui and Picton Lakes. Also grows in northern NSW around Raymond Terrace near Newcastle and Cherry Tree and Gibberagee State Forests in the Grafton area. Grows in damp places usually on the margins of waterbodies and in swamp forests in a variety of communities including Coastal Floodplain Wetlands, Coastal Swamp Forests, Eastern Riverine Forests, Coastal Freshwater Lagoons and Coastal Heath Swamps.	Medium	Yes	Yes	No impact	Tall Knotweed is associated with PCT 3975 and grows in damp places, beside streams and often is associated with disturbance. However, there are no previous records within 10km of the subject land. Therefore, targeted surveys for this species were required. Targeted surveys for this species were undertaken within the development footprint in May 2021 (écologique 2024) during the approved survey period for the species and no individuals were recorded. Based on the absence of this species within the development footprint, Tall Knotweed does not require any further consideration.
Persoonia hirsuta **Hairy Geebung**	EN	EN	Yes	Spreading, hairy shrub with a scattered distribution throughout Sydney from Singleton to the north, the east coast of Bargo to the south and the Blue Mountains to the west. Grows at elevations between 350 - 600 metres in a variety of communities including Southern Tableland	Low	No	No	No impact	Hairy Geebung is associated with PCT 4025 and prefers shrubby heathy vegetation on ridge tops or rises. However, PCT 4025 within the subject land is highly disturbed and weedy and is not heathy or shrubby. There are also no previous records within 10km of the subject land.

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Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Western Slopes Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths and Southern Escarpment Wet Sclerophyll Forests. Grows in sandy soils on sandstone substrates.					Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, the Hairy Geebung does not require any further consideration.
Persoonia nutans **Nodding Geebung**	EN	EN	Yes	Erect or spreading shrub with a disjunct distribution restricted to the Cumberland Plain between Richmond in the north and Macquarie Fields in the south with core distribution occuring in the Penrith and to a lesser extent, Hawkesbury regions. Grows in Cumberland Dry Sclerophyll Forests including Agnes Banks Woodland, Castlereagh Scribbly Gum Woodland, Cooks River/Castlereagh Ironbark Forest and Shale-Sandstone Transition Forest as wel as Sydney Sand Flats Dry Sclerophyll Forests and Coastal Valley Grassy Woodlands. Grows in sandy soils derived	Low	No	No	No impact	Nodding Geebung is associated with PCT 3320 and prefers to grow on alluvial sediments. However, PCT 3320 within the subject land is highly disturbed and weedy and is not heathy or shrubby. There are also no close previous records, the nearest record is approximately 7.2 km from the subject land. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				from aeolian or alluvial sediments as well as in tertiary alluviums to the south of its range.					absence of nearby records, the Nodding Geebung does not require any further consideration.
Pimelea curviflora* var. *curviflora	VU	VU	Yes	Small to medium sized shrub restricted to the coastal areas of Sydney between northern Sydney and Maroota with an outlying population at Croom Reserve near Albion Park in the Illawarra region. Grows on ridgetops and upper slopes amongst grasses and sedges in a variety of communities including Cumberland Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths and Northern Hinterland Wet Sclerophyll Forests. Can be inconspicuous amongst grasses and sedges although easier to find in October to May when flowering. Grows on sandstone substrates in shale/lateritic soils and shale/sandstone transition soils.	Low	No	No	No impact	*Pimelea curviflora* var. *curviflora* is associated with PCT 3320 and occurs on upper slopes or ridgetops in open forest or woodland. However, PCT 3320 within the subject land is highly disturbed and weedy and there are no ridgetops or upper slopes within the subject land. There are also no close previous records, the nearest record is approximately 4.5 km from the subject land. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, the *Pimelea curviflora* var. *curviflora* does not require any further consideration.
Pimelea spicata **Spiked Rice-flower**	EN	EN	Yes	Small erect or spreading shrub with populations occurring in two disjunct areas, one	Medium	Yes	Yes	No impact	Spiked Rice-flower is associated with PCT 3320 and co-occurs with several species found within the subject land

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				occurring on the Cumberland Plain from Marayong and Prospect Reservoir south to Narellan and Douglas Park, and the other occurring in the Illawarra from Landsdowne to Shellharbour and north Kiama. Grows in Maritime Grasslands and Coastal Valley Grassy Woodlands including Cumberland Plain Woodlands and Moist Shale Woodlands within the Cumberland Basin and in Coast Banksia Open Woodland Coastal Grasslands in the Illawarra region. Grows on well structured clay soils.					including Forest Red Gum and Grey Box. Furthermore, there are approximately 256 records within 10km of the subject land, the closest being 130m west of the subject land. Therefore, targeted surveys for this species were required. Targeted surveys for this species were undertaken within the development footprint in November 2024 (current assessment) during the approved survey period for the species and no individuals were recorded. Incidental searches were also undertaken in August 2024 and September 2024 and the species was not detected. Based on the absence of this species within the development footprint, Spiked Rice-flower does not require any further consideration.
Pomaderris brunnea **Brown Pomaderris**	VU	EN	Yes	Medium sized shrub with a distribution limited to the area around the Colo, Nepean and Hawkesbury Rivers including the Bargo area and near Camden. Grows on floodplains and creeklines in a variety of communities including Sydney Hinterland Dry Sclerophyll Forests, Central Gorge Dry Sclerophyll Forests, Coastal Floodplain Wetlands, Coastal	Low	No	No	No impact	Brown Pomaderris is associated with PCTs 3320 and 4025 and occurs in moist woodland and alluvial flood plains. However, PCTs 3320 and 4025 within the subject land are both highly disturbed and weedy. There are also no previous records within 10km of the subject land. Therefore, targeted surveys for this species were not required.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Valley Grasslands and North Coast Wet Sclerophyll Forests. Grows in clay and alluvial soils.					Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, the Brown Pomaderris does not require any further consideration.
Pomaderris prunifolia **Plum-leaf Pomaderris**	-	E2	Yes	A shrub 1-3 metres high that has been known to grow along road reserves adjacent to creeks and rocky slopes, as well as among grass species on sandstone. Known from three sites within the Parramatta, Auburn, Strathfield and Bankstown areas: Rydalmere, Rookwood Cemetery and at the Crest of Bankstown.	Low	No	No	No impact	Plum-leaf Pomaderris is associated with PCT 3320 and is known to occur along road reserves, creeks and gullies. Furthermore, there are previous records within 10km of the subject land, the closest being approximately 4km south east of the subject land. Fairfield City Council is not within the geographical range of this species and the habitat is heavily degraded. Based on the absence of this species within the development footprint, and geographical limitations for this species, Plum-leaf Pomaderris does not require any further consideration.
Pterostylis saxicola **Sydney Plains Greenhood**	EN	EN	Yes	Deciduous terrestrial orchid restricted to a few small populations located in Western Sydney between Freemans	Low	No	No	No impact	Sydney Plains Greenhood is associated with PCT 3320 and commonly occurs in shallow soils in depressions on sandstone rock

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Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Reach in the north and Picton in the south including Georges River National Park. Found growing near streams in depression on sandstone rock shelves above cliff lines faces, moist, sheltered ridges and creek banks on mossy rocks in Temperate Montane Grasslands, Northern Warm Temperate Rainforests, Southern Warm Temperate Rainforests and Southern Tableland Wet Sclerophyll Forests. Grows in small pockets of shallow shale or shale/sandstone transition soils over sandstone substrates.					shelves (TSSC 1997). However, PCT 3320 within the subject land is highly disturbed and weedy and there are no rock shelves or cliff lines within the subject land. There are also no previous records that are close or recent, the closest record is approximately 4.8 km away and was recorded in 1804. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species or any *Pterostylis spp.* Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, the Sydney Plains Greenhood does not require any further consideration.
Pultenaea parviflora	VU	EN	Yes	Small erect, branching shrub endemic to the Cumberland Plain from Windsor to Penrith east to Dean Park with outlying populations at Kemps Creek and Wilberforce. Found growing in Cumberland Dry Sclerophyll Forests including Castlereagh Ironbark Forest, Shale Gravel Transition Forest	Low	No	No	No impact	*Pultenaea parviflora* is associated with PCT 3320 and prefers scrubby/dry heath areas. However, PCT 3320 within the subject land is highly disturbed and weedy and does not contain any areas that are scrubby or heathy. There are 548 records within 10km of the subject land, the closest being approximately 2.2km from the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				and Castlereagh Scribbly Gum Woodland, Sydney Coastal Dry Sclerophyll Forests, Sydney Sand Flats Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands and Southern Lowland Wet Sclerophyll Forests. Grows in soils derived from Wianamatta shale, laterite or alluvium.					Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, the *Pultenaea parviflora* does not require any further consideration.
Pultenaea pedunculata **Matted Bush-pea**	-	EN	Yes	Small prostrate, mat forming shrub restricted to three disjunct populations, in Villawood, Prestons and north-west of Appin in the Cumberland Plains in Sydney, the coast between Tathra and Bermagui and the Windellama area south of Goulburn. Found growing in a variety of habitats including intact woodland, creeklines, broad valleys, headlands, rock crevices, disturbed sites such as road batters and coastal cliffs in a variety of communities including Central Gorge Dry Sclerophyll Forests, South Coast Sands Dry Sclerophyll Forests, Cumberland Dry	Low	No	No	No impact	Matted Bush-pea is associated with PCT 3320 and is largely confined to loamy soils in dry gullies. PCT 3320 within the subject land is highly disturbed and weedy. There are 11 records within 10km of the subject land, the closest being approximately 5.5km from the subject land. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, the

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Sclerophyll Forests, Temperate Montane Grasslands, Coastal Valley Grassy Woodlands and Southern Tableland Wet Sclerophyll Forests. Grows in a variety of soils including sandy clay soils, loam soils, transitional soils with ironstone nodule inclusions and soils derived from Wianamatta shale, laterite or alluvium.					Matted Bush-pea does not require any further consideration.
Syzygium paniculatum **Magenta Lilly Pilly**	VU	EN	Yes	Small to medium sized rainforest tree restricted to a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. Found growing on stabilized dunes near the sea in South Coast Sands Dry Sclerophyll Forests, Coastal Swamp Forests, Coastal Headland Heaths, Littoral Rainforests, Northern Hinterland Wet Sclerophyll Forests and Southern Lowland Wet Sclerophyll Forests. Grows on grey sandy, gravelly, silty or clay soils over sandstone substrates.	Low	No	No	No impact	Magenta Lilly Pilly is associated with PCT 4025 however generally occurs on grey soils over sandstone and is restricted to coastal littoral rainforest. PCT 4025 within the subject land is highly disturbed and weedy. There are also few records within 10km of the subject land, the closest being approximately 9.5km away. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, the Magenta Lilly Pilly does not require any further consideration.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
***Wahlenbergia multicaulis* – endangered population Tadgell's Bluebell in the local government areas of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield**	-	E2	Yes	A perennial, tufted herb to 75cm high that grows on the Villawood Soil Series in disturbed sites in a variety of habitats including forest, woodland, scrub, grassland and along creeks or wetlands. It prefers damp disturbed areas. There are only 13 known sites within the Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield LGAs.	Low	No	No	No impact	Tadgell's Bluebell is associated with PCTs 3320 and 4025 however is closely associated with the Villawood Soil Series and often grows in disturbed sites. PCT 4025 within the subject land is highly disturbed and weedy. There are also no previous records within 10km of the subject land. Therefore, targeted surveys for this species were not required. Although targeted surveys were not undertaken for this species due to the absence of suitable habitat, initial surveys also did not incidentally record this species. Based on the absence of suitable habitat for this species within the development footprint and the absence of nearby records, the Tadgell's Bluebell does not require any further consideration.

Appendix 2.2 Threatened fauna species assessment

Table A 2 Threatened fauna species assessment

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Anthochaera phrygia **Regent Honeyeater**	CE	CE	Yes	Regent Honeyeaters are semi-nomadic, occurring in temperate eucalypt woodlands and open forests. Most records are from box-ironbark eucalypt forest associations and wet lowland coastal forests. Nectar and fruit from mistletoes are also eaten. This species usually nest in tall mature eucalypts and sheoaks.	Low	No	No	No impact	Excluded as a candidate as the subject land is not included on the Important Areas map for the species.
Burhinus grallarius **Bush Stone-curlew**	-	EN	Yes	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Occurs in lightly timbered open forest and woodland, or partly cleared farmland with remnants of woodland, with a ground cover of short sparse grass and few or no shrubs where fallen branches and leaf litter are present.	Low	No	No	No impact	This species depends on vegetation with an open understorey and suitable fallen debris for cover and foraging (such as dead timber and logs). There is a minimal quantity of fallen debris present in the subject land due to prior disturbance. Excluded as a candidate based on habitat constraints in the BAM-C (lack of standing/fallen dead timber)..

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Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Calidris ferruginea **Curlew Sandpiper**	CE	CE	Yes	Inhabits sheltered intertidal mudflats. Also non-tidal swamps, lagoons and lakes near the coast. Infrequently recorded inland.	Low	No	No	No impact	The habitat for this species is not present in the subject land, as it is over 5 km from coastal waterbodies. While there are dams present in the subject land, observations are generally from high quality freshwater wetlands. Excluded as a candidate as the subject land is also not included on the Important Areas map for the species.
Callocephalon fimbriatum **Gang-gang Cockatoo**	EN	EN, E2	Yes	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine Snow Gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.	Medium	Yes	Yes	No impact	Old growth forests and woodland habitats preferred by the species are not present in the subject land. There are suitable hollows available in the subject land, however presence is likely to be limited to transient foraging. While there are some hollows on site, the breeding habitat is of poor quality. Targeted survey conducted during the required survey period yielded no observations of breeding. Foraging habitat in the form of *Allocasuarina* and *Casuarina* spp. are not present within the subject land.
Calyptorhynchus lathami **South-eastern Glossy Black-Cockatoo**	VU	VU, E2	Yes	Inhabits forest with low nutrients, characteristically with key Allocasuarina species. Tends to prefer drier forest types. Often confined to	Low	No	Yes (precautionary)	No impact	Breeding habitat for the species consists of large hollow-bearing eucalyptus trees with a minimum diameter of 15 cm that are greater than 8 m above ground. While there

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				remnant patches in hills and gullies. Breed in hollows stumps or limbs, either living or dead.					was some hollows on site, the breeding habitat is of poor quality and hollows are not a suitable size. Targeted surveys yielded no observations of breeding (although these were outside of the recently updated survey season). Foraging habitat in the form of *Allocasuarina* and *Casuarina* spp. are not present within the subject land. Excluded as a candidate based on habitat constraints in the BAM-C (lack of suitable hollows).
Cercartetus nanus **Eastern Pygmy-possum**	-	VU	Yes	Patchily distributed from the coast to the Great Dividing Range, and as far as Pillaga, Dubbo, Parkes and Wagga Wagga on the western slopes. Inhabits rainforest through to sclerophyll forest and tree heath. Banksias and myrtaceous shrubs and trees are a favoured food source. Soft fruits are eaten when flowers are unavailable and it also feeds on insects. Will often nest in tree hollows, but can also construct its own nest. Because of its small size it is able to utilise a range of hollow sizes including very small hollows. Individuals will use a number of different hollows	Low	No	No	No impact	Habitat in the form of woodland with hollow-bearing trees is present within the subject land. In addition eucalypts and bottlebrushes are present. However, the site has been heavily degraded and therefore the subject land is unlikely to provide foraging habitat.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				and an individual has been recorded using up to 9 nest sites within a 0.5 ha area over a 5 month period.					
Chalinolobus dwyeri **Large-eared Pied Bat**	EN	EN	Yes	Occurs from the Queensland border to Ulladulla, with largest numbers from the sandstone escarpment country in the Sydney Basin and Hunter Valley. Primarily found in dry sclerophyll forests and woodlands, but also found in rainforest fringes and subalpine woodlands. Forages on small, flying insects below the forest canopy. Roosts in colonies of between three and 80 in caves, Fairy Martin nests and mines, and beneath rock overhangs, but usually less than 10 individuals. Likely that it hibernates during the cooler months. The only known existing maternity roost is in a sandstone cave near Coonabarabran.	Low	No	No	No impact	The subject land has low topographic relief and there are no rocky areas containing caves within 2 km of the subject land, therefore it is not considered to contain breeding habitat for the species. The species forages in well-timbered areas containing gullies, under the forest canopy, therefore there is unlikely to be any suitable foraging habitat in the subject land. Excluded as a candidate based on habitat constraints in the BAM-C (lack of breeding habitat within two kilometres).
Gallinago hardwickii **Latham's Snipe**	VU	VU	No	Typically found on wet soft ground or shallow water with good cover of tussocks. Often found in wet paddocks, seepage areas below dams.	Low	No	No	No impact	Key habitat for this species is not present within the subject land.

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Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Haliaeetus leucogaster **White-bellied Sea-Eagle**	-	VU	Yes	A migratory species that is generally sedentary in Australia, although immature individuals and some adults are dispersive. Found in terrestrial and coastal wetlands; favouring deep freshwater swamps, lakes and reservoirs; shallow coastal lagoons and saltmarshes. It hunts over open terrestrial habitats. Feeds on birds, reptiles, fish, mammals, crustaceans and carrion. Roosts and makes nest in trees.	Low	No	No	No impact	This species nests on cliff ledges, headlands or at the top of large trees near coasts or rivers. Nests are usually in sight of large waterbodies. The breeding habitat for this species is present in the subject land as it contains mature tall open forest. There are several small dams present in the subject land, but these are not likely to constitute sufficient breeding habitat. No nests or evidence of breeding were observed during the field investigations. Excluded as a candidate based on habitat constraints in the BAM-C (lack of breeding habitat).
Hieraaetus morphnoides **Little Eagle**	-	VU	Yes	The Little Eagle is most abundant in lightly timbered areas with open areas nearby providing an abundance of prey species. It has often been recorded foraging in grasslands, crops, treeless dune fields, and recently logged areas. The Little Eagle nests in tall living trees within farmland, woodland and forests.	Low	No	No	No impact	This species nests in tall living trees within a remnant patch of open eucalypt forest, which is present as habitat in the subject land, however no nests or evidence of breeding was observed during the field investigations. Excluded as a candidate based on habitat constraints in the BAM-C (lack of breeding habitat).
Hirundapus caudacutus **White-throated Needletail**	VU	VU	No	An aerial species found in feeding concentrations over cities, hilltops and timbered ranges. Breeds in Asia.	Low	No	No	No impact	The species has been recorded roosting in trees in forests and woodlands, though little is known about the species. The species does

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									not breed in Australia and nearby sightings are likely vagrants.
Lathamus discolor **Swift Parrot**	CE	EN	Yes	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. Favoured feed trees include winter flowering species such as Swamp Mahogany Eucalyptus robusta, Spotted Gum Corymbia maculata, Red Bloodwood C. gummifera, Mugga Ironbark E. sideroxylon, and White Box E. albens. Commonly used lerp infested trees include Grey Box E. microcarpa, Grey Box E. moluccana and Blackbutt E. pilularis. This species is migratory, breeding in Tasmania and also nomadic, moving about in response to changing food availability.	Low	No	No	No impact	Excluded as a candidate as the subject land is also not included on the Important Areas map for the species.
Limosa limosa **Black-tailed Godwit**	EN	VU	Yes	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern	Low	No	No	No impact	Excluded as a candidate as the subject land is not included on the Important Areas map for the species.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state.					
Litoria aurea **Green and Golden Bell Frog**	VU	EN	Yes	Most existing locations for the species occur as small, coastal, or near coastal populations, with records occurring between south of Grafton and northern VIC. The species is found in marshes, dams and stream sides, particularly those containing bullrushes or spikerushes. Preferred habitat contains water bodies that are unshaded, are free of predatory fish, have a grassy area nearby and have diurnal	Medium	Yes	Yes	No impact	Semi-permanent wet areas associated with a first order creekline are considered potential habitat for the species. There are several small dams and one waterway in the subject land. Targeted survey for the species was conducted and the species was not observed.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				sheltering sites nearby such as vegetation or rocks , although the species has also been recorded from highly disturbed areas including disused industrial sites, brick pits, landfill areas and cleared land. Breeding usually occurs in summer. Tadpoles, which take approximately 10-12 weeks to develop , feed on algae and other vegetative matter. Adults eat insects as well as other frogs, including juveniles of their own species.					
Lophoictinia isura **Square-tailed Kite**	-	VU	Yes	Typically inhabits coastal forested and wooded lands of tropical and temperate Australia. In NSW it is often associated with ridge and gully forests dominated by Eucalyptus longifolia, Corymbia maculata, E. elata, or E. smithii. Individuals appear to occupy large hunting ranges of more than 100 km2. They require large living trees for breeding, particularly near water with surrounding woodland /forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in	Low	No	No	No impact	Breeding habitat for this species includes large eucalypts in preferred vegetation types located along or near watercourses. No nests or evidence of breeding were observed during the field investigations. Excluded as a candidate based on habitat constraints in the BAM-C (lack of breeding habitat).

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Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				a tree fork or on large horizontal limbs.					
Meridolum corneovirens **Cumberland Plain Land Snail**	-	EN	Yes	Most likely restricted to Cumberland Plain, Castlereagh Woodlands and boundaries between River-flat Forest and Cumberland Plain Woodland. It is normally found beneath logs, debris and amongst accumulated leaf and bark particularly at the base of trees. May also use soil cracks for refuge.	Medium	Yes	Yes	No impact	Habitat for this species includes Cumberland Plain Woodland, Shale Gravel Transition Forests, Castlereagh Swamp Woodlands and River-flat Eucalypt Forest. One of these TECs is present in the subject land, and potential habitat exists in the form of leaf litter. Targeted survey for the species was conducted and the species was not observed.
Miniopterus australis **Little Bent-winged Bat**	-	VU	Yes	Occurs from Northern Queensland to the Hawkesbury River near Sydney. Roost sites encompass a range of structures including caves, tunnels and stormwater drains. Young are raised by the females in large maternity colonies in caves in summer. Shows a preference for well timbered areas including rainforest, wet and dry sclerophyll forests, Melaleuca swamps and coastal forests. The Little Bentwing bat forages for small insects (such as moths, wasps and ants) beneath the canopy of densely vegetated habitats.	Low	No	No	No impact	The subject land does not contain habitat features suitable for breeding (i.e. caves, mines or tunnels). Excluded as a candidate based on habitat constraints in the BAM-C (lack of breeding habitat).

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Miniopterus orianae oceanensis **Large Bent-winged Bat**	-	VU	Yes	Occurs from Victoria to Queensland, on both sides of the Great Dividing Range. Forms large maternity roosts (up to 100,000 individuals) in caves and mines in spring and summer. Individuals may fly several hundred kilometres to their wintering sites, where they roost in caves, culverts, buildings, and bridges. They occur in a broad range of habitats including rainforest, wet and dry sclerophyll forest, paperbark forest and open grasslands. Has a fast, direct flight and forages for flying insects (particularly moths) above the tree canopy and along waterways.	Low	No	No	No impact	The subject land does not contain habitat features suitable for breeding (i.e. caves, mines or tunnels). Excluded as a candidate based on habitat constraints in the BAM-C (lack of breeding habitat).
Myotis macropus **Southern Myotis**	-	VU	Yes	Scattered, mainly coastal distribution extending to South Australia along the Murray River. Roosts in caves, mines or tunnels, under bridges, in buildings, tree hollows, and even in dense foliage. Colonies occur close to water bodies, ranging from rainforest streams to large lakes and reservoirs. They catch aquatic insects and small fish with their	Medium	Yes	Yes	No impact	Breeding and foraging habitat was considered to be present within the subject land due to the presence of associated PCTs within 200 m of the dams and hollow-bearing trees. Targeted survey for the species was conducted and the species was not detected.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				large hind claws, and also catch flying insects.					
Ninox connivens **Barking Owl**	-	VU	Yes	Generally found in open forests, woodlands, swamp woodlands, farmlands and dense scrub. Can also be found in the foothills and timber along watercourses in otherwise open country. Territories are typically 2000 ha in NSW habitats. Hunts small arboreal mammals or birds and terrestrial mammals when tree hollows are absent.	Low	No	No	No impact	Potential breeding habitat in the form of hollow-bearing trees present in the subject land, though not suitably sized for this species and the habitat is substantially degraded. Excluded as a candidate based on habitat constraints in the BAM-C (lack of suitable hollows for breeding).
Ninox strenua **Powerful Owl**	-	VU	Yes	The Powerful Owl occupies wet and dry eucalypt forests and rainforests. It may inhabit both un-logged and lightly logged forests as well as undisturbed forests where it usually roosts on the limbs of dense trees in gully areas. Large mature trees with hollows at least 0.5 m deep are required for nesting. Tree hollows are particularly important for the Powerful Owl because a large proportion of the diet is made up of hollow-dependent arboreal marsupials. Nest trees for this species are usually emergent with a diameter at breast height of at least 100 cm. It has	Low	No	No	No impact	Potential breeding habitat in the form of hollow-bearing trees present in the subject land, though not suitably sized for this species and the habitat is substantially degraded. Excluded as a candidate based on habitat constraints in the BAM-C (lack of suitable hollows for breeding).

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				a large home range of between 450 and 1450 ha.					
Pandion haliaetus cristatus **Eastern Osprey**	-	VU	Yes	Found in coastal waters, inlets, estuaries and offshore islands. Occasionally found 100 km inland along larger rivers. It is water-dependent, hunting for fish in clear, open water. The Osprey occurs in terrestrial wetlands, coastal lands and offshore islands. It is a predominantly coastal species, generally using marine cliffs as nesting and roosting sites. Nests can also be made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	Low	No	No	No impact	Breeding habitat for this species consists of dead trees or artificial structures that are located within 100 m of a floodplain, with a preference for coastline, therefore the habitat is absent in the subject land. No nests or evidence of breeding were found during the field investigations. Excluded as a candidate based on habitat constraints in the BAM-C (lack of breeding habitat).
Petaurus norfolcensis **Squirrel Glider**	-	VU, E2	Yes	Generally occurs in dry sclerophyll forests and woodlands but is absent from dense coastal ranges in the southern part of its range. Requires abundant hollow-bearing trees and a mix of eucalypts, banksias and acacias. Within a suitable vegetation community at least one species should flower heavily in winter and one	Low	No	No	No impact	This species prefers Blackbutt-Bloodwood forest with a heath understorey and an Acacia midstorey, which is absent from the subject land. The species requires hollow-abundant vegetation for refuge or breeding sites. While two medium hollows and five stag trees are present, it is unlikely that there is sufficient abundance for the species. This species has not been observed within 10 km of the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				species of eucalypt should be smooth barked.					Excluded as a candidate based on habitat degradation.
Phascolarctos cinereus **Koala**	EN	EN, E2	Yes	In NSW the Koala mainly occurs on the central and north coasts with some populations in the western region. Koalas feed almost exclusively on eucalypt foliage, and their preferences vary regionally. Primary feed trees include Eucalyptus robusta, E. tereticornis, E. punctata, E. haemostoma and E. signata. They are solitary with varying home ranges.	Medium	Yes	Yes	No impact	Native vegetation containing Koala food trees are of poor quality, being heavily degraded by past disturbance and clearance. It is unlikely that the subject land is used by individuals for foraging habitat due to the poor-quality of the vegetation, however targeted survey was undertaken in the form of SAT surveys and spotlighting, and the species was not detected.
Pluvialis squatarola **Grey Plover**	VU	-	No	Almost entirely coastal, but occasionally recorded on inland wetlands. Mainly on marine shores, inlets, estuaries and lagoons where there are nearby large tidal mudflats or sandflats for feeding and sandy beaches for roosting.	Low	No	No	No impact	The habitat for this species is not present in the subject land, as it is over 5 km from coastal waterbodies. While there are dams present in the subject land, observations are generally from wetlands and/or seepages.
Pteropus poliocephalus **Grey-headed Flying-fox**	VU	VU	Yes	Occurs along the NSW coast, extending further inland in the north. This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia	Low	No	No	Potential for impact to foraging habitat	No camps (communal breeding/roosting sites) were identified within the subject land during the field investigations. Excluded as a candidate based on habitat constraints in the BAM-C (lack of breeding camps).

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				woodlands. Roosts in large colonies, commonly in dense riparian vegetation.					
Tyto novaehollandiae **Masked Owl**	-	VU	Yes	The Masked Owl is found in range of wooded habitats that provide tall or dense mature trees with hollows suitable for nesting and roosting. It is mostly seen in open forests and woodlands adjacent to cleared lands. Prey includes hollow-dependent arboreal marsupials and terrestrial mammals.	Low	No	No	No impact	This species breeds in moist eucalypt forests and woodlands, and the species relies on medium sized hollows with close proximity to open habitat. Potential breeding habitat in the form of hollow-bearing trees present in the subject land, though not suitably sized for this species and the habitat is substantially degraded. Excluded as a candidate based on habitat constraints in the BAM-C (lack of suitable hollows for breeding).

Appendix 3 Flora

Appendix 3.1 Incidental flora species

Table A 3 Flora species recorded incidentally at the subject land

Scientific name	Common name
Native species	
Acacia implexa	Hickory Wattle
Callistemon citrinus	Crimson Bottlebrush
Centella asiatica	Indian Pennywort
***Chenopodium* spp.**	Goosefoot, Crumbweed
Chloris truncata	Windmill Grass
Cynodon dactylon	Common Couch
Cyperus gracilis	Slender Flat-sedge
***Cyperus* spp.**	-
Dianella caerulea* var. *caerulea	-
Dichelachne micrantha	Shorthair Plumegrass
Dichondra repens	Kidney Weed
Einadia hastata	Berry Saltbush
Einadia nutans	Climbing Saltbush
Eucalyptus amplifolia	Cabbage Gum
Eucalyptus amplifolia* subsp. *amplifolia	-
Eucalyptus camaldulensis	River Red Gum
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus microcorys	Tallowwood
Eucalyptus moluccana	Grey Box
Eucalyptus tereticornis	Forest Red Gum
Eucalyptus tereticornis subsp. tereticornis	-
Glycine clandestina	Twining glycine
Glycine microphylla	Small-leaf Glycine
Glycine tabacina	Variable Glycine
Grevillea robusta	Silky Oak
Hypericum gramineum	Small St John's Wort
Juncus usitatus	-
Lobelia purpurascens	Whiteroot
Ludwigia peploides* subsp. *montevidensis	Water Primrose
Melaleuca alternifolia	-
Melaleuca armillaris subsp. armillaris	Bracelet Honey-myrtle

Scientific name	Common name
Melaleuca bracteata	Black Tea-tree
Microlaena stipoides	Weeping Grass
Microlaena stipoides* var. *stipoides	Weeping Grass
Persicaria decipiens	Slender Knotweed
Phragmites australis	Common Reed
***Rumex* spp.**	Dock
***Senecio* spp.**	Groundsel, Fireweed
***Senna* spp.**	-
Typha orientalis	Broad-leaved Cumbungi
Exotic species	
Ageratina adenophora	Crofton Weed
Alternanthera pungens	Khaki Weed
Anredera cordifolia	Madeira Vine
Araujia sericifera	Moth Vine
Artemisia verlotiorum	Chinese Wormwood
Arundo donax	Giant Reed
Asparagus aethiopicus	Asparagus Fern
Asparagus asparagoides	Bridal Creeper
Asparagus plumosus	Climbing Asparagus Fern
Aster subulatus	Wild Aster
Avena barbata	Bearded Oats
Avena fatua	Wild Oats
Avena sativa	Oats
Bidens pilosa	Cobbler's Pegs
Brassica fruticulosa	Twiggy Turnip
Brassicaceae indeterminate	Mustards
Briza subaristata	
Bromus catharticus	Praire Grass
Cardamine hirsuta	Common Bittercress
Cenchrus clandestinus	Kikuyu Grass
Cestrum parqui	Green Cestrum
Chloris gayana	Rhodes Grass
Cirsium vulgare	Spear Thistle
Conyza bonariensis	Flaxleaf Fleabane
Corymbia citriodora	Lemon-scented Gum
Daucus carota	Wild Carrot
Digitaria sanguinalis	Crab Grass

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Scientific name	Common name
Ehrharta erecta	Panic Veldtgrass
Eleusine indica	Crowsfoot Grass
Eragrostis curvula	African Lovegrass
Eriobotrya japonica	Loquat
Foeniculum vulgare	Fennel
Fumaria bastardii	Bastards Fumitory
Galium aparine	Goosegrass
Geranium molle* subsp. *molle	Cranesbill Geranium
Hypochaeris radicata	Catsear
Jacaranda mimosifolia	Jacaranda
Juncus acutus subsp. acutus	Sharp Rush
Juncus effusus	-
Lactuca serriola	Prickly Lettuce
Lagerstroemia indica	-
Lantana camara	Lantana
Ligustrum lucidum	Large-leaved Privet
Ligustrum sinense	Small-leaved Privet
Lolium perenne	Perennial Ryegrass
Lotus angustissimus	Slender Birds-foot Trefoil
Ludwigia peruviana	
Lycium ferocissimum	African Boxthorn
Lysimachia arvensis	Scarlet Pimpernel
Modiola caroliniana	Red-flowered Mallow
Morus alba	White Mulberry
Olea europaea	Common Olive
Olea europaea subsp. cuspidata	African Olive
Opuntia stricta	Common Prickly Pear
Opuntia stricta* var. *stricta	Common Prickly Pear
Oxalis corniculata	Creeping Oxalis
Parietaria judaica	Pellitory
Paronychia brasiliana	Chilean Whitlow Wort, Brazilian Whitlow
Paspalum dilatatum	Paspalum
Passiflora caerulea	Blue Passionflower
Passiflora suberosa	Cork Passionfruit
***Phalaris* spp.**	-
Phoenix canariensis	Canary Island Date Palm
Phoenix dactylifera	Date Palm

Scientific name	Common name
Phytolacca octandra	Inkweed
Plantago lanceolata	Lamb's Tongues
Plumbago auriculata	Cape leadwot
Poa annua	Winter Grass
Ricinus communis	Castor Oil Plant
***Rubus fruticosus* sp. agg.**	Blackberry complex
Rumex crispus	Curled Dock
Senecio madagascariensis	Fireweed
Senecio pterophorus	-
Setaria parviflora	-
Setaria pumila	Pale Pigeon Grass
Sida rhombifolia	Paddy's Lucerne
Solanum nigrum	Black-berry Nightshade
Solanum pseudocapsicum	Madeira Winter Cherry
Sonchus oleraceus	Common Sowthistle
Stenotaphrum secundatum	Buffalo Grass
Taraxacum officinale	Dandelion
Tradescantia fluminensis	Wandering Jew
Tragopogon porrifolius* subsp. *porrifolius	Salsify
Trifolium repens	White Clover
Urochloa panicoides	Urochloa Grass
Verbena bonariensis	Purpletop
Vicia sativa	Common vetch
Vicia sativa* subsp. *nigra	Narrow-leaved Vetch
Vicia sativa* subsp. *sativa	Common Vetch
Vinca major	Periwinkle

Appendix 3.2 BAM plot field data

Table A 4 BAM plot floristics (Plots 1-7)

Family	Scientific name	Common name	40675.B01		40675.B02		40675.B03		40675.B04		40675.B05		40675.B06		40675.B07	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Native species																
Apiaceae	*Centella asiatica*	Indian Pennywort	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asphodelaceae	*Dianella caerulea* var. *caerulea*	-	-	-	-	-	-	-	0.3	20	-	-	-	-	-	-
Asteraceae	*Senecio pterophorus*	-	-	-	0.5	100	-	-	0.1	2	-	-	-	-	-	-
Campanulaceae	*Lobelia purpurascens*	Whiteroot	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chenopodiaceae	*Einadia hastata*	Berry Saltbush	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chenopodiaceae	*Einadia nutans*	Climbing Saltbush	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chenopodiaceae	*Chenopodium* spp.	Goosefoot, Crumbweed	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clusiaceae	*Hypericum gramineum*	Small St John's Wort	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Convolvulaceae	*Dichondra repens*	Kidney Weed	-	-	0.1	10	-	-	-	-	-	-	-	-	0.1	20
Cyperaceae	*Cyperus* spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyperaceae	*Cyperus gracilis*	Slender Flat-sedge	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fabaceae (Faboideae)	*Glycine microphylla*	Small-leaf Glycine	-	-	-	-	-	-	-	-	-	-	-	-	0.1	10
Fabaceae (Faboideae)	*Glycine clandestina*	Twining glycine	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fabaceae (Faboideae)	*Glycine tabacina*	Variable Glycine	0.1	5	-	-	-	-	-	-	-	-	-	-	-	-
Fabaceae (Mimosoideae)	*Acacia implexa*	Hickory Wattle	-	-	-	-	-	-	1	3	-	-	-	-	-	-
Juncaceae	*Juncus usitatus*	-	-	-	-	-	0.2	30	0.1	5	-	-	-	-	-	-
Moraceae	*Morus alba*	White Mulberry	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Family	Scientific name	Common name	40675.B01		40675.B02		40675.B03		40675.B04		40675.B05		40675.B06		40675.B07	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Myrtaceae	*Melaleuca bracteata*	Black Tea-tree	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Melaleuca armillaris* subsp. *armillaris*	Bracelet Honey-myrtle	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Eucalyptus amplifolia*	Cabbage Gum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Callistemon citrinus*	Crimson Bottlebrush	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Eucalyptus tereticornis*	Forest Red Gum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Eucalyptus moluccana*	Grey Box	40	6	-	-	-	-	-	-	-	-	-	-	5	2
Myrtaceae	*Eucalyptus crebra*	Narrow-leaved Ironbark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Eucalyptus amplifolia* subsp. *amplifolia*	-	-	-	10	2	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Eucalyptus tereticornis* subsp. *tereticornis*	-	20	4	30	3	-	-	15	30	-	-	-	-	-	-
Myrtaceae	*Melaleuca alternifolia*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Onagraceae	*Ludwigia peploides* subsp. *montevidensis*	Water Primrose	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Cynodon dactylon*	Common Couch	-	-	1	300	1	300	10	1000	0.5	200	-	-	-	-
Poaceae	*Phragmites australis*	Common Reed	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Dichelachne micrantha*	Shorthair Plumegrass	-	-	-	-	-	-	0.1	1	-	-	-	-	-	-
Poaceae	*Microlaena stipoides*	Weeping Grass	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Microlaena stipoides* var. *stipoides*	Weeping Grass	-	-	0.1	50	-	-	1	300	-	-	-	-	-	-
Poaceae	*Chloris truncata*	Windmill Grass	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polygonaceae	*Rumex* spp.	Dock	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Family	Scientific name	Common name	40675.B01		40675.B02		40675.B03		40675.B04		40675.B05		40675.B06		40675.B07	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Polygonaceae	*Persicaria decipiens*	Slender Knotweed	-	-	-	-	1	100	-	-	-	-	-	-	-	-
Proteaceae	*Grevillea robusta*	Silky Oak	-	-	-	-	-	-	0.1	1	-	-	-	-	-	-
Typhaceae	*Typha orientalis*	Broad-leaved Cumbungi	-	-	-	-	10	500	0.1	10	-	-	-	-	-	-
Introduced species																
Asteraceae	*Ageratina adenophora*	Crofton Weed	0.5	30	-	-	-	-	-	-	-	-	-	-	-	-
Amaranthaceae	*Alternanthera pungens*	Khaki Weed	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Basellaceae	*Anredera cordifolia*	Madeira Vine	3	50	-	-	-	-	-	-	-	-	-	-	-	-
Apocynaceae	*Araujia sericifera*	Moth Vine	0.5	10	0.1	1	-	-	0.1	1	0.1	5	-	-	-	-
Asteraceae	*Artemisia verlotiorum*	Chinese Wormwood	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Arundo donax*	Giant Reed	-	-	0.1	10	-	-	-	-	-	-	-	-	-	-
Asparagaceae	*Asparagus aethiopicus*	Asparagus Fern	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asparagaceae	*Asparagus asparagoides*	Bridal Creeper	0.1	1	0.1	10	0.1	1	0.1	1	0.1	1	-	-	-	-
Asparagaceae	*Asparagus plumosus*	Climbing Asparagus Fern	-	-	0.5	20	-	-	-	-	-	-	-	-	-	-
Asteraceae	*Aster subulatus*	Wild Aster	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Avena barbata*	Bearded Oats	-	-	5	100	-	-	0.1	20	0.5	100	0.5	200	-	-
Poaceae	*Avena fatua*	Wild Oats	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Avena sativa*	Oats	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asteraceae	*Bidens pilosa*	Cobbler's Pegs	4	300	5	500	0.1	1	0.1	5	0.1	1	-	-	0.1	1
Brassicaceae	*Brassica fruticulosa*	Twiggy Turnip	-	-	0.1	50	-	-	0.1	5	-	-	-	-	-	-
Brassicaceae	*Brassicaceae indeterminate*	Mustards	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Briza subaristata*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Bromus catharticus*	Praire Grass	-	-	-	-	-	-	0.1	30	-	-	-	-	-	-

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Family	Scientific name	Common name	40675.B01		40675.B02		40675.B03		40675.B04		40675.B05		40675.B06		40675.B07	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Brassicaceae	*Cardamine hirsuta*	Common Bittercress	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Cenchrus clandestinus*	Kikuyu Grass	-	-	30	1000	1	500	20	1000	95	1000	95	1000	95	1000
Solanaceae	*Cestrum parqui*	Green Cestrum	5	20	20	50	-	-	-	-	-	-	-	-	-	-
Poaceae	*Chloris gayana*	Rhodes Grass	-	-	-	-	-	-	-	-	-	-	-	-	0.5	100
Asteraceae	*Cirsium vulgare*	Spear Thistle	0.1	1	-	-	-	-	0.1	1	0.1	2	0.5	10	0.1	2
Asteraceae	*Conyza bonariensis*	Flaxleaf Fleabane	0.1	5	-	-	-	-	-	-	-	-	-	-	0.1	1
Myrtaceae	*Corymbia citriodora*	Lemon-scented Gum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Apiaceae	*Daucus carota*	Wild Carrot	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Digitaria sanguinalis*	Crab Grass	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Ehrharta erecta*	Panic Veldtgrass	70	1000	30	1000	-	-	-	-	-	-	-	-	-	-
Poaceae	*Eleusine indica*	Crowsfoot Grass	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Eragrostis curvula*	African Lovegrass	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malaceae	*Eriobotrya japonica*	Loquat	-	-	-	-	-	-	0.5	1	-	-	-	-	-	-
Apiaceae	*Foeniculum vulgare*	Fennel	0.1	1	-	-	-	-	-	-	0.1	10	-	-	2	100
Fumariaceae	*Fumaria bastardii*	Bastards Fumitory	0.1	5	-	-	-	-	-	-	-	-	-	-	-	-
Rubiaceae	*Galium aparine*	Goosegrass	0.1	5	0.1	10	-	-	0.1	1	0.1	20	-	-	-	-
Geraniaceae	*Geranium molle* subsp. *molle*	Cranesbill Geranium	0.1	5	-	-	-	-	-	-	-	-	-	-	-	-
Asteraceae	*Hypochaeris radicata*	Catsear	-	-	0.1	10	-	-	0.1	10	-	-	0.1	1	-	-
Bignoniaceae	*Jacaranda mimosifolia*	Jacaranda	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Juncaceae	*Juncus acutus* subsp. *acutus*	Sharp Rush	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Family	Scientific name	Common name	40675.B01		40675.B02		40675.B03		40675.B04		40675.B05		40675.B06		40675.B07	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Juncaceae	*Juncus effusus*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asteraceae	*Lactuca serriola*	Prickly Lettuce	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lythraceae	*Lagerstroemia indica*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Verbenaceae	*Lantana camara*	Lantana	-	-	-	-	-	-	0.1	3	-	-	-	-	-	-
Oleaceae	*Ligustrum lucidum*	Large-leaved Privet	0.5	5	-	-	-	-	0.1	5	-	-	-	-	-	-
Oleaceae	*Ligustrum sinense*	Small-leaved Privet	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Lolium perenne*	Perennial Ryegrass	-	-	-	-	-	-	0.1	1	-	-	-	-	-	-
Fabaceae (Faboideae)	*Lotus angustissimus*	Slender Birds-foot Trefoil	-	-	-	-	-	-	0.1	20	-	-	-	-	-	-
Onagraceae	*Ludwigia peruviana*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Solanaceae	*Lycium ferocissimum*	African Boxthorn	-	-	0.5	2	-	-	-	-	-	-	-	-	0.1	1
Primulaceae	*Lysimachia arvensis*	Scarlet Pimpernel	0.1	30	-	-	-	-	-	-	-	-	-	-	-	-
Malvaceae	*Modiola caroliniana*	Red-flowered Mallow	-	-	-	-	-	-	0.1	1	0.1	5	-	-	0.1	3
Oleaceae	*Olea europaea*	Common Olive	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oleaceae	*Olea europaea subsp. cuspidata*	African Olive	-	-	0.2	1	0.5	5	1	10	-	-	-	-	0.1	2
Cactaceae	*Opuntia stricta*	Common Prickly Pear	-	-	0.1	1	-	-	-	-	-	-	-	-	0.1	1
Cactaceae	*Opuntia stricta* var. *stricta*	Common Prickly Pear	-	-	-	-	-	-	0.1	5	-	-	-	-	-	-
Oxalidaceae	*Oxalis corniculata*	Creeping Oxalis	0.1	5	0.1	10	-	-	-	-	-	-	-	-	-	-
Urticaceae	*Parietaria judaica*	Pellitory	0.5	1	-	-	-	-	-	-	-	-	-	-	-	-
Caryophyllaceae	*Paronychia brasiliana*	Chilean Whitlow Wort, Brazilian Whitlow	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Paspalum dilatatum*	Paspalum	-	-	-	-	-	-	0.1	10	-	-	0.1	10	-	-
Passifloraceae	*Passiflora caerulea*	Blue Passionflower	-	-	-	-	-	-	-	-	0.5	100	-	-	-	-

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Family	Scientific name	Common name	40675.B01		40675.B02		40675.B03		40675.B04		40675.B05		40675.B06		40675.B07	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Passifloraceae	*Passiflora suberosa*	Cork Passionfruit	-	-	-	-	-	-	0.1	1	-	-	-	-	-	-
Poaceae	*Phalaris* spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arecaceae	*Phoenix canariensis*	Canary Island Date Palm	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arecaceae	*Phoenix dactylifera*	Date Palm	-	-	0.1	1	-	-	0.1	1	-	-	-	-	-	-
Phytolaccaceae	*Phytolacca octandra*	Inkweed	0.5	5	-	-	-	-	-	-	-	-	-	-	-	-
Plantaginaceae	*Plantago lanceolata*	Lamb's Tongues	0.3	100	-	-	0.1	5	0.1	20	0.1	10	0.1	20	0.1	20
Plumbaginaceae	*Plumbago auriculata*	Cape leadwot	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Poa annua*	Winter Grass	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rosaceae	*Rubus fruticosus* sp. agg.	Blackberry complex	-	-	-	-	0.5	30	-	-	-	-	-	-	-	-
Polygonaceae	*Rumex crispus*	Curled Dock	-	-	-	-	-	-	0.1	10	-	-	-	-	0.1	2
Asteraceae	*Senecio madagascariensis*	Fireweed	-	-	-	-	0.1	3	0.1	20	0.1	3	-	-	-	-
Poaceae	*Setaria parviflora*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Setaria pumila*	Pale Pigeon Grass	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malvaceae	*Sida rhombifolia*	Paddy's Lucerne	0.1	1	0.1	5	-	-	-	-	0.1	10	-	-	0.1	5
Solanaceae	*Solanum nigrum*	Black-berry Nightshade	0.1	1	0.1	10	-	-	0.1	1	-	-	-	-	0.1	1
Solanaceae	*Solanum pseudocapsicum*	Madeira Winter Cherry	0.5	100	-	-	-	-	-	-	-	-	-	-	-	-
Asteraceae	*Sonchus oleraceus*	Common Sowthistle	0.5	50	0.5	20	-	-	0.1	5	0.1	5	-	-	0.1	1
Poaceae	*Stenotaphrum secundatum*	Buffalo Grass	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asteraceae	*Taraxacum officinale*	Dandelion	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Commelinaceae	*Tradescantia fluminensis*	Wandering Jew	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asteraceae	*Tragopogon porrifolius* subsp. *porrifolius*	Salsify	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Family	Scientific name	Common name	40675.B01		40675.B02		40675.B03		40675.B04		40675.B05		40675.B06		40675.B07	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Fabaceae (Faboideae)	*Trifolium repens*	White Clover	0.1	50	-	-	-	-	0.1	50	-	-	-	-	0.1	10
Poaceae	*Urochloa panicoides*	Urochloa Grass	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Verbenaceae	*Verbena bonariensis*	Purpletop	-	-	-	-	-	-	0.1	10	0.1	10	0.1	20	0.1	20
Fabaceae (Faboideae)	*Vicia sativa*	Common vetch	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fabaceae (Faboideae)	*Vicia sativa* subsp. *nigra*	Narrow-leaved Vetch	-	-	-	-	-	-	-	-	-	-	-	-	0.1	50
Fabaceae (Faboideae)	*Vicia sativa* subsp. *sativa*	Common Vetch	-	-	0.1	10	0.1	10	-	-	0.5	200	0.1	1	0.3	100
Apocynaceae	*Vinca major*	Periwinkle	-	-	-	-	-	-	-	-	-	-	-	-	0.1	1

Table A 5 BAM plot floristics (Plots 8-13)

Family	Scientific name	Common name	40675.B08		40675.B09		40675.B10		40675.B11		40675.B12		40675.B13	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Native species														
Apiaceae	*Centella asiatica*	Indian Pennywort	-	-	-	-	-	-	-	-	-	-	-	-
Asphodelaceae	*Dianella caerulea* var. *caerulea*	-	-	-	-	-	-	-	-	-	-	-	-	-
Asteraceae	*Senecio pterophorus*	-	0.5	20	0.5	20	-	-	-	-	-	-	-	-
Campanulaceae	*Lobelia purpurascens*	Whiteroot	-	-	-	-	-	-	-	-	-	-	-	-
Chenopodiaceae	*Einadia hastata*	Berry Saltbush	-	-	-	-	0.5	100	-	-	-	-	0.1	2
Chenopodiaceae	*Einadia nutans*	Climbing Saltbush	-	-	-	-	-	-	-	-	-	-	-	-
Chenopodiaceae	*Chenopodium* spp.	Goosefoot, Crumbweed	-	-	-	-	-	-	-	-	0.1	1	-	-
Clusiaceae	*Hypericum gramineum*	Small St John's Wort	-	-	-	-	-	-	-	-	-	-	-	-

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Family	Scientific name	Common name	40675.B08		40675.B09		40675.B10		40675.B11		40675.B12		40675.B13	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Convolvulaceae	*Dichondra repens*	Kidney Weed	-	-	0.1	10	-	-	-	-	-	-	-	-
Cyperaceae	*Cyperus* spp.	-	-	-	0.1	1	-	-	-	-	-	-	-	-
Cyperaceae	*Cyperus gracilis*	Slender Flat-sedge	-	-	-	-	-	-	-	-	-	-	-	-
Fabaceae (Faboideae)	*Glycine microphylla*	Small-leaf Glycine	-	-	-	-	-	-	-	-	-	-	-	-
Fabaceae (Faboideae)	*Glycine clandestina*	Twining glycine	-	-	-	-	-	-	-	-	-	-	-	-
Fabaceae (Faboideae)	*Glycine tabacina*	Variable Glycine	-	-	-	-	-	-	-	-	-	-	-	-
Fabaceae (Mimosoideae)	*Acacia implexa*	Hickory Wattle	-	-	-	-	-	-	-	-	-	-	-	-
Juncaceae	*Juncus usitatus*	-	-	-	-	-	-	-	-	-	-	-	-	-
Moraceae	*Morus alba*	White Mulberry	-	-	0.5	1	-	-	-	-	15	2	-	-
Myrtaceae	*Melaleuca bracteata*	Black Tea-tree	-	-	-	-	20	8	-	-	-	-	-	-
Myrtaceae	*Melaleuca armillaris* subsp. *armillaris*	Bracelet Honey-myrtle	-	-	-	-	-	-	-	-	-	-	0.7	1
Myrtaceae	*Eucalyptus amplifolia*	Cabbage Gum	-	-	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Callistemon citrinus*	Crimson Bottlebrush	-	-	-	-	-	-	-	-	-	-	5	2
Myrtaceae	*Eucalyptus tereticornis*	Forest Red Gum	-	-	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Eucalyptus moluccana*	Grey Box	-	-	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Eucalyptus crebra*	Narrow-leaved Ironbark	-	-	-	-	10	5	-	-	-	-	-	-
Myrtaceae	*Eucalyptus amplifolia* subsp. *amplifolia*	-	-	-	-	-	-	-	-	-	-	-	-	-
Myrtaceae	*Eucalyptus tereticornis* subsp. *tereticornis*	-	-	-	-	-	1	1	-	-	-	-	-	-
Myrtaceae	*Melaleuca alternifolia*	-	-	-	-	-	-	-	-	-	-	-	1	1

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Family	Scientific name	Common name	40675.B08		40675.B09		40675.B10		40675.B11		40675.B12		40675.B13	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Onagraceae	*Ludwigia peploides subsp. montevidensis*	Water Primrose	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Cynodon dactylon*	Common Couch	-	-	-	-	0.5	200	5	400	-	-	1	30
Poaceae	*Phragmites australis*	Common Reed	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Dichelachne micrantha*	Shorthair Plumegrass	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Microlaena stipoides*	Weeping Grass	-	-	-	-	-	-	-	-	0.1	10	-	-
Poaceae	*Microlaena stipoides* var. *stipoides*	Weeping Grass	-	-	0.1	50	-	-	-	-	-	-	-	-
Poaceae	*Chloris truncata*	Windmill Grass	-	-	-	-	-	-	-	-	-	-	-	-
Polygonaceae	*Rumex* spp.	Dock	-	-	-	-	-	-	-	-	0.1	1	-	-
Polygonaceae	*Persicaria decipiens*	Slender Knotweed	-	-	-	-	-	-	-	-	-	-	-	-
Proteaceae	*Grevillea robusta*	Silky Oak	-	-	-	-	-	-	-	-	-	-	-	-
Typhaceae	*Typha orientalis*	Broad-leaved Cumbungi	-	-	-	-	-	-	-	-	-	-	-	-
Introduced species														
Asteraceae	*Ageratina adenophora*	Crofton Weed	-	-	0.1	10	-	-	-	-	-	-	-	-
Amaranthaceae	*Alternanthera pungens*	Khaki Weed	-	-	-	-	-	-	-	-	-	-	-	-
Basellaceae	*Anredera cordifolia*	Madeira Vine	-	-	-	-	-	-	-	-	-	-	-	-
Apocynaceae	*Araujia sericifera*	Moth Vine	-	-	0.1	10	0.1	1	3	20	5	30	-	-
Asteraceae	*Artemisia verlotiorum*	Chinese Wormwood	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Arundo donax*	Giant Reed	-	-	-	-	-	-	-	-	-	-	-	-
Asparagaceae	*Asparagus aethiopicus*	Asparagus Fern	-	-	-	-	0.1	1	-	-	0.1	1	-	-
Asparagaceae	*Asparagus asparagoides*	Bridal Creeper	-	-	0.1	10	-	-	-	-	-	-	-	-
Asparagaceae	*Asparagus plumosus*	Climbing Asparagus Fern	-	-	-	-	-	-	-	-	-	-	-	-

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Family	Scientific name	Common name	40675.B08		40675.B09		40675.B10		40675.B11		40675.B12		40675.B13	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Asteraceae	*Aster subulatus*	Wild Aster	-	-	-	-	-	-	0.1	3	-	-	-	-
Poaceae	*Avena barbata*	Bearded Oats	0.5	50	0.1	20	0.1	10	-	-	-	-	-	-
Poaceae	*Avena fatua*	Wild Oats	-	-	-	-	-	-	0.2	20	-	-	3	100
Poaceae	*Avena sativa*	Oats	-	-	-	-	-	-	-	-	5	200	-	-
Asteraceae	*Bidens pilosa*	Cobbler's Pegs	-	-	0.1	30	0.5	50	-	-	0.1	3	-	-
Brassicaceae	*Brassica fruticulosa*	Twiggy Turnip	-	-	1	100	-	-	-	-	-	-	-	-
Brassicaceae	*Brassicaceae indeterminate*	Mustards	-	-	-	-	-	-	-	-	0.1	10	-	-
Poaceae	*Briza subaristata*	-	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Bromus catharticus*	Praire Grass	-	-	1	100	-	-	70	1000	25	500	2	50
Brassicaceae	*Cardamine hirsuta*	Common Bittercress	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Cenchrus clandestinus*	Kikuyu Grass	95	1000	30	1000	5	500	1	50	5	200	60	1000
Solanaceae	*Cestrum parqui*	Green Cestrum	-	-	5	100	0.1	1	-	-	0.5	3	-	-
Poaceae	*Chloris gayana*	Rhodes Grass	-	-	-	-	1	200	-	-	-	-	-	-
Asteraceae	*Cirsium vulgare*	Spear Thistle	1	20	0.1	10	-	-	0.1	10	0.2	10	0.2	8
Asteraceae	*Conyza bonariensis*	Flaxleaf Fleabane	0.3	50	0.1	50	-	-	0.1	1	0.1	2	-	-
Myrtaceae	*Corymbia citriodora*	Lemon-scented Gum	-	-	-	-	10	4	-	-	-	-	-	-
Apiaceae	*Daucus carota*	Wild Carrot	-	-	-	-	-	-	-	-	0.1	5	-	-
Poaceae	*Digitaria sanguinalis*	Crab Grass	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Ehrharta erecta*	Panic Veldtgrass	0.1	50	50	1000	2	300	-	-	3	100	-	-
Poaceae	*Eleusine indica*	Crowsfoot Grass	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Eragrostis curvula*	African Lovegrass	-	-	-	-	5	500	0.2	20	-	-	-	-
Malaceae	*Eriobotrya japonica*	Loquat	-	-	-	-	-	-	-	-	-	-	-	-

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Family	Scientific name	Common name	40675.B08		40675.B09		40675.B10		40675.B11		40675.B12		40675.B13	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Apiaceae	*Foeniculum vulgare*	Fennel	0.1	1	3	100	-	-	0.1	1	-	-	-	-
Fumariaceae	*Fumaria bastardii*	Bastards Fumitory	-	-	-	-	-	-	-	-	-	-	-	-
Rubiaceae	*Galium aparine*	Goosegrass	0.1	1	0.1	20	-	-	-	-	-	-	-	-
Geraniaceae	*Geranium molle* subsp. *molle*	Cranesbill Geranium	-	-	-	-	-	-	-	-	-	-	-	-
Asteraceae	*Hypochaeris radicata*	Catsear	0.1	10	-	-	0.1	1	-	-	-	-	-	-
Bignoniaceae	*Jacaranda mimosifolia*	Jacaranda	-	-	-	-	-	-	-	-	-	-	0.5	1
Juncaceae	*Juncus acutus subsp. acutus*	Sharp Rush	-	-	-	-	-	-	-	-	-	-	-	-
Juncaceae	*Juncus effusus*	-	-	-	-	-	-	-	0.1	1	-	-	-	-
Asteraceae	*Lactuca serriola*	Prickly Lettuce	-	-	-	-	-	-	0.1	1	0.1	5	-	-
Lythraceae	*Lagerstroemia indica*	-	-	-	-	-	-	-	-	-	-	-	3	6
Verbenaceae	*Lantana camara*	Lantana	-	-	2	10	-	-	-	-	0.5	3	-	-
Oleaceae	*Ligustrum lucidum*	Large-leaved Privet	-	-	-	-	-	-	-	-	2	10	0.1	1
Oleaceae	*Ligustrum sinense*	Small-leaved Privet	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Lolium perenne*	Perennial Ryegrass	-	-	0.1	1	-	-	-	-	5	200	-	-
Fabaceae (Faboideae)	*Lotus angustissimus*	Slender Birds-foot Trefoil	-	-	0.1	100	0.1	20	-	-	-	-	-	-
Onagraceae	*Ludwigia peruviana*	-	-	-	-	-	-	-	-	-	-	-	-	-
Solanaceae	*Lycium ferocissimum*	African Boxthorn	-	-	-	-	-	-	-	-	-	-	-	-
Primulaceae	*Lysimachia arvensis*	Scarlet Pimpernel	-	-	0.1	1	-	-	-	-	-	-	-	-
Malvaceae	*Modiola caroliniana*	Red-flowered Mallow	-	-	0.1	10	0.1	1	0.1	10	0.2	20	0.3	20
Oleaceae	*Olea europaea*	Common Olive	-	-	-	-	-	-	-	-	0.1	5	-	-
Oleaceae	*Olea europaea subsp. cuspidata*	African Olive	-	-	0.5	1	0.1	1	-	-	-	-	-	-

Family	Scientific name	Common name	40675.B08		40675.B09		40675.B10		40675.B11		40675.B12		40675.B13	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Cactaceae	*Opuntia stricta*	Common Prickly Pear	-	-	0.1	1	-	-	-	-	10	20	-	-
Cactaceae	*Opuntia stricta* var. *stricta*	Common Prickly Pear	-	-	-	-	-	-	-	-	-	-	-	-
Oxalidaceae	*Oxalis corniculata*	Creeping Oxalis	-	-	-	-	-	-	-	-	-	-	-	-
Urticaceae	*Parietaria judaica*	Pellitory	-	-	0.1	5	-	-	-	-	-	-	-	-
Caryophyllaceae	*Paronychia brasiliana*	Chilean Whitlow Wort, Brazilian Whitlow	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Paspalum dilatatum*	Paspalum	0.5	50	-	-	-	-	0.2	10	0.1	1	0.3	20
Passifloraceae	*Passiflora caerulea*	Blue Passionflower	-	-	-	-	-	-	-	-	-	-	0.5	3
Passifloraceae	*Passiflora suberosa*	Cork Passionfruit	-	-	-	-	-	-	-	-	-	-	-	-
Poaceae	*Phalaris* spp.	-	-	-	-	-	-	-	-	-	-	-	1	30
Arecaceae	*Phoenix canariensis*	Canary Island Date Palm	-	-	-	-	-	-	-	-	-	-	-	-
Arecaceae	*Phoenix dactylifera*	Date Palm	-	-	-	-	-	-	-	-	-	-	-	-
Phytolaccaceae	*Phytolacca octandra*	Inkweed	-	-	-	-	-	-	-	-	-	-	-	-
Plantaginaceae	*Plantago lanceolata*	Lamb's Tongues	0.1	10	0.1	50	0.1	10	1	30	2	50	3	30
Plumbaginaceae	*Plumbago auriculata*	Cape leadwot	-	-	-	-	40	50	-	-	-	-	-	-
Poaceae	*Poa annua*	Winter Grass	-	-	-	-	-	-	-	-	-	-	-	-
Rosaceae	*Rubus fruticosus* sp. agg.	Blackberry complex	-	-	50	500	-	-	-	-	-	-	-	-
Polygonaceae	*Rumex crispus*	Curled Dock	0.1	20	-	-	-	-	0.2	8	-	-	3	20
Asteraceae	*Senecio madagascariensis*	Fireweed	0.1	10	0.1	10	0.1	1	0.1	1	-	-	-	-
Poaceae	*Setaria parviflora*	-	-	-	-	-	-	-	-	-	0.1	1	-	-
Poaceae	*Setaria pumila*	Pale Pigeon Grass	-	-	-	-	0.1	20	-	-	-	-	-	-
Malvaceae	*Sida rhombifolia*	Paddy's Lucerne	-	-	0.1	10	0.1	1	-	-	0.2	10	-	-

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Family	Scientific name	Common name	40675.B08		40675.B09		40675.B10		40675.B11		40675.B12		40675.B13	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Solanaceae	*Solanum nigrum*	Black-berry Nightshade	-	-	0.1	1	-	-	0.3	20	-	-	-	-
Solanaceae	*Solanum pseudocapsicum*	Madeira Winter Cherry	-	-	-	-	-	-	-	-	-	-	-	-
Asteraceae	*Sonchus oleraceus*	Common Sowthistle	0.1	10	0.1	10	0.1	1	0.1	3	0.1	2	0.2	8
Poaceae	*Stenotaphrum secundatum*	Buffalo Grass	-	-	-	-	-	-	-	-	-	-	0.1	1
Asteraceae	*Taraxacum officinale*	Dandelion	-	-	-	-	-	-	0.1	5	0.1	5	0.2	10
Commelinaceae	*Tradescantia fluminensis*	Wandering Jew	-	-	0.3	100	-	-	-	-	1	100	-	-
Asteraceae	*Tragopogon porrifolius* subsp. *porrifolius*	Salsify	-	-	-	-	-	-	0.1	7	-	-	0.1	1
Fabaceae (Faboideae)	*Trifolium repens*	White Clover	0.5	300	-	-	-	-	-	-	0.5	50	0.1	1
Poaceae	*Urochloa panicoides*	Urochloa Grass	-	-	-	-	-	-	-	-	-	-	-	-
Verbenaceae	*Verbena bonariensis*	Purpletop	-	-	0.3	100	-	-	0.1	3	0.2	20	1	30
Fabaceae (Faboideae)	*Vicia sativa*	Common vetch	-	-	-	-	-	-	0.1	2	-	-	-	-
Fabaceae (Faboideae)	*Vicia sativa* subsp. *nigra*	Narrow-leaved Vetch	0.1	1	-	-	-	-	-	-	-	-	-	-
Fabaceae (Faboideae)	*Vicia sativa* subsp. *sativa*	Common Vetch	-	-	0.1	5	-	-	-	-	-	-	-	-
Apocynaceae	*Vinca major*	Periwinkle	-	-	-	-	-	-	-	-	-	-	-	-

Table A 6 BAM plot floristics (Plots X1-X3)

Family	Scientific name	Common name	40675.BX1		40675.BX2		40675.BX3	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Native species								
Apiaceae	*Centella asiatica*	Indian Pennywort	0.1	1	-	-	-	-

Family	Scientific name	Common name	40675.BX1		40675.BX2		40675.BX3	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Asphodelaceae	*Dianella caerulea* var. *caerulea*	-	-	-	-	-	-	-
Asteraceae	*Senecio pterophorus*	-	-	-	-	-	-	-
Campanulaceae	*Lobelia purpurascens*	Whiteroot	-	-	-	-	-	-
Chenopodiaceae	*Einadia hastata*	Berry Saltbush	-	-	-	-	-	-
Chenopodiaceae	*Einadia nutans*	Climbing Saltbush	-	-	0.1	2	-	-
Chenopodiaceae	*Chenopodium* spp.	Goosefoot, Crumbweed	-	-	-	-	-	-
Clusiaceae	*Hypericum gramineum*	Small St John's Wort	-	-	-	-	-	-
Convolvulaceae	*Dichondra repens*	Kidney Weed	-	-	-	-	-	-
Cyperaceae	*Cyperus* spp.	-	-	-	-	-	-	-
Cyperaceae	*Cyperus gracilis*	Slender Flat-sedge	-	-	0.1	10	-	-
Fabaceae (Faboideae)	*Glycine microphylla*	Small-leaf Glycine	-	-	-	-	-	-
Fabaceae (Faboideae)	*Glycine clandestina*	Twining glycine	-	-	-	-	-	-
Fabaceae (Faboideae)	*Glycine tabacina*	Variable Glycine	-	-	0.1	10	-	-
Fabaceae (Mimosoideae)	*Acacia implexa*	Hickory Wattle	-	-	-	-	-	-
Juncaceae	*Juncus usitatus*	-	0.1	10	-	-	0.1	5
Moraceae	*Morus alba*	White Mulberry	-	-	-	-	-	-
Myrtaceae	*Melaleuca bracteata*	Black Tea-tree	-	-	-	-	-	-
Myrtaceae	*Melaleuca armillaris* subsp. *armillaris*	Bracelet Honey-myrtle	-	-	-	-	-	-
Myrtaceae	*Eucalyptus amplifolia*	Cabbage Gum	-	-	-	-	-	-
Myrtaceae	*Callistemon citrinus*	Crimson Bottlebrush	-	-	15	2	-	-
Myrtaceae	*Eucalyptus tereticornis*	Forest Red Gum	-	-	5	1	-	-

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Family	Scientific name	Common name	40675.BX1		40675.BX2		40675.BX3	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Myrtaceae	*Eucalyptus moluccana*	Grey Box	-	-	0.3	-	-	-
Myrtaceae	*Eucalyptus crebra*	Narrow-leaved Ironbark	-	-	-	-	-	-
Myrtaceae	*Eucalyptus amplifolia* subsp. *amplifolia*	-	-	-	-	-	-	-
Myrtaceae	*Eucalyptus tereticornis* subsp. *tereticornis*	-	-	-	-	-	-	-
Myrtaceae	*Melaleuca alternifolia*	-	0.1	1	-	-	-	-
Onagraceae	*Ludwigia peploides subsp. montevidensis*	Water Primrose	0.1	1	-	-	-	-
Poaceae	*Cynodon dactylon*	Common Couch	-	-	2	200	5	1000
Poaceae	*Phragmites australis*	Common Reed	15	500	-	-	-	-
Poaceae	*Dichelachne micrantha*	Shorthair Plumegrass	-	-	-	-	-	-
Poaceae	*Microlaena stipoides*	Weeping Grass	-	-	0.2	30	-	-
Poaceae	*Microlaena stipoides* var. *stipoides*	Weeping Grass	-	-	-	-	-	-
Poaceae	*Chloris truncata*	Windmill Grass	-	-	0.1	5	-	-
Polygonaceae	*Rumex* spp.	Dock	-	-	-	-	-	-
Polygonaceae	*Persicaria decipiens*	Slender Knotweed	0.1	10	-	-	0.1	5
Proteaceae	*Grevillea robusta*	Silky Oak	-	-	-	-	-	-
Typhaceae	*Typha orientalis*	Broad-leaved Cumbungi	35	2000	-	-	10	100
Introduced species								
Asteraceae	*Ageratina adenophora*	Crofton Weed	-	-	-	-	-	-
Amaranthaceae	*Alternanthera pungens*	Khaki Weed	-	-	0.1	20	-	-
Basellaceae	*Anredera cordifolia*	Madeira Vine	0.3	20	-	-	-	-

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Family	Scientific name	Common name	40675.BX1		40675.BX2		40675.BX3	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Apocynaceae	*Araujia sericifera*	Moth Vine	-	-	-	-	-	-
Asteraceae	*Artemisia verlotiorum*	Chinese Wormwood	0.2	20	-	-	-	-
Poaceae	*Arundo donax*	Giant Reed	-	-	-	-	-	-
Asparagaceae	*Asparagus aethiopicus*	Asparagus Fern	-	-	-	-	-	-
Asparagaceae	*Asparagus asparagoides*	Bridal Creeper	-	-	-	-	-	-
Asparagaceae	*Asparagus plumosus*	Climbing Asparagus Fern	-	-	-	-	-	-
Asteraceae	*Aster subulatus*	Wild Aster	-	-	-	-	-	-
Poaceae	*Avena barbata*	Bearded Oats	-	-	0.2	20	-	-
Poaceae	*Avena fatua*	Wild Oats	-	-	-	-	-	-
Poaceae	*Avena sativa*	Oats	-	-	-	-	-	-
Asteraceae	*Bidens pilosa*	Cobbler's Pegs	0.1	5	0.1	1	-	-
Brassicaceae	*Brassica fruticulosa*	Twiggy Turnip	-	-	-	-	-	-
Brassicaceae	*Brassicaceae indeterminate*	Mustards	-	-	-	-	-	-
Poaceae	*Briza subaristata*	-	-	-	0.1	20	0.1	10
Poaceae	*Bromus catharticus*	Praire Grass	-	-	15	1000	0.1	10
Brassicaceae	*Cardamine hirsuta*	Common Bittercress	-	-	-	-	-	-
Poaceae	*Cenchrus clandestinus*	Kikuyu Grass	0.5	20	5	500	10	1000
Solanaceae	*Cestrum parqui*	Green Cestrum	2	200	-	-	0.3	30
Poaceae	*Chloris gayana*	Rhodes Grass	-	-	-	-	-	-
Asteraceae	*Cirsium vulgare*	Spear Thistle	-	-	-	-	-	-
Asteraceae	*Conyza bonariensis*	Flaxleaf Fleabane	-	-	-	-	-	-
Myrtaceae	*Corymbia citriodora*	Lemon-scented Gum	-	-	-	-	-	-
Apiaceae	*Daucus carota*	Wild Carrot	-	-	-	-	-	-

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Family	Scientific name	Common name	40675.BX1		40675.BX2		40675.BX3	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Poaceae	*Digitaria sanguinalis*	Crab Grass	-	-	0.1	10	-	-
Poaceae	*Ehrharta erecta*	Panic Veldtgrass	-	-	1	80	-	-
Poaceae	*Eleusine indica*	Crowsfoot Grass	-	-	0.1	10	-	-
Poaceae	*Eragrostis curvula*	African Lovegrass	-	-	5	500	-	-
Malaceae	*Eriobotrya japonica*	Loquat	-	-	-	-	-	-
Apiaceae	*Foeniculum vulgare*	Fennel	0.1	10	0.1	1	-	-
Fumariaceae	*Fumaria bastardii*	Bastards Fumitory	-	-	-	-	-	-
Rubiaceae	*Galium aparine*	Goosegrass	-	-	-	-	-	-
Geraniaceae	*Geranium molle* subsp. *molle*	Cranesbill Geranium	-	-	-	-	-	-
Asteraceae	*Hypochaeris radicata*	Catsear	-	-	-	-	-	-
Bignoniaceae	*Jacaranda mimosifolia*	Jacaranda	-	-	-	-	-	-
Juncaceae	*Juncus acutus subsp. acutus*	Sharp Rush	1	20	-	-	-	-
Juncaceae	*Juncus effusus*	-	-	-	-	-	-	-
Asteraceae	*Lactuca serriola*	Prickly Lettuce	-	-	0.1	10	-	-
Lythraceae	*Lagerstroemia indica*	-	-	-	-	-	-	-
Verbenaceae	*Lantana camara*	Lantana	-	-	-	-	-	-
Oleaceae	*Ligustrum lucidum*	Large-leaved Privet	-	-	-	-	0.1	2
Oleaceae	*Ligustrum sinense*	Small-leaved Privet	0.1	10	-	-	-	-
Poaceae	*Lolium perenne*	Perennial Ryegrass	-	-	-	-	-	-
Fabaceae (Faboideae)	*Lotus angustissimus*	Slender Birds-foot Trefoil	-	-	-	-	-	-
Onagraceae	*Ludwigia peruviana*	-	-	-	-	-	15	300
Solanaceae	*Lycium ferocissimum*	African Boxthorn	-	-	-	-	-	-

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Family	Scientific name	Common name	40675.BX1		40675.BX2		40675.BX3	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Primulaceae	*Lysimachia arvensis*	Scarlet Pimpernel	-	-	-	-	-	-
Malvaceae	*Modiola caroliniana*	Red-flowered Mallow	-	-	0.5	100	-	-
Oleaceae	*Olea europaea*	Common Olive	-	-	-	-	-	-
Oleaceae	*Olea europaea subsp. cuspidata*	African Olive	-	-	0.1	5	0.1	10
Cactaceae	*Opuntia stricta*	Common Prickly Pear	-	-	-	-	0.1	1
Cactaceae	*Opuntia stricta* var. *stricta*	Common Prickly Pear	-	-	-	-	-	-
Oxalidaceae	*Oxalis corniculata*	Creeping Oxalis	-	-	-	-	-	-
Urticaceae	*Parietaria judaica*	Pellitory	-	-	-	-	-	-
Caryophyllaceae	*Paronychia brasiliana*	Chilean Whitlow Wort, Brazilian Whitlow	-	-	0.1	20	-	-
Poaceae	*Paspalum dilatatum*	Paspalum	-	-	0.3	70	-	-
Passifloraceae	*Passiflora caerulea*	Blue Passionflower	-	-	-	-	-	-
Passifloraceae	*Passiflora suberosa*	Cork Passionfruit	-	-	-	-	-	-
Poaceae	*Phalaris* spp.	-	-	-	-	-	-	-
Arecaceae	*Phoenix canariensis*	Canary Island Date Palm	-	-	-	-	-	-
Arecaceae	*Phoenix dactylifera*	Date Palm	-	-	-	-	-	-
Phytolaccaceae	*Phytolacca octandra*	Inkweed	-	-	-	-	-	-
Plantaginaceae	*Plantago lanceolata*	Lamb's Tongues	-	-	0.1	10	0.1	10
Plumbaginaceae	*Plumbago auriculata*	Cape leadwot	-	-	-	-	-	-
Poaceae	*Poa annua*	Winter Grass	-	-	-	-	-	-
Rosaceae	*Rubus fruticosus* sp. agg.	Blackberry complex	5	500	-	-	5	50
Polygonaceae	*Rumex crispus*	Curled Dock	0.1	5	-	-	-	-

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Family	Scientific name	Common name	40675.BX1		40675.BX2		40675.BX3	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Asteraceae	*Senecio madagascariensis*	Fireweed	-	-	0.1	1	-	-
Poaceae	*Setaria parviflora*	-	-	-	-	-	-	-
Poaceae	*Setaria pumila*	Pale Pigeon Grass	-	-	-	-	-	-
Malvaceae	*Sida rhombifolia*	Paddy's Lucerne	-	-	-	-	-	-
Solanaceae	*Solanum nigrum*	Black-berry Nightshade	-	-	-	-	-	-
Solanaceae	*Solanum pseudocapsicum*	Madeira Winter Cherry	-	-	-	-	-	-
Asteraceae	*Sonchus oleraceus*	Common Sowthistle	-	-	0.1	10	-	-
Poaceae	*Stenotaphrum secundatum*	Buffalo Grass	-	-	-	-	-	-
Asteraceae	*Taraxacum officinale*	Dandelion	-	-	0.5	60	-	-
Commelinaceae	*Tradescantia fluminensis*	Wandering Jew	-	-	-	-	-	-
Asteraceae	*Tragopogon porrifolius* subsp. *porrifolius*	Salsify	-	-	-	-	-	-
Fabaceae (Faboideae)	*Trifolium repens*	White Clover	-	-	-	-	-	-
Poaceae	*Urochloa panicoides*	Urochloa Grass	-	-	0.1	10	-	-
Verbenaceae	*Verbena bonariensis*	Purpletop	0.1	1	0.1	1	0.1	20
Fabaceae (Faboideae)	*Vicia sativa*	Common vetch	-	-	-	-	-	-
Fabaceae (Faboideae)	*Vicia sativa* subsp. *nigra*	Narrow-leaved Vetch	-	-	-	-	-	-
Fabaceae (Faboideae)	*Vicia sativa* subsp. *sativa*	Common Vetch	-	-	-	-	-	-
Apocynaceae	*Vinca major*	Periwinkle	-	-	-	-	-	-

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Table A 7 BAM plot summary

Plot ID	PCT	Area (Ha)	Patch size	Condition	Zone	Easting	Northing	Bearing	Comp. Tree	Comp. Shrub	Comp. Grass	Comp. Forbs	Comp. Ferns	Comp. Other
40675.B01	3320	1.08	101	Low	56	302672	6254104	275	2	0	0	0	0	1
40675.B02	4025	0.29	101	Low	56	302166	6253402	157	2	0	2	1	0	0
40675.B03	3975	0.13	101	Low	56	302385	6253722	133	0	0	3	1	0	0
40675.B04	3320	1.08	101	Low	56	302324	6253768	296	2	3	5	1	0	0
40675.B05	3320	28.57	101	NOG	56	302479	6254044	23	0	0	1	0	0	0
40675.B06	3320	28.57	101	NOG	56	302256	6253871	0	0	0	0	0	0	0
40675.B07	3320	1.08	101	Other	56	302344	6253447	145	1	0	0	1	0	1
40675.B08	3320	28.57	101	NOG	56	302168	6253280	0	0	0	0	0	0	0
40675.B09	3320	28.57	101	Exotic	56	302239	6253327	190	0	0	2	1	0	0
40675.B10	3320	0.04	101	Planted	56	302312	6253213	357	2	1	1	1	0	0
40675.B11	3320	28.57	101	NOG	56	302551	6254081	355	0	0	1	0	0	0
40675.B12	3320	2.72	101	Exotic	56	302384	6253942	54	0	2	1	2	0	0
40675.B13	0	0.08	101	Planted native vegetation	56	302361	6254260	192	0	3	1	0	0	0
40675.BX1	3975			Low	56	302393	6253164	247	0	0	3	3	0	0
40675.BX2	3320			Low	56	302364	6253141	275	3	0	4	1	0	1
40675.BX3	3975			Low	56	302336	6253746	75	0	0	3	1	0	0

Plot ID	Struc. Tree	Struc. Shrub	Struc. Grass	Struc. Forbs	Stuc. Ferns	Stuc. Other	Funn. Large Trees	Fun. Hollow Trees	Fun. Litter Cover	Fun Len. Fallen Logs	Fun. Tree Stem 5to9	Fun. Tree Stem 10to19	Fun. Tree Stem 20to29	Fun. Tree Stem 30to49	Fun. Tree50to79	Fun. Tree Regen	Fun. High Threat Exotic
40675.B01	60.0	0.0	0.0	0.0	0.0	0.1	1	0	24	4	1	1	1	8	3	0	83.6
40675.B02	40.0	0.0	1.1	0.1	0.0	0.0	1	0	34	0	1	1	0	6	0	0	86.3
40675.B03	0.0	0.0	11.2	1.0	0.0	0.0	0	0	0.4	0	0	0	0	0	0	0	1.8
40675.B04	15.1	2.1	11.3	0.3	0.0	0.0	1	0	2.4	0	1	1	1	2	1	1	20.9

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Plot ID	Struc. Tree	Struc. Shrub	Struc. Grass	Struc. Forbs	Stuc. Ferns	Stuc. Other	Funn. Large Trees	Fun. Hollow Trees	Fun. Litter Cover	Fun Len. Fallen Logs	Fun. Tree Stem 5to9	Fun. Tree Stem 10to19	Fun. Tree Stem 20to29	Fun. Tree Stem 30to49	Fun. Tree50to79	Fun. Tree Regen	Fun. High Threat Exotic
40675.B05	0.0	0.0	0.5	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	95.4
40675.B06	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.2	0	0	0	0	0	0	0	95.1
40675.B07	5.0	0.0	0.0	0.1	0.0	0.1	0	1	0.6	0	0	0	0	0	1	0	95.8
40675.B08	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	95.7
40675.B09	0.0	0.0	0.2	0.1	0.0	0.0	0	0	20	0	0	0	0	0	0	0	137.8
40675.B10	11.0	20.0	0.5	0.5	0.0	0.0	1	0	28.2	6	1	1	1	8	0	0	13.9
40675.B11	0.0	0.0	5.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	4.5
40675.B12	0.0	15.1	0.1	0.2	0.0	0.0	0	0	0	0	0	0	0	0	0	0	17.4
40675.B13	0.0	6.1	1.0	0.1	0.0	0.0	0	0	0	0	0	0	0	1	0	0	60.5
40675.BX1	0.0	0.0	50.1	0.3	0.0	0.0	0	0	2.2	0	0	0	0	0	0	0	9.0
40675.BX2	20.3	0.0	2.4	0.1	0.0	0.1	1	1	5	1	0	1	1	2	3	0	11.7
40675.BX3	0.0	0.0	15.1	0.1	0.0	0.0	0	0	0	0	0	0	0	0	0	0	30.5

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Appendix 3.3 BAM plot data sheets

BAM Plot Data Sheet								Site Sheet no: 1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	29/08/2024	Canopy Estate		Low	TL, RG			
Zone 56	Datum GDA94	Plot ID	40675.B01	Plot dimensions	50x20	Orientation of middle	275	
Easting 302672	Northing 6254104	IBRA region	Sydney Basin	Photo #				
Plant Community Type		3320				EEC: Cumberland Plain Woodland	Confidence H	

BAM Attribute (400 m^2 plot)		Sum values
Count of Native Richness	Trees	2
	Shrubs	0
	Grasses etc.	0
	Forbs	0
	Ferns	0
	Other	1
Sum of Cover of native vascular plans by growth form group	Trees	60
	Shrubs	0
	Grasses etc.	0
	Forbs	0
	Ferns	0
	Other	0.1
High Threat Weed cover		83.6

BAM Attribute (1000 m^2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	3
30 - 49 cm	8
20 - 29cm	1
10 - 19 cm	1
5 - 9 cm	1
< 5 cm	0
Length of logs (m)	4
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	15	5	10	60	30
Average of the 5 subplots	24				

Notes	Private property. Plot done in backyard. Trees slightly too young to have hollows. Weeds and rubbish throughout property. Low condition veg and poor habitat

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

Landform Pattern		Slope	Slopes 15 degrees upwards west	Soil Surface Texture	Silty clay, dry
Soil Colour	Medium brown	Site Drainage	Towards E	Distance to nearest water	40m

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	2	O	Cleared tracks through vegetation patches
Cultivation (inc. pasture)	0		
Soil erosion	0		
Firewood/CWD removal	3	R	Few logs throughout vegetation patch
Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	1	R	Cracked tree at front of property
Weediness	3	O	Weeds throughout. Large privets throughout property
Other	0		

400 m^2 plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	29/08/2024	Canopy Estate	40675.B01	TL, RG

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Ageratina adenophora	HTE	0.5	30	Mid Storey
	Anredera cordifolia	HTE	3	50	Ground
	Araujia sericifera	HTE	0.5	10	Ground
	Asparagus asparagoides	HTE	0.1	1	Ground
	Bidens pilosa	HTE	4	300	Ground
	Cestrum parqui	HTE	5	20	Mid Storey
	Cirsium vulgare	E	0.1	1	Ground
	Conyza bonariensis	E	0.1	5	Ground
	Ehrharta erecta	HTE	70	1000	Ground
TG	*Eucalyptus moluccana*	N	40	6	Canopy
TG	*Eucalyptus tereticornis* subsp. *tereticornis*	N	20	4	Canopy
	Foeniculum vulgare	E	0.1	1	Ground
	Fumaria bastardii	E	0.1	5	Ground
	Galium aparine	E	0.1	5	Ground
	Geranium molle subsp. *molle*	E	0.1	5	Ground
OG	*Glycine tabacina*	N	0.1	5	Ground
	Ligustrum lucidum	HTE	0.5	5	Mid Storey
	Lysimachia arvensis	E	0.1	30	Ground
	Oxalis corniculata	E	0.1	5	Ground
	Parietaria judaica	E	0.5	1	Mid Storey
	Phytolacca octandra	E	0.5	5	Mid Storey
	Plantago lanceolata	E	0.3	100	Ground
	Sida rhombifolia	E	0.1	1	Ground

	Solanum nigrum	E	0.1	1	Ground
	Solanum pseudocapsicum	E	0.5	100	Ground
	Sonchus oleraceus	E	0.5	50	Ground
	Trifolium repens	E	0.1	50	Ground

BAM Plot Data Sheet								Site Sheet no:1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	30/08/2024	Canopy Estate		Low	TL, RG			
Zone 56	Datum GDA94	Plot ID	40675.B02	Plot dimensions	50x20	Orientation of middle	157	
Easting 302166	Northing 6253402	IBRA region	Sydney Basin	Photo #				
Plant Community Type		4025				EEC: None	Confidence H	

BAM Attribute (400 m^2 plot)		Sum values
Count of Native Richness	Trees	2
	Shrubs	0
	Grasses etc.	2
	Forbs	1
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	40
	Shrubs	0
	Grasses etc.	1.1
	Forbs	0.1
	Ferns	0
	Other	0
High Threat Weed cover		86.3

BAM Attribute (1000 m^2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	6
20 - 29cm	0
10 - 19 cm	1
5 - 9 cm	1
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	5	5	60	95	5
Average of the 5 subplots	34				

Notes	

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

Landform Pattern		Slope	20 degrees down towards south	Soil Surface Texture	Silty loam, dry
Soil Colour	Pale brown	Site Drainage	Towards 154 degrees SE	Distance to nearest water	Creek runs through plot

Plot Disturbance	Severity code	Age code	Observational evidence

Clearing inc. logging)	3	O	Most of property is cleared
Cultivation (inc. pasture)	0		
Soil erosion	2	NR	Erosion around creek line
Firewood/CWD removal	3	R	No logs remaining
Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	0		
Weediness	3	NR	Established patches of weeds across property
Other	0		

400 m^2 plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	30/08/2024	Canopy Estate	40675.B02	TL, RG

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Araujia sericifera	HTE	0.1	1	Ground
	Arundo donax	HTE	0.1	10	Mid Storey
	Asparagus asparagoides	HTE	0.1	10	Ground
	Asparagus plumosus	HTE	0.5	20	Ground
	Avena barbata	E	5	100	Ground
	Bidens pilosa	HTE	5	500	Ground
	Brassica fruticulosa	E	0.1	50	Ground
	Cenchrus clandestinus	HTE	30	1000	Ground
	Cestrum parqui	HTE	20	50	Mid Storey
GG	*Cynodon dactylon*	N	1	300	Ground
FG	*Dichondra repens*	N	0.1	10	Ground
	Ehrharta erecta	HTE	30	1000	Ground
TG	*Eucalyptus amplifolia* subsp. *amplifolia*	N	10	2	Canopy
TG	*Eucalyptus tereticornis* subsp. *tereticornis*	N	30	3	Canopy
	Galium aparine	E	0.1	10	Ground
	Hypochaeris radicata	E	0.1	10	Ground
	Lycium ferocissimum	HTE	0.5	2	Mid Storey
GG	*Microlaena stipoides* var. *stipoides*	N	0.1	50	Ground
	Olea europaea subsp. cuspidata	E	0.2	1	Mid Storey
	Opuntia stricta	E	0.1	1	Ground
	Oxalis corniculata	E	0.1	10	Ground
	Phoenix spp.	E	0.1	1	Mid Storey
	Senecio pterophorus	E	0.5	100	Ground

	Sida rhombifolia	E	0.1	5	Ground
	Solanum nigrum	E	0.1	10	Ground
	Sonchus oleraceus	E	0.5	20	Ground
	Vicia sativa subsp. *sativa*	E	0.1	10	Ground

BAM Plot Data Sheet								Site Sheet no:1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	17/09/2024	Canopy Estate		Low	RG, TL			
Zone 56	Datum GDA94	Plot ID	40675. B03	Plot dimensions	50x20	Orientation of middle	133	
Easting 302385	Northing 6253722	IBRA region	Sydney Basin	Photo #				
Plant Community Type		3975				EEC: None	Confidence M	

BAM Attribute (400 m^2 plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	3
	Forbs	1
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	11.2
	Forbs	1
	Ferns	0
	Other	0
High Threat Weed cover		1.8

BAM Attribute (1000 m^2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	0
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	0	0	0	0	2
Average of the 5 subplots	0.4				

Notes	Plot runs through a dam

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

Landform Pattern	Dam	Slope	0	Soil Surface Texture	Wet, silty loam
Soil Colour	Dark brown	Site Drainage	Into dam	Distance to nearest water	0

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3	O	Artificial farm dam
Cultivation (inc. pasture)	0		
Soil erosion	1	NR	Some erosion in drainage line to dam
Firewood/CWD removal	0		

Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	0		
Weediness	3	NR	
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	17/09/2024	Canopy Estate	40675. B03	RG, TL

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Asparagus asparagoides	HTE	0.1	1	Ground
	Bidens pilosa	HTE	0.1	1	Ground
	Cenchrus clandestinus	HTE	1	500	Ground
GG	*Cynodon dactylon*	N	1	300	Ground
GG	*Juncus usitatus*	N	0.2	30	Ground
	Olea europaea subsp. *cuspidata*	E	0.5	5	Mid Storey
FG	*Persicaria decipiens*	N	1	100	Ground
	Plantago lanceolata	E	0.1	5	Ground
	Rubus fruticosus sp. agg.	HTE	0.5	30	Ground
	Senecio madagascariensis	HTE	0.1	3	Ground
GG	*Typha orientalis*	N	10	500	Ground
	Vicia sativa subsp. *sativa*	E	0.1	10	Ground

BAM Plot Data Sheet								Site Sheet no:1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	17/09/2024	Canopy Estate		Low	RG, TL			
Zone 56	Datum GDA94	Plot ID	40675.B04	Plot dimensions	100x10	Orientation of middle	296	
Easting 302324	Northing 6253768	IBRA region	Sydney Basin	Photo #				
Plant Community Type		3320				EEC: Cumberland Plain Woodland	Confidence H	

BAM Attribute (400 m^2 plot)		Sum values
Count of Native Richness	Trees	2
	Shrubs	3
	Grasses etc.	5
	Forbs	1
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	15.1
	Shrubs	2.1
	Grasses etc.	11.3
	Forbs	0.3
	Ferns	0
	Other	0
High Threat Weed cover		20.9

BAM Attribute (1000 m^2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	1
30 - 49 cm	2
20 - 29cm	1
10 - 19 cm	1
5 - 9 cm	1
< 5 cm	1
Length of logs (m)	0
No. trees with hollows	0

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

Notes	

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

Landform Pattern	Dry, silty loam	Slope	Dam wall 45 degrees down slope towards N, flat after dam	Soil Surface Texture	Dry, silty loam
Soil Colour	Pale brown	Site Drainage	Towards N	Distance to nearest water	1m

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	2	NR	Cleared for dam wall
Cultivation (inc. pasture)	0		
Soil erosion	0		
Firewood/CWD removal	2	R	No logs
Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	0		
Weediness	1	NR	
Other			

400 m² plot: Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	17/09/2024	Canopy Estate	40675.B04	RG, TL

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
SG	*Acacia implexa*	N	1	3	Mid Storey
SG	*Acacia* spp.	N	1	3	Mid Storey
	Araujia sericifera	HTE	0.1	1	Ground
	Asparagus asparagoides	HTE	0.1	1	Ground
	Avena barbata	E	0.1	20	Ground
	Bidens pilosa	HTE	0.1	5	Ground
	Brassica fruticulosa	E	0.1	5	Ground
	Bromus catharticus	E	0.1	30	Ground
	Cenchrus clandestinus	HTE	20	1000	Ground
	Cirsium vulgare	E	0.1	1	Ground
GG	*Cynodon dactylon*	N	10	1000	Ground
FG	*Dianella caerulea* var. *caerulea*	N	0.3	20	Ground
GG	*Dichelachne micrantha*	N	0.1	1	Ground
	Eriobotrya japonica	E	0.5	1	Mid Storey
TG	*Eucalyptus tereticornis* subsp. *tereticornis*	N	15	30	Canopy
	Galium aparine	E	0.1	1	Ground
TG	*Grevillea robusta*	N	0.1	1	Mid Storey
SG	*Grevillea* spp.	N	0.1	1	Mid Storey
	Hypochaeris radicata	E	0.1	10	Ground
GG	*Juncus usitatus*	N	0.1	5	Ground
	Lantana camara	HTE	0.1	3	Mid Storey

	Ligustrum lucidum	HTE	0.1	5	Mid Storey
	Lolium perenne	E	0.1	1	Ground
	Lotus angustissimus	E	0.1	20	Ground
GG	*Microlaena stipoides* var. *stipoides*	N	1	300	Ground
	Modiola caroliniana	E	0.1	1	Ground
	Olea europaea subsp. *cuspidata*	E	1	10	Mid Storey
	Opuntia stricta var. *stricta*	HTE	0.1	5	Ground
	Paspalum dilatatum	HTE	0.1	10	Ground
	Passiflora suberosa	HTE	0.1	1	Ground
	Phoenix dactylifera	E	0.1	1	Mid Storey
	Plantago lanceolata	E	0.1	20	Ground
	Rumex crispus	E	0.1	10	Ground
	Senecio madagascariensis	HTE	0.1	20	Ground
	Senecio pterophorus	E	0.1	2	Ground
	Solanum nigrum	E	0.1	1	Ground
	Sonchus oleraceus	E	0.1	5	Ground
	Trifolium repens	E	0.1	50	Ground
GG	*Typha orientalis*	N	0.1	10	Ground
	Verbena bonariensis	E	0.1	10	Ground

BAM Plot Data Sheet								Site Sheet no:1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	17/09/2024	Canopy Estate		Other	RG, TL			
Zone 56	Datum GDA94	Plot ID	40675. B05	Plot dimensions	50x20	Orientation of middle	23	
Easting 302479	Northing 6254044	IBRA region	Sydney Basin	Photo #				
Plant Community Type		0				EEC: N/a	Confidence H	

BAM Attribute (400 m^2 plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	1
	Forbs	0
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	0.5
	Forbs	0
	Ferns	0
	Other	0
High Threat Weed cover		95.4

BAM Attribute (1000 m^2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	0
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

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

Notes	

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

Landform Pattern		Slope	15 degrees down slope to E	Soil Surface Texture	Moist, silty clay
Soil Colour	light brown	Site Drainage	Towards dam at 320 degrees	Distance to nearest water	95m

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3	O	Cleared for agriculture

Cultivation (inc. pasture)	0		
Soil erosion	0		
Firewood/CWD removal	0		
Grazing (identify native/livestock	0		Grass very overgrown
Fire damage	0		
Storm damage	0		
Weediness	1	NR	
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	17/09/2024	Canopy Estate	40675. B05	RG, TL

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Araujia sericifera	HTE	0.1	5	Ground
	Asparagus asparagoides	HTE	0.1	1	Ground
	Avena barbata	E	0.5	100	Ground
	Bidens pilosa	HTE	0.1	1	Ground
	Cenchrus clandestinus	HTE	95	1000	Ground
	Cirsium vulgare	E	0.1	2	Ground
GG	*Cynodon dactylon*	N	0.5	200	Ground
	Foeniculum vulgare	E	0.1	10	Ground
	Galium aparine	E	0.1	20	Ground
	Modiola caroliniana	E	0.1	5	Ground
	Passiflora caerulea	E	0.5	100	Ground
	Plantago lanceolata	E	0.1	10	Ground
	Senecio madagascariensis	HTE	0.1	3	Ground
	Sida rhombifolia	E	0.1	10	Ground
	Sonchus oleraceus	E	0.1	5	Ground
	Verbena bonariensis	E	0.1	10	Ground
	Vicia sativa subsp. *sativa*	E	0.5	200	Ground

BAM Plot Data Sheet								Site Sheet no: 1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	17/09/2024	40675.B06		Other	rg			
Zone 56	Datum GDA94	Plot ID	40675. B06	Plot dimensions	50x20	Orientation of middle	0	
Easting 302256	Northing 6253871	IBRA region	Sydney Basin	Photo #				
Plant Community Type		0				EEC: None	Confidence H	

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	0
	Forbs	0
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	0
	Forbs	0
	Ferns	0
	Other	0
High Threat Weed cover		95.1

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

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	0	1	0	0	0
Average of the 5 subplots	0.2				

Notes	

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

Landform Pattern		Slope	flat	Soil Surface Texture	clay
Soil Colour	dark brown	Site Drainage	flat	Distance to nearest water	300m

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3	O	
Cultivation (inc. pasture)	0		
Soil erosion	0		
Firewood/CWD removal	0		

Grazing (identify native/livestock	1	O	
Fire damage	0		
Storm damage	0		
Weediness	3	R	
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	17/09/2024	40675.B06	40675. B06	rg

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Avena barbata	E	0.5	200	Ground
	Cenchrus clandestinus	HTE	95	1000	Ground
	Cirsium vulgare	E	0.5	10	Ground
	Hypochaeris radicata	E	0.1	1	Ground
	Paspalum dilatatum	HTE	0.1	10	Ground
	Plantago lanceolata	E	0.1	20	Ground
	Verbena bonariensis	E	0.1	20	Ground
	Vicia sativa subsp. *sativa*	E	0.1	1	Ground

BAM Plot Data Sheet								Site Sheet no:1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	17/09/2024	Canopy Estate		Other	RG, TL			
Zone 56	Datum GDA94	Plot ID	40675. B07	Plot dimensions	50x20	Orientation of middle	145	
Easting 302344	Northing 6253447	IBRA region	Sydney Basin	Photo #				
Plant Community Type		3320				EEC: Cumberland Plain Woodland	Confidence H	

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	1
	Shrubs	0
	Grasses etc.	0
	Forbs	1
	Ferns	0
	Other	1
Sum of Cover of native vascular plans by growth form group	Trees	5
	Shrubs	0
	Grasses etc.	0
	Forbs	0.1
	Ferns	0
	Other	0.1
High Threat Weed cover		95.8

BAM Attribute (1000 m² plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	1
30 - 49 cm	0
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	1

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	1	2	0	0	0
Average of the 5 subplots	0.6				

Notes	

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

Landform Pattern		Slope	10 degrees downslope towards N	Soil Surface Texture	Dry, silty loam
Soil Colour	Pale brown	Site Drainage	Towards N	Distance to nearest water	150m

Plot Disturbance	Severity code	Age code	Observational evidence

Clearing inc. logging)	3	O	Site cleared for agriculture
Cultivation (inc. pasture)	0		
Soil erosion	0		
Firewood/CWD removal	0		
Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	0		
Weediness	1	NR	
Other	3	NR	Dumping, grassy stockpiles throughout plot

400 m^2 plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	17/09/2024	Canopy Estate	40675. B07	RG, TL

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Bidens pilosa	HTE	0.1	1	Ground
	Cenchrus clandestinus	HTE	95	1000	Ground
	Chloris gayana	HTE	0.5	100	Ground
	Cirsium vulgare	E	0.1	2	Ground
	Conyza bonariensis	E	0.1	1	Ground
FG	*Dichondra repens*	N	0.1	20	Ground
TG	*Eucalyptus moluccana*	N	5	2	Canopy
	Foeniculum vulgare	E	2	100	Ground
OG	*Glycine microphylla*	N	0.1	10	Ground
	Lycium ferocissimum	HTE	0.1	1	Mid Storey
	Modiola caroliniana	E	0.1	3	Ground
	Olea europaea subsp. *cuspidata*	E	0.1	2	Mid Storey
	Opuntia stricta	E	0.1	1	Ground
	Plantago lanceolata	E	0.1	20	Ground
	Rumex crispus	E	0.1	2	Ground
	Sida rhombifolia	E	0.1	5	Ground
	Solanum nigrum	E	0.1	1	Ground
	Sonchus oleraceus	E	0.1	1	Ground
	Trifolium repens	E	0.1	10	Ground
	Verbena bonariensis	E	0.1	20	Ground
	Vicia sativa subsp. *nigra*	E	0.1	50	Ground
	Vicia sativa subsp. *sativa*	E	0.3	100	Ground
	Vinca major	HTE	0.1	1	Ground

BAM Plot Data Sheet								Site Sheet no: 1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	18/09/2024	40675.B08		Low	rg			
Zone 56	Datum GDA94	Plot ID	40675.B08	Plot dimensions	50x20	Orientation of middle	0	
Easting 302168	Northing 6253280	IBRA region	Sydney Basin	Photo #				
Plant Community Type		0				EEC: None	Confidence H	

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	0
	Forbs	0
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	0
	Forbs	0
	Ferns	0
	Other	0
High Threat Weed cover		95.7

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

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

Notes	

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

Landform Pattern		Slope	flat	Soil Surface Texture	clay
Soil Colour	dark brown	Site Drainage	flat	Distance to nearest water	50m

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3	O	
Cultivation (inc. pasture)	0		
Soil erosion	0		
Firewood/CWD removal	0		

Grazing (identify native/livestock	1	O	
Fire damage	0		
Storm damage	0		
Weediness	3		
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	18/09/2024	40675.B08	40675. B08	rg

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Avena barbata	E	0.5	50	Ground
	Cenchrus clandestinus	HTE	95	1000	Ground
	Cirsium vulgare	E	1	20	Ground
	Conyza bonariensis	E	0.3	50	Ground
	Ehrharta erecta	HTE	0.1	50	Ground
	Foeniculum vulgare	E	0.1	1	Ground
	Galium aparine	E	0.1	1	Ground
	Hypochaeris radicata	E	0.1	10	Ground
	Paspalum dilatatum	HTE	0.5	50	Ground
	Plantago lanceolata	E	0.1	10	Ground
	Rumex crispus	E	0.1	20	Ground
	Senecio madagascariensis	HTE	0.1	10	Ground
	Senecio pterophorus	E	0.5	20	Ground
	Sonchus oleraceus	E	0.1	10	Ground
	Trifolium repens	E	0.5	300	Ground
	Vicia sativa subsp. *nigra*	E	0.1	1	Ground

BAM Plot Data Sheet								Site Sheet no:1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	18/09/2024	Canopy Estate		Other	RG, TL			
Zone 56	Datum GDA94	Plot ID	40675. B09	Plot dimensions	50x20	Orientation of middle	190	
Easting 302239	Northing 6253327	IBRA region	Sydney Basin	Photo #				
Plant Community Type		0				EEC: None	Confidence H	

BAM Attribute (400 m^2 plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	2
	Forbs	1
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	0.2
	Forbs	0.1
	Ferns	0
	Other	0
High Threat Weed cover		137.8

BAM Attribute (1000 m^2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	0
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	15	25	50	10	0
Average of the 5 subplots	20				

Notes	

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

Landform Pattern		Slope	10 degrees downslope to W	Soil Surface Texture	Dry clay
Soil Colour	Pale brown	Site Drainage	Towards W	Distance to nearest water	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3	O	Land clezred for agriculture
Cultivation (inc. pasture)	0		
Soil erosion	1	NR	Some erosion near creek line

Firewood/CWD removal	0		
Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	0		
Weediness	3	O	
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	18/09/2024	Canopy Estate	40675. B09	RG, TL

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Ageratina adenophora	HTE	0.1	10	Ground
	Araujia sericifera	HTE	0.1	10	Ground
	Asparagus asparagoides	HTE	0.1	10	Ground
	Avena barbata	E	0.1	20	Ground
	Bidens pilosa	HTE	0.1	30	Ground
	Brassica fruticulosa	E	1	100	Ground
	Bromus catharticus	E	1	100	Ground
	Cenchrus clandestinus	HTE	30	1000	Ground
	Cestrum parqui	HTE	5	100	Mid Storey
	Cirsium vulgare	E	0.1	10	Ground
	Conyza bonariensis	E	0.1	50	Ground
GG	*Cyperus* spp.	N	0.1	1	Ground
FG	*Dichondra repens*	N	0.1	10	Ground
	Ehrharta erecta	HTE	50	1000	Ground
	Foeniculum vulgare	E	3	100	Ground
	Galium aparine	E	0.1	20	Ground
	Lantana camara	HTE	2	10	Mid Storey
	Lolium perenne	E	0.1	1	Ground
	Lotus angustissimus	E	0.1	100	Ground
	Lysimachia arvensis	E	0.1	1	Ground
GG	*Microlaena stipoides* var. *stipoides*	N	0.1	50	Ground
	Modiola caroliniana	E	0.1	10	Ground
	Morus alba	E	0.5	1	Mid Storey
	Olea europaea subsp. *cuspidata*	E	0.5	1	Mid Storey
	Opuntia stricta	E	0.1	1	Ground
	Parietaria judaica	E	0.1	5	Ground
	Plantago lanceolata	E	0.1	50	Ground

	Rubus fruticosus sp. agg.	HTE	50	500	Mid Storey
	Senecio madagascariensis	HTE	0.1	10	Ground
	Senecio pterophorus	E	0.5	20	Ground
	Sida rhombifolia	E	0.1	10	Ground
	Solanum nigrum	E	0.1	1	Ground
	Sonchus oleraceus	E	0.1	10	Ground
	Tradescantia fluminensis	HTE	0.3	100	Ground
	Verbena bonariensis	E	0.3	100	Ground
	Vicia sativa subsp. *sativa*	E	0.1	5	Ground

BAM Plot Data Sheet								Site Sheet no:1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	18/09/2024	Canopy Estate		Other	RG, TL			
Zone 56	Datum GDA94	Plot ID	40675. B10	Plot dimensions	100x10	Orientation of middle	357	
Easting 302312	Northing 6253213	IBRA region	Sydney Basin	Photo #				
Plant Community Type		0				EEC: None	Confidence M	

BAM Attribute (400 m^2 plot)		Sum values
Count of Native Richness	Trees	2
	Shrubs	1
	Grasses etc.	1
	Forbs	1
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	11
	Shrubs	20
	Grasses etc.	0.5
	Forbs	0.5
	Ferns	0
	Other	0
High Threat Weed cover		13.9

BAM Attribute (1000 m^2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	8
20 - 29cm	1
10 - 19 cm	1
5 - 9 cm	1
< 5 cm	0
Length of logs (m)	6
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	50	30	60	1	0
Average of the 5 subplots	28.2				

Notes	

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

Landform Pattern	Leveled concrete carpark	Slope	5 degrees downslope towards N	Soil Surface Texture	Dry, silty loam
Soil Colour	Dark brown	Site Drainage	Towards N	Distance to nearest water	85m

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3	O	Site cleared for carpark
Cultivation (inc. pasture)	2	O	Planted natives throughout carpark
Soil erosion	0		

Firewood/CWD removal	0		
Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	0		
Weediness	2	NR	
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	18/09/2024	Canopy Estate	40675. B10	RG, TL

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Araujia sericifera	HTE	0.1	1	Ground
	Asparagus aethiopicus	HTE	0.1	1	Ground
	Avena barbata	E	0.1	10	Ground
	Bidens pilosa	HTE	0.5	50	Ground
	Cenchrus clandestinus	HTE	5	500	Ground
	Cestrum parqui	HTE	0.1	1	Mid Storey
	Chloris gayana	HTE	1	200	Ground
	Corymbia citriodora	E	10	4	Canopy
GG	*Cynodon dactylon*	N	0.5	200	Ground
	Ehrharta erecta	HTE	2	300	Ground
FG	*Einadia hastata*	N	0.5	100	Ground
	Eragrostis curvula	HTE	5	500	Ground
TG	*Eucalyptus crebra*	N	10	5	Canopy
TG	*Eucalyptus tereticornis* subsp. *tereticornis*	N	1	1	Canopy
	Hypochaeris radicata	E	0.1	1	Ground
	Lotus angustissimus	E	0.1	20	Ground
SG	*Melaleuca bracteata*	N	20	8	Mid Storey
	Modiola caroliniana	E	0.1	1	Ground
	Olea europaea subsp. *cuspidata*	E	0.1	1	Mid Storey
	Plantago lanceolata	E	0.1	10	Ground
	Plumbago auriculata	E	40	50	Mid Storey
	Senecio madagascariensis	HTE	0.1	1	Ground
	Setaria pumila	E	0.1	20	Ground
	Sida rhombifolia	E	0.1	1	Ground
	Sonchus oleraceus	E	0.1	1	Ground

BAM Plot Data Sheet								Site Sheet no:1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	11/11/2024	Horsley park		Other	Jg, kme			
Zone 56	Datum GDA94	Plot ID	40675.B11	Plot dimensions	50x20	Orientation of middle	355	
Easting 302551	Northing 6254081	IBRA region	Sydney Basin	Photo #				
Plant Community Type		0				EEC: None	Confidence H	

BAM Attribute (400 m^2 plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	1
	Forbs	0
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	5
	Forbs	0
	Ferns	0
	Other	0
High Threat Weed cover		4.5

BAM Attribute (1000 m^2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	0
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

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

Notes	Overgrown Grass

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

Landform Pattern		Slope	5	Soil Surface Texture	Silt, little clay
Soil Colour	Brown	Site Drainage	Good	Distance to nearest water	

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

Grazing (identify native/livestock			
Fire damage			
Storm damage			
Weediness	3	NR	
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	11/11/2024	Horsley park	40675.B11	Jg, kme

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Araujia sericifera	HTE	3	20	
	Aster subulatus	E	0.1	3	
	Avena fatua	E	0.2	20	
	Bromus catharticus	E	70	1000	
	Cenchrus clandestinus	HTE	1	50	
	Cirsium vulgare	E	0.1	10	
	Conyza bonariensis	E	0.1	1	
GG	*Cynodon dactylon*	N	5	400	
	Eragrostis curvula	HTE	0.2	20	
	Foeniculum vulgare	E	0.1	1	
	Juncus effusus	E	0.1	1	
	Lactuca serriola	E	0.1	1	
	Modiola caroliniana	E	0.1	10	
	Paspalum dilatatum	HTE	0.2	10	
	Plantago lanceolata	E	1	30	
	Rumex crispus	E	0.2	8	
	Senecio madagascariensis	HTE	0.1	1	
	Solanum nigrum	E	0.3	20	
	Sonchus oleraceus	E	0.1	3	
	Taraxacum officinale	E	0.1	5	
	Tragopogon porrifolius subsp. *porrifolius*	E	0.1	7	
	Verbena bonariensis	E	0.1	3	
	Vicia sativa	E	0.1	2	

BAM Plot Data Sheet								Site Sheet no: 1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	11/11/2024	Horsley park		Other	Jg, kme			
Zone 56	Datum GDA94	Plot ID	40675.B12	Plot dimensions	50x20	Orientation of middle	54	
Easting 302384	Northing 6253942	IBRA region	Sydney Basin	Photo #				
Plant Community Type		0				EEC: None	Confidence H	

BAM Attribute (400 m^2 plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	2
	Grasses etc.	1
	Forbs	2
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	0
	Shrubs	15.1
	Grasses etc.	0.1
	Forbs	0.2
	Ferns	0
	Other	0
High Threat Weed cover		17.4

BAM Attribute (1000 m^2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	0
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

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

Notes	

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

Landform Pattern		Slope	5	Soil Surface Texture	Silt, little clay
Soil Colour	Brown	Site Drainage	Good	Distance to nearest water	

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

Grazing (identify native/livestock			
Fire damage			
Storm damage			
Weediness	3	NR	
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	11/11/2024	Horsley park	40675.B12	Jg, kme

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Araujia sericifera	HTE	5	30	
	Asparagus aethiopicus	HTE	0.1	1	
	Avena sativa	E	5	200	
	Bidens pilosa	HTE	0.1	3	
	Brassicaceae indeterminate	E	0.1	10	
	Bromus catharticus	E	25	500	
	Cenchrus clandestinus	HTE	5	200	
	Cestrum parqui	HTE	0.5	3	
SG	*Chenopodium* spp.	N	0.1	1	
	Cirsium vulgare	E	0.2	10	
	Conyza bonariensis	E	0.1	2	
	Daucus carota	E	0.1	5	
	Ehrharta erecta	HTE	3	100	
	Lactuca serriola	E	0.1	5	
	Lantana camara	HTE	0.5	3	
	Ligustrum lucidum	HTE	2	10	
	Lolium perenne	E	5	200	
GG	*Microlaena stipoides*	N	0.1	10	
	Modiola caroliniana	E	0.2	20	
	Morus alba	N	15	2	
	Olea europaea	HTE	0.1	5	
	Opuntia stricta	E	10	20	
	Paspalum dilatatum	HTE	0.1	1	
	Plantago lanceolata	E	2	50	
FG	*Rumex* spp.	N	0.1	1	
FG	*Senecio* spp.	N	0.1	1	
	Setaria parviflora	E	0.1	1	
	Sida rhombifolia	E	0.2	10	
	Sonchus oleraceus	E	0.1	2	
	Taraxacum officinale	E	0.1	5	
	Tradescantia fluminensis	HTE	1	100	
	Trifolium repens	E	0.5	50	

	Verbena bonariensis	E	0.2	20	

BAM Plot Data Sheet								Site Sheet no:1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	11/11/2024	Horsley park		Other	Jg, kme			
Zone 56	Datum GDA94	Plot ID	40675.B13	Plot dimensions	100x10	Orientation of middle	192	
Easting 302361	Northing 6254260	IBRA region	Sydney Basin	Photo #				
Plant Community Type		0				EEC: None	Confidence H	

BAM Attribute (400 m^2 plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	3
	Grasses etc.	1
	Forbs	1
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	0
	Shrubs	6.7
	Grasses etc.	1
	Forbs	0.1
	Ferns	0
	Other	0
High Threat Weed cover		60.5

BAM Attribute (1000 m^2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	1
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

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

Notes	Exotic grasses

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

Landform Pattern		Slope	0	Soil Surface Texture	Silt
Soil Colour	Brown	Site Drainage	Good	Distance to nearest water	

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

Grazing (identify native/livestock			
Fire damage			
Storm damage			
Weediness	3	NR	
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	11/11/2024	Horsley park	40675.B13	Jg, kme

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Avena fatua	E	3	100	
	Bromus catharticus	E	2	50	
SG	*Callistemon citrinus*	N	5	2	
	Cenchrus clandestinus	HTE	60	1000	
	Cirsium vulgare	E	0.2	8	
GG	*Cynodon dactylon*	N	1	30	
FG	*Einadia hastata*	N	0.1	2	
	Jacaranda mimosifolia	E	0.5	1	
	Lagerstroemia indica	E	3	6	
	Ligustrum lucidum	HTE	0.1	1	
SG	*Melaleuca alternifolia*	N	1	1	
SG	*Melaleuca armillaris* subsp. *armillaris*	N	0.7	1	
	Modiola caroliniana	E	0.3	20	
	Paspalum dilatatum	HTE	0.3	20	
	Passiflora caerulea	E	0.5	3	
	Phalaris spp.	E	1	30	
	Plantago lanceolata	E	3	30	
	Rumex crispus	E	3	20	
	Sonchus oleraceus	E	0.2	8	
	Stenotaphrum secundatum	HTE	0.1	1	
	Taraxacum officinale	E	0.2	10	
	Tragopogon porrifolius subsp. *porrifolius*	E	0.1	1	
	Trifolium repens	E	0.1	1	
	Verbena bonariensis	E	1	30	

BAM Plot Data Sheet								Site Sheet no: 1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	16/12/2025	40675.BX1		Low	HUS, JRS			
Zone 56	Datum GDA94	Plot ID	40675.BX1	Plot dimensions	50x20	Orientation of middle	247	
Easting 302393	Northing 6253164	IBRA region	Sydney Basin	Photo #				
Plant Community Type		3975				EEC: None	Confidence H	

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	3
	Forbs	3
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	50.1
	Forbs	0.3
	Ferns	0
	Other	0
High Threat Weed cover		9

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

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	5	2	0	3	1
Average of the 5 subplots	2.2				

Notes	

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

Landform Pattern		Slope	250	Soil Surface Texture	Sandy silt
Soil Colour	Brown	Site Drainage	152	Distance to nearest water	0

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3	O	
Cultivation (inc. pasture)	3	O	
Soil erosion	0		
Firewood/CWD removal	3	O	
Grazing (identify native/livestock	0		

Fire damage	0		
Storm damage	0		
Weediness	3	O	
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	16/12/2025	40675.BX1	40675.BX1	HUS, JRS

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Anredera cordifolia	HTE	0.3	20	
	Artemisia verlotiorum	E	0.2	20	
	Bidens pilosa	HTE	0.1	5	
	Cenchrus clandestinus	HTE	0.5	20	
FG	*Centella asiatica*	N	0.1	1	
	Cestrum parqui	HTE	2	200	
	Foeniculum vulgare	E	0.1	10	
	Juncus acutus subsp. *acutus*	HTE	1	20	
GG	*Juncus usitatus*	N	0.1	10	
	Ligustrum sinense	HTE	0.1	10	
FG	*Ludwigia peploides* subsp. *montevidensis*	N	0.1	1	
FG	*Persicaria decipiens*	N	0.1	10	
GG	*Phragmites australis*	N	15	500	
	Rubus fruticosus sp. agg.	HTE	5	500	
	Rumex crispus	E	0.1	5	
GG	*Typha orientalis*	N	35	2000	
	Verbena bonariensis	E	0.1	1	

BAM Plot Data Sheet								Site Sheet no: 1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	16/12/2025	40675.BX2		Low	hus, jrs			
Zone 56	Datum GDA94	Plot ID	40675.BX2	Plot dimensions	50x20	Orientation of middle	275	
Easting 302364	Northing 6253141	IBRA region	Sydney Basin	Photo #				
Plant Community Type		3320				EEC: Yes	Confidence H	

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	3
	Shrubs	0
	Grasses etc.	4
	Forbs	1
	Ferns	0
	Other	1
Sum of Cover of native vascular plans by growth form group	Trees	20.3
	Shrubs	0
	Grasses etc.	2.4
	Forbs	0.1
	Ferns	0
	Other	0.1
High Threat Weed cover		11.7

BAM Attribute (1000 m² plot)	
DBH	# Tree Stems Count
80+ cm	3
50 - 79 cm	3
30 - 49 cm	2
20 - 29cm	1
10 - 19 cm	1
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	1
No. trees with hollows	1

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	5	3	0	7	10
Average of the 5 subplots	5				

Notes	

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

Landform Pattern		Slope	6 degrees north	Soil Surface Texture	Silty loam
Soil Colour	Brown	Site Drainage	5 degrees north	Distance to nearest water	50 m (to typha frog habitat)

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3	O	
Cultivation (inc. pasture)	3	O	
Soil erosion	0		
Firewood/CWD removal	3	O	

Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	0		
Weediness	2	O	
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	16/12/2025	40675.BX2	40675.BX2	hus, jrs

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Alternanthera pungens	HTE	0.1	20	
	Avena barbata	E	0.2	20	
	Bidens pilosa	HTE	0.1	1	
	Briza subaristata	HTE	0.1	20	
	Bromus catharticus	E	15	1000	
	Cenchrus clandestinus	HTE	5	500	
GG	*Chloris truncata*	N	0.1	5	
GG	*Cynodon dactylon*	N	2	200	
GG	*Cyperus gracilis*	N	0.1	10	
	Digitaria sanguinalis	E	0.1	10	
	Ehrharta erecta	HTE	1	80	
FG	*Einadia nutans*	N	0.1	2	
	Eleusine indica	E	0.1	10	
	Eragrostis curvula	HTE	5	500	
TG	*Eucalyptus crebra*	N	0.3		
TG	*Eucalyptus moluccana*	N	5	1	
TG	*Eucalyptus tereticornis*	N	15	2	
	Foeniculum vulgare	E	0.1	1	
OG	*Glycine tabacina*	N	0.1	10	
	Lactuca serriola	E	0.1	10	
GG	*Microlaena stipoides*	N	0.2	30	
	Modiola caroliniana	E	0.5	100	
	Olea europaea subsp. *cuspidata*	E	0.1	5	
	Paronychia brasiliana	E	0.1	20	
	Paspalum dilatatum	HTE	0.3	70	
	Plantago lanceolata	E	0.1	10	
	Senecio madagascariensis	HTE	0.1	1	
	Sonchus oleraceus	E	0.1	10	
	Taraxacum officinale	E	0.5	60	
	Urochloa panicoides	E	0.1	10	
	Verbena bonariensis	E	0.1	1	

BAM Plot Data Sheet								Site Sheet no: 1 of 2
		Survey Name		Veg Zone ID	Recorders			
Date	13/01/2026	40675.BX3		Low	EP, JRS			
Zone 56	Datum GDA94	Plot ID	40675.BX3	Plot dimensions	50x20	Orientation of middle	75	
Easting 302336	Northing 6253746	IBRA region	Sydney Basin	Photo #				
Plant Community Type		3975				EEC: None	Confidence H	

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	3
	Forbs	1
	Ferns	0
	Other	0
Sum of Cover of native vascular plans by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	15.1
	Forbs	0.1
	Ferns	0
	Other	0
High Threat Weed cover		30.5

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

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

Notes	Dam through middle of plot

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

Landform Pattern		Slope	Level	Soil Surface Texture	Clayey, silt
Soil Colour	Light brown	Site Drainage	Poor	Distance to nearest water	0m, in dam

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

Fire damage			
Storm damage			
Weediness			
Other			

400 m² plot: Sheet 2 of 2		**Survey Name**	**Plot ID**	**Recorders**
Date	13/01/2026	40675.BX3	40675.BX3	EP, JRS

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Briza subaristata	HTE	0.1	10	
	Bromus catharticus	E	0.1	10	
	Cenchrus clandestinus	HTE	10	1000	
	Cestrum parqui	HTE	0.3	30	
GG	*Cynodon dactylon*	N	5	1000	
GG	*Juncus usitatus*	N	0.1	5	
	Ligustrum lucidum	HTE	0.1	2	
	Ludwigia peruviana	HTE	15	300	
	Olea europaea subsp. *cuspidata*	E	0.1	10	
	Opuntia stricta	E	0.1	1	
FG	*Persicaria decipiens*	N	0.1	5	
	Plantago lanceolata	E	0.1	10	
	Rubus fruticosus sp. agg.	HTE	5	50	
GG	*Typha orientalis*	N	10	100	
	Verbena bonariensis	E	0.1	20	

Appendix 4 Fauna

Appendix 4.1 Fauna species recorded

Table A 8 Fauna species recorded at the subject land

Scientific name	Common name	EPBC Act	BC Act
Birds			
Acridotheres tristis	Common Myna	-	-
Anthochaera carunculata	Red Wattlebird	-	-
Cacatua galerita	Sulphur-crested Cockatoo	-	-
Corvus coronoides	Australian Raven	-	-
Cracticus nigrogularis	Pied Butcherbird	-	-
Egretta novaehollandiae	White-faced Heron	-	-
Egretta sacra	Eastern Reef Egret	-	-
Eolophus roseicapilla	Galah	-	-
Falco cenchroides cenchroides	Nankeen Kestrel	-	-
Fulica atra	Eurasian Coot	-	-
Gallinula tenebrosa	Dusky Moorhen	-	-
Hirundo neoxena	Welcome Swallow	-	-
Malurus cyaneus	Superb Fairy-wren	-	-
Manorina melanocephala	Noisy Miner	-	-
Phalacrocorax varius	Pied Cormorant	-	-
Phylidonyris niger	White-cheeked Honeyeater	-	-
Psephotus haematonotus	Red-rumped Parrot	-	-
Pycnonotus jocosus	Red-whiskered Bulbul	-	-
Spilopelia chinensis	Spotted Turtle-Dove	-	-
Tachybaptus novaehollandiae	Australasian Grebe	-	-
Vanellus miles	Masked Lapwing	-	-
Mammals			
***Nyctophilus* sp.**	Long-eared bat	-	-
Ozimops ridei	Eastern Free-tailed Bat	-	-
Pteropus poliocephalus	Grey-headed Flying-fox	VU	VU
Scoteanax rueppellii	Greater Broad-nosed Bat	-	VU
Reptiles			
Chelodina longicollis	Eastern Snake-necked Turtle	-	-
Pseudechis porphyriacus	Red-bellied Black Snake	-	-

Scientific name	Common name	EPBC Act	BC Act
Tiliqua scincoides	Eastern Blue-tongue	-	-
Frogs			
Crinia signifera	Common Eastern Froglet	-	-
Limnodynastes peronii	Brown-striped Frog	-	-
Litoria fallax	Eastern Dwarf Tree Frog	-	-
Litoria latopalmata	Broad-palmed Frog	-	-
Litoria peronii	Peron's Tree Frog	-	-
Litoria verreauxii	Verreaux's Frog	-	-

Appendix 5 SAII

Appendix 5.1 Cumberland Plain Woodland in the Sydney Basin Bioregion TEC

The *Cumberland Plain Woodland in the Sydney Basin Bioregion* TEC (PCT 3320) is listed under NSW *Biodiversity Conservation Act* as a Critically Endangered Ecological Community. The TEC is listed in the BioNet Threatened Biodiversity Data Collection as an entity subject to SAII in NSW. Given the absence of definitive impact thresholds stated for the community, the potential for a SAII will be determined by the consent authority, guided by the additional assessment provided below in Table A 9.

Table A 9 Assessment of SAII for Cumberland Plain Woodland in the Sydney Basin Bioregion TEC

Information required (BAM Section 9.1.1)	Response
1. The action and measures taken to avoid the direct and indirect impact on the TEC at risk of an SAII.	The project will impact upon a total of approximately 1.15 ha of PCT 3320 vegetation that meets the BC Act listing requirements for Cumberland Plain Woodland CEEC. The vegetation to be removed occurs in the following conditions: • Low: 1.07 hectares – VI score of 25.7. • Scattered trees: 0.08 hectares – VI score of 2.9. Measures undertaken by the proponent to avoid and minimise impacts to the CEEC (PCT 3320) are provided in Section 5 of this BDAR. Specifically, the development site has been selected for this project as it contains a highly disturbed footprint, which has been subject to substantial degradation. The development site is significantly degraded and largely consists of NOG. This infrastructure is being located within an area that has low condition vegetation and habitats for threatened entities. The primary reason for the development is to establish an industrial estate within the development site which is consistent with the recent rezoning secured under the Keyhole Lands Planning Proposal (which has in-principle support from Council). Given the strategic location of the subject land and its inclusion as a priority urban investigation the development cannot be located elsewhere.
2a. Evidence of reduction in geographic distribution, as the current total geographic extent of the TEC in NSW and the estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the proposal). **TBDC or other sources.** **(SAII Principle 1)**	Species and ecological communities that have undergone large reductions or are likely to undergo large reductions in the future are considered to be at greater risk of extinction than those that have undergone or are likely to undergo smaller reductions (NSW TSSC 2018). To be considered under this principle, the ecological community should have been observed, estimated, inferred, or reasonably suspected to have undergone, or be projected to undergo, a very large reduction in distribution, being: • ≥80% reduction where the reduction is over a 50-year period (i.e. since 1970), either in the past, future, or any part of the past, present and future (DPIE 2019). Prior to European settlement, Cumberland Plain Woodland was extensive across the Western Sydney area, and is estimated to have covered approximately 125,446 ha (DEC 2005, NPWS 2004). Whilst formerly extensive, the community now mostly occurs as small patches within the Cumberland IBRA subregion, with some occurrences extending into neighboring subregions. It is known to occur within the following LGAs; Auburn, Bankstown, Baulkham Hills, Blacktown, Camden, Campbelltown,

Information required (BAM Section 9.1.1)	Response
	Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta, Penrith and Wollondilly (DoEWHA 2010). Whilst there is no guidance as to the proportion of geographic distribution reduction that has occurred over the last 50 years (i.e. since 1970), the fact that the CEEC is noted in the SAII guidance document (DPIE 2019) as being subject to Principle 1, infers that it has occurred in recent times, and therefore at a rapid rate. According to *Remnant vegetation of the western Cumberland subregion, 2013 Update VIS_ID 4207* (DPE 2015), and *The Native Vegetation of the Sydney Metropolitan Area* (OEH 2016) and *Native Vegetation of Southeast NSW: A Revised Classification and Map for the Coast and Eastern Tablelands* (Tozer et al. 2010), the current extent of Cumberland Shale Plains Woodland (PCTs 3319 and 3320, of which 3320 is present within the subject land) within NSW is approximately 58,618 ha. This is a total reduction of approximately 54% of the geographic distribution.
2b. Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes. (SAII Principle 2)	Reduction in ecological function relates to the IUCN principle of "very small population size" which for ecological communities means communities have very high levels of either environmental degradation or disruption of biotic processes, and interactions have an increased risk of failure to sustain their characteristic native species assemblages (Bland et al. 2016). Ecological communities that are considered to have a very large degree of environmental degradation or disruption of biotic processes or interactions are those with: • ≥90% extent and severity where the disruption or impacts are measured since 1970. • ≥80% extent and severity where the disruption or impacts are over a 50-year period, either in the past, future, or any part of the past, present and future (as per (Bland et al. 2016)) (DPIE 2019). **i. change in community structure, ii. change in species composition and iii. disruption of ecological processes** The initial reduction in Cumberland Plain Woodland was due to tree-felling for timber and clearing for crops and pastures. This decline has accelerated since World War II, where there was a marked acceleration in urban and industrial development in the region, which continues to present day. Now, almost all of the remaining areas of the community are either regrowth forest or degraded woodland impacted by past clearing activities (OEH 2019). The final determination for Cumberland Plain Woodland notes that changes in community structure contribute to a very large reduction in the overall ecological functioning of Cumberland Plain Woodland (OEH 2019). Large trees that were once common prior to European settlement now occur very sparsely within the remaining patches of woodland, or remain as isolated individuals within paddocks or urban areas. Loss of these large trees has contributed to the decline and extinctions in native bird and mammal species, once common throughout the Cumberland Plain, and the associated ecological processes they once supported. Other structural changes include the removal of fallen woody debris and standing dead trees, removal of woody understorey plants (OEH 2019). Changes in species composition over time have occurred as a result of clearing vegetation for agricultural process and the selective retention of trees. The proportion of native and characteristic understorey grasses, forbs, shrubs etc. now

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

Information required (BAM Section 9.1.1)	Response
	with housing, industrial development and transport infrastructure. Given the low area of occupancy and the fact that land-clearing is likely to remain a threatening process contributing to the decline of this community over the next twenty years, the CEEC can be considered a highly geographically restricted community. However, based on the available information, the CEEC does not currently meet the thresholds for consideration under SAII Principle 3.
2d. Evidence that the TEC is unlikely to respond to management. **(SAII Principle 4)**	This principle encompasses two components, firstly whether there are any particular traits of the community which limits its' response to management, and secondly whether there are any key threatening processes affecting the community which cannot be effectively managed (DPIE 2019). Conservation management of the community in areas subjected to historical clearing and agricultural grazing has resulted in some measurable recovery, provided the soil has not been disturbed by earthworks, cultivation, fertiliser application or other means of nutrient of moisture enrichment (OEH 2019). Conversely in areas that have been exposed to these soil disturbances, restoration has been proven to be problematic, with one abandoned pasture planting site showing no evidence of convergence in species composition with nearby remnant woodland stands over a 10 year period (OEH 2019). However, several management measures are detailed within the TBDC for this community. These include: • Community and land-holder liaison/ awareness and/or education. • Habitat management: Fire. • Habitat management: Ongoing EIA - Advice to consent and planning authorities. • Habitat management: Promote regeneration by avoiding mowing or prolonged or heavy grazing. • Habitat management: Protect habitat by controlling run-off entering the site if it would change water, nutrient or sediment levels or cause erosion. • Habitat management: Weed Control. • Habitat Rehabilitation/Restoration and/or Regeneration. Generally those entities which are listed as unlikely to respond to management (and thus are irreplaceable) tend to include species where the ability to control key threats is negligible and known reproductive characteristics that severely limit their ability to increase the existing population (DPIE 2019). Ecological communities as a whole do not typically align well with these criteria. The response to management practices of Cumberland Plain Woodland has been demonstrated to be based on site specific conditions and therefore it is does not meet SAII Principle 4.
3. Where the TBDC indicates data is 'unknown' or 'data deficient' for a TEC, the assessor must record this in the BDAR or BCAR.	Not applicable.

Information required (BAM Section 9.1.1)	Response
4a. The impact on the geographic extent of the TEC, by estimating the total area of the TEC to be impacted by the proposal.	As discussed above, the current extent of Cumberland Plain Woodland within NSW is approximately 58,618 ha. The CEEC is known to occur as small patches within the Cumberland IBRA subregion, with some occurrences extending into neighboring subregions. It is known to occur within the following LGAs: Auburn, Bankstown, Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta, Penrith and Wollondilly (OEH 2019, DoEWHA 2010). **Direct impacts** The proposed development will result in the removal of approximately 1.15 ha of the CEEC from within the development footprint. As such, the total area of the CEEC to be impacted by the project equates to 0.002 % of the CEEC within NSW. The vegetation occurs in the following conditions: • Low: 1.07 hectares – VI score of 25.7. • Scattered trees: 0.08 hectares – VI score of 2.9. The structure of these patches ranges from patches of woodland with full structural integrity across all stratum (intact condition), down to patches of scattered native trees where the middle stratum has been completely removed and there is a low level of native species in the understorey. These areas occur predominantly as small vegetation patches within paddocks and scattered trees. **Indirect impacts** Indirect impacts to Cumberland Plain Woodland associated with factors such as increased edge effects, fragmentation, altered fire regimes, and transport of weeds and pathogens are not expected to be substantial or significant, largely due to the already degraded and edge effected nature of the TEC within the subject land and broader vicinity. Where Cumberland Plain Woodland occurs within the subject land, and therefore most likely to suffer indirect impacts associated with construction and operational activities, the TEC occurs in the following condition: • Low: 0.44 hectares – VI score of 25.7.
4b. The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the TEC.	**i. estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500m of the development footprint or equivalent area for other types of proposals.** Cumberland Plain Woodland present in the wider landscape surrounding the project area occurs in an already highly fragmented state. GIS was used to determine the range and average size of mapped (OEH 2013, OEH 2016, Biosis 2024) occurrences of Cumberland Plain Woodland within a 500 m buffer of the subject land. The results of which are provided below both for those patches intersected by the development footprint / subject land (i.e., subject to vegetation removal) and those patches not intersected by the development footprint / subject land (i.e. not directly impact by the project). **Mapped areas within 500 m not directly impacted:** 101.95 ha **Mapped areas within 500 m directly impacted:** 0.06 ha **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**

Information required (BAM Section 9.1.1)	Response
	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** GIS was used to undertake a nearest neighbour analysis of mapped (OEH 2013, OEH 2016, Biosis 2024) occurrences of Cumberland Plain Woodland prior to and post vegetation to determine the distance between impacted areas of the CEEC before and after the proposed vegetating removal. The average distance between mapped occurrences of Cumberland Plain Woodland within a 500 m buffer of the development footprint / subject land, include: • 24.93 m before development • 25.94 m after development. Based on the above there will be an average increase of 1.01 m separation between retained patches of Cumberland Plain Woodland within 500 m of the subject land. Native flora species characteristic of the TEC include a range trees, shrubs, grasses, forbs and other groundcover species, the majority of which are dispersed via wind or animal vectors, with some species primary method of dispersal likely to be via non-flying insects such as ants. The increase in average separation distance by 1.01 m for mapped Cumberland Plain Woodland within 500 m of the development footprint / subject land, is not expected to result in a significant or substantial impediment to the dispersal of native species between retained patches, in an already highly fragmented landscape. Furthermore, the project will not result in the creation of barrier to movement across the site post-construction and landscaping will help promote connectivity following construction. It is noted in EPBC Act conservation advice documents that allowances can be made for "breaks" of up to 30 m between areas of MNES habitat, and that such breaks, which may be the result of watercourses, tracks, paths, roads, etc., do not significantly alter the overall functionality of the ecological community, or habitat (CoA 2020). As such, breaks in connectivity caused by the project, of up to 1.01 m are not considered to be substantial in nature. The project will result in some vegetation removal that splits patches of Cumberland Plain Woodland vegetation into two (or more) patches, which is likely to increase the area to perimeter ratio for smaller patches, which may in turn increase edge effects for those smaller, now isolated patches. However any increase in edge effects is unlikely to be significant or substantial to the vegetation immediately adjacent to the development footprint / subject land, due to the already disturbed and edge effected nature of the vegetation. **iii. describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone(s) (Section 4.3). The**

Information required (BAM Section 9.1.1)	Response
	assessor must also include the relevant composition, structure and function condition scores for each vegetation zone. The TEC occurs in two conditions within the subject land: • Low: – Composition condition score: 10.4 – Structure condition score: 29.1 – Function condition score: 56.4 – Presence of hollow-bearing trees: Yes – VI score: 25.7 • Scattered Trees: – Composition condition score: 2.5 – Structure condition score: 0.5 – Function condition score: 9.7 – Presence of hollow-bearing trees: Yes – VI score: 2.9 The proposed works will result in the removal of 1.15 ha of Low condition and Scattered Trees condition Cumberland Plain Woodland. Approximately 0.44 ha of Low condition Cumberland Plain Woodland in the Sydney Basin Bioregion will be retained within the subject land.

Appendix 6 Significant Impact Criteria assessments

Appendix 6.1 Grey-headed Flying-fox

Distribution

Grey-headed Flying-fox is listed as Vulnerable under the Commonwealth EPBC Act. Key threats to the Grey-headed Flying-fox include habitat fragmentation and habitat degradation, low levels of mortality, exploitation and competition. The species is largely impacted by urban growth displacing individuals. The species is wide-ranging and occurs within 200 kilometres of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia.

Habitat requirements

The Grey-headed Flying-fox trends with the distribution of plants with similar flowering and fruiting times, support regular annual cycles of migration (Eby & Lunney 2002). It can be associated with flowering eucalyptus dependant on seasonality.

Survey observation

Previous records of the Grey-headed Flying-fox exist in the surrounding locality (1223 nearby records within 10 kilometres of the subject land with closest record being 1487 metres from the subject land) and the most recent record being from 2023. There is a Flying-fox camp located 4.3 kilometres east of the subject land, known as Wetherill Park (490), as well as several others within the wider region. The camp contained up to 499 Grey-headed Flying-foxes each when last surveyed in February 2020 (Cth DCCEEW 2023).

Given the nearby resources, surrounding vegetation and Flying-fox camps nearby the subject land, the species may use the subject land for occasional foraging resources. No camp sites were detected within the subject land or subject land during the field investigation.

The proposed works will result in the removal of up to 1.65 hectares of native vegetation, which constitutes foraging habitat for the species, corresponding with treed vegetation, including PCT 3320 in low, planted and scattered trees condition and PCT 4025 in low condition.

An assessment of whether the proposed project is likely to lead to a significant impact Grey-headed Flying-fox is provided below.

Table A 10 SIC assessment for Grey-headed Flying-fox

SIC assessment for vulnerable species
Lead to the long-term decrease in the size of an important population of a species.
While the project will result in the removal of potential foraging resources for Grey-headed Flying-fox, the total area of habitat being removed is considered moderate quality, non-breeding habitat. The species prefers large consolidated vegetation communities that produce significant foraging resources. Given the scale of the impact, and size of foraging habitat to be removed (1.65 ha), it is unlikely that it will lead to a long-term decrease in the size of an important Grey-headed Flying-fox population. The species is also highly mobile and would be utilising foraging resources from up to

SIC assessment for vulnerable species

50 km away from the camp. The proposed loss of 1.65 ha of habitat in the form of small, fragmented, patches, does not constitute a significant reduction is resources available to individuals in the locality.

Reduce the area of occupancy of an important population.

The species is highly mobile and relatively widespread, roosting and maternity sites are well documented and conspicuous. No roosting or breeding habitat was recorded during field assessment. Due to the small area, limited number of potential feed trees to be removed, the overall area of occupancy of the species is likely to remain unchanged. The species will continue to forage in retained habitat either side of the development footprint and the development will not represent a barrier to the movement of individuals.

Fragment an existing important population into two or more populations.

The national population of the Grey-headed Flying-fox is considered a single population as it is a highly mobile species. The subject land contains potential foraging habitat to be removed by the proposal. The species will utilise the vegetation in retained patches to the north and west of the subject land as it prefers larger intact vegetation communities. No camps have previously been recorded within the subject land and no roosting flying-foxes were present during field investigation. The closest Grey-headed Flying-fox camp is located 4.3 km to the east (Cth DCCEEW 2023). Given the highly mobile nature of the species (known to travel up to 50 km whilst foraging) the proposed removal of up to 1.65 ha of potential foraging habitat for the species will not fragment an existing important population into two or more populations.

Adversely affect habitat critical to the survival of a species.

Habitat critical to the survival of the Grey-headed Flying-fox includes important breeding and foraging resources. Breeding occurs within camps. The closest camp is located 4.3 km south-east of the subject land (Cth DCCEEW 2023).

Limiting foraging resources may constitute habitat critical for the survival of Grey-headed Flying-fox and may include areas with highly productive winter flowering tree species. It is considered unlikely that foraging resources within the subject land would constitute habitat critical to the survival of the Grey-headed Flying-fox for the following reasons:

- No camps will be impacted by the proposed development.
- Native vegetation within the subject land is considered unlikely to be selected as a roosting site in the future as the vegetation patch is relatively small.

Disrupt the breeding cycle of an important population.

While the project may result in the removal of vegetation utilised for foraging by the species, the project will not result in the disruption to the breeding cycle of any local Grey-headed Flying-fox population or the species as a whole. The proposal may provide limited disturbance from noise or light pollution, however it is unlikely that it will substantially interfere with the species' ability to reproduce successfully as the subject land is not within view of breeding areas. Grey-headed Flying-foxes will continue to breed in camps unaffected by vegetation loss and as a result the breeding cycle of the population will not be disrupted.

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

Grey-headed Flying-foxes are assumed to utilise the subject land on occasion for foraging. The project will only impact a small area of native vegetation which may provide foraging resources at certain times of the year. The proposed development will not impact on any existing camps and is unlikely to have an impact on nearby camps as this small patch is unlikely to produce sufficient foraging resources to support a large number of Flying-foxes. There are higher-quality resources within native vegetation adjacent to the subject land, as vegetation within the subject land is patchy and degraded. Therefore the project will only impact a very small number of resources within the broader landscape.

The subject land is considered to be potentially suitable for a future camp as the subject land contains tall mature trees and is within a close distance of well-connected vegetation. The species prefers intact vegetation inclusive of foraging

SIC assessment for vulnerable species

resources within close proximity. However, the surrounding residential development means the subject land may not be considered not suitable, as it is subject to regular disturbance from nearby traffic and noise.

The proposed development will remove up to 1.65 ha of native vegetation. This will not fragment or isolate the population as it is a small area, and vegetation within the locality provides more suitable resources. While the project will result in the removal of trees, some of which may be used by the species, this level of loss is not likely to result in the decline of the species at a national scale.

Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

There are a moderate number of feral animals and plants that are known or likely to be well established in the subject land. Some of these, including foxes and dogs, have potential to negatively impact Grey-headed Flying-fox. However it is unlikely that the project would result in the establishment of new species. The proposed action is unlikely to exacerbate the current level of invasive species threat operating within the project area.

Introduce disease that may cause the species to decline.

The IUCN Species Survival Commission released a statement on 19 June 2020 stating that there is a credible risk of human-to-bat transmission of SARS-Cov-2, a virus currently circulating the globe and causing a pandemic of the illness Covid-19 (IUCN SSC 2020). However, introduction of this disease to Grey-headed Flying-fox within the subject land as a result of the proposed works is unlikely for the following reasons:

- No contact or sharing of closed areas between humans and bats is expected as a result of the proposed works.
- The subject land does not contain breeding habitat for the species.
- When a preclearance inspection is undertaken by an ecologist for removal of native vegetation, the recommendations provided by the IUCN will be followed, including the wearing of a face mask by the ecologist, and avoidance of handling of any Flying-foxes.

The transmission of SARS-Cov-2 is considered unlikely as a result of the proposed works.

Interfere substantially with the recovery of the species.

Actions considered likely to substantially interfere with the recovery of the Grey-headed Flying-fox as determined by key threats to the species (DEW 2021) are as follows:

- Habitat loss and fragmentation including important foraging species such as Forest Red Gum.
- Winter Foraging resources are limited to a narrow coastal strip in QLD and northern NSW.
- Spring foraging resources are considered critical to the survival of the species.
- Exploitation – shooting of Grey-Headed Flying-foxes to protect fruit crops involves death of the individual and indirect death as a result of shooting of pregnant and lactating females.
- Competition and hybridisation – indirect competition by Black Flying-fox which has had a range expansion in the past.
- Pollutants, electrocution and pathogens. A disproportionately higher number of lactating females are killed by electrocution on power lines.

The project will not fragment habitat for the Grey-headed Flying-fox and will not significantly contribute to the loss of habitat as it will result in the removal of up to 1.65 ha of native vegetation. The proposed development will not result in activities likely to result in exploitation of the species as the project does not include fruit crops. The proposed development is not likely to increase incidence of competition or hybridisation. The project is therefore unlikely to substantially interfere with the recovery of the Grey-headed Flying-fox.

Conclusion.

In consideration of the above significant impact criteria, the proposed activity is not likely to significantly impact Grey-headed Flying-fox within the subject land or wider locality, as the project is unlikely to:

- Lead to the long-term decrease in the size of an important population of Grey-headed Flying-fox.

SIC assessment for vulnerable species

- Reduce the area of occupancy of an important population of Grey-headed Flying-fox.
- Fragment an existing important population of Grey-headed Flying-fox into two or more populations.
- Adversely affect habitat critical to the survival of Grey-headed Flying-fox.
- Disrupt the breeding cycle of an important population of Grey-headed Flying-fox.
- Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that Grey-headed Flying-fox is likely to decline.
- Result in invasive species that are harmful to a vulnerable species becoming established in Grey-headed Flying-fox habitat.
- Introduce disease that may cause Grey-headed Flying-fox to decline.
- Interfere substantially with the recovery of Grey-headed Flying-fox.
- The subject land does not contain any breeding camps.
- While small numbers of individuals may occasionally forage within woodland that will be impacted by the project, its removal is not likely to constitute a significant impact the local population.
- Mitigation measures will be implemented to minimise risk of indirect impacts.

A Commonwealth referral is not recommended for impacts to this species.