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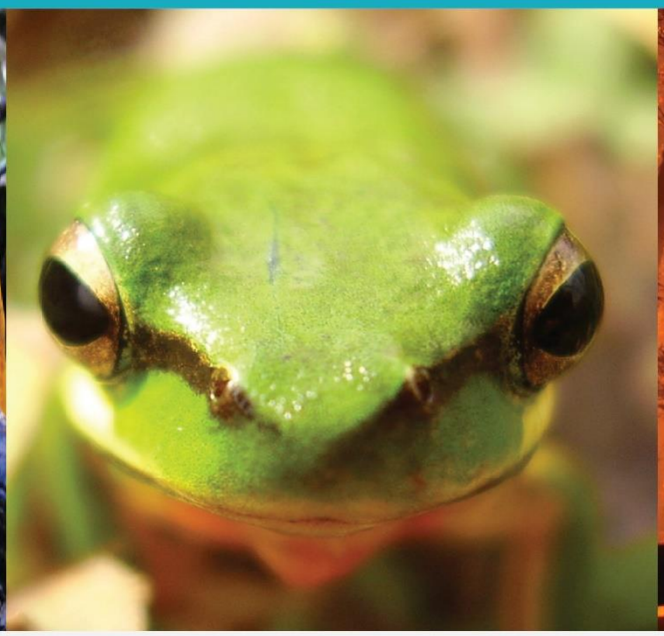

Cumberland Plain Conservation Plan Consistency Report

North Appin (part) Precinct Plan

Ingham Property Group

21 June 2023

(REF: 22ING02)

CUMBERLAND PLAIN CONSERVATION PLAN CONSISTENCY REPORT

North Appin (part) Precinct

Update to Planning Proposal for Gateway

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Date:	21 June 2023
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The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features is to be confirmed by a registered surveyor.

LIST OF ABBREVIATIONS

APZ	asset protection zone
BAM	Biodiversity Assessment Method (2020)
BC Act	Biodiversity Conservation Act (2016)
BOS	Biodiversity Offset Scheme
CPCP	Cumberland Plain Conservation Plan (August 2022)
DCP	development control plan
DPE	NSW Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment (superseded by DPE Dec 2021)
EEC	endangered ecological community
EPBC Act	Environment Protection and Biodiversity Conservation Act (1999)
LEP	local environmental plan
LGA	local government area
PCT	plant community type
RFS	NSW Rural Fire Service
SEPP	State Environmental Planning Policy
TEC	threatened ecological community
VMP	vegetation management plan

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1. INTRODUCTION

1.1 Purpose

Travers bushfire & ecology has been engaged to prepare a preliminary desktop constraints assessment utilising regional vegetation and threatened species records and then to review for consistency the planning proposal for the proposed North Appin (Part) Precinct prepared by Ingham Property Group against the Cumberland Plain Conservation Plan 2022.

The study area for the Planning Proposal is shown in Figure 1 and is located within the Wollondilly and Campbelltown Local Government Areas.

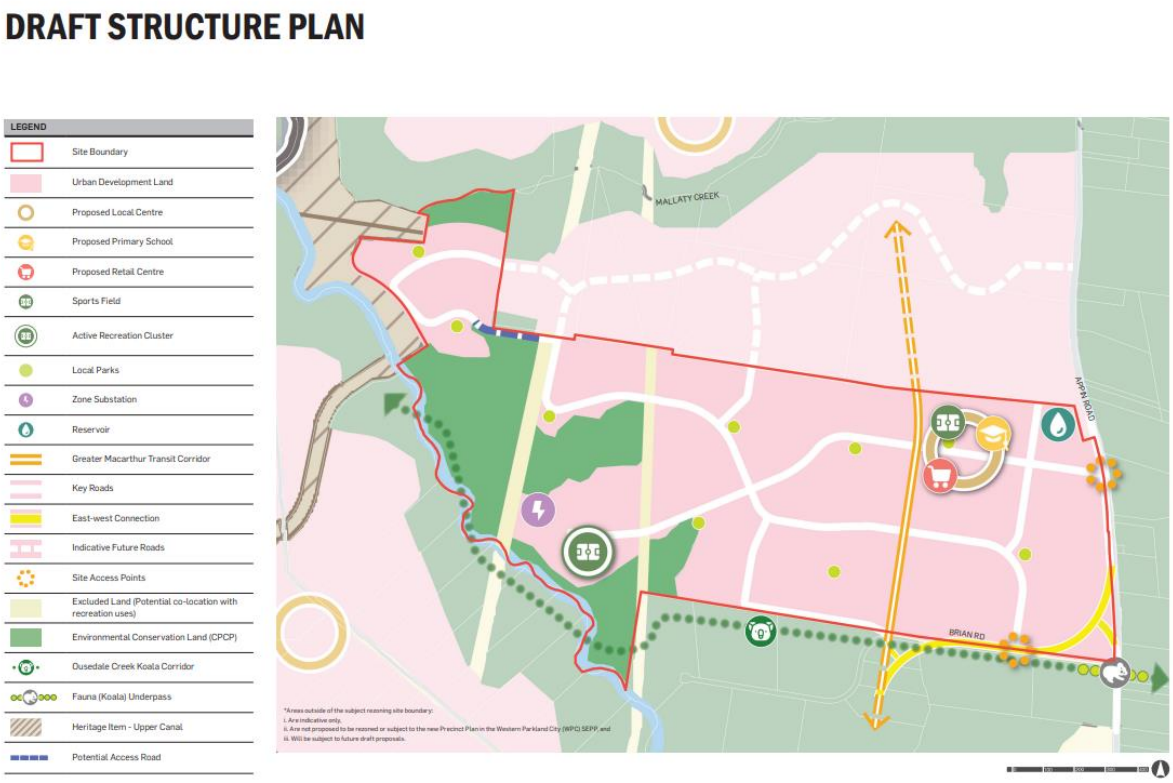

Figure 1 – Draft Structure Plan

A Cumberland Plain Conservation Plan Consistency Report has been prepared for the purposes of examining the consistency of the Draft Structure Plan with mapped conservations zones and certified urban capable lands.

As a desktop assessment, this report relies upon existing vegetation mapping and is intended to guide the proposed Draft Structure Plan.

1.2 Site description

1.2.1 Site overview

The land to which this Planning Proposal relates to is 345 Appin Road, Appin (the site). The site is accessed via Appin Road and is located within the North Appin Precinct. It is more

broadly situated in the GMGA within southwest Sydney. The majority of the site is located with the Wollondilly local government area (LGA), while a small northwest portion is located in the Campbelltown LGA.

The site is irregular in shape and can be characterised as predominantly cleared pastoral land that has access to significant natural assets and corridors. The key features of the site are summarised in the table below.

Table 1 provides an overview the planning, cadastral and topographical details of the study area.

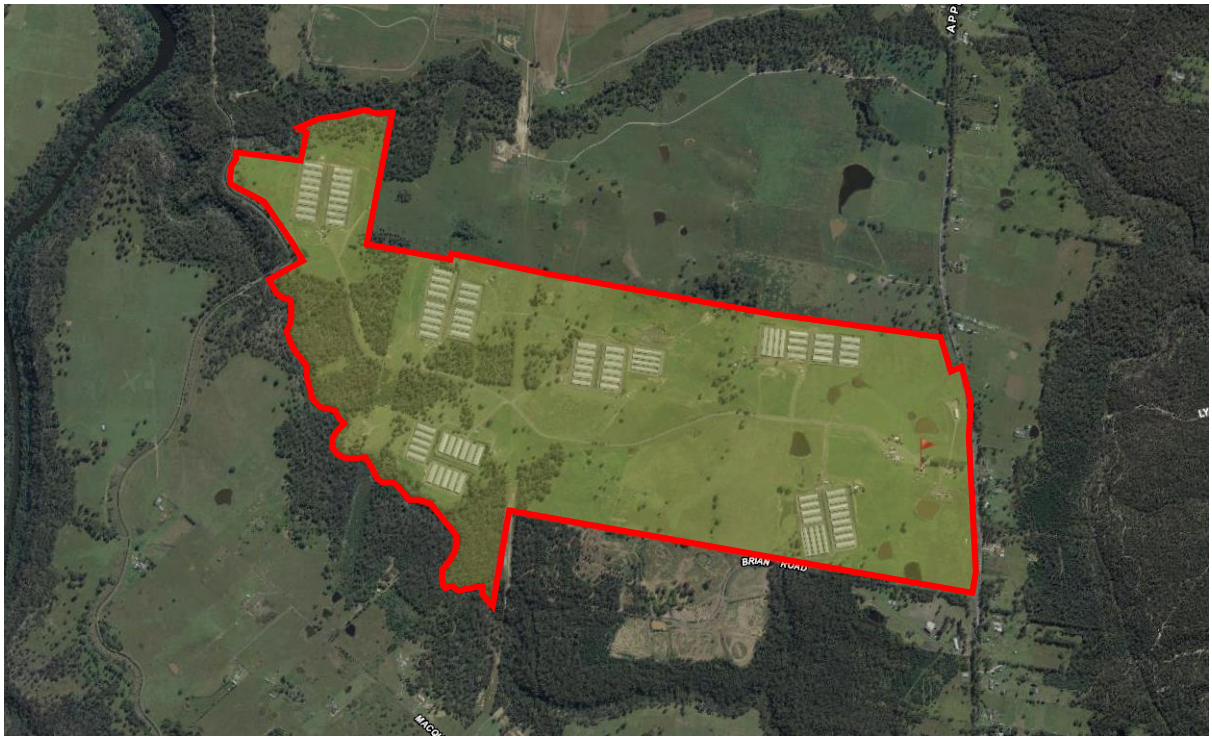

Figure 2 - Study area

Table 1 – Site features

Street Address	345 Appin Road, Appin, NSW
Legal Description	Lot 105 in Deposited Plan 1188670
Site Area	300.8 hectares
Site frontage	>1km frontage to Appin Road
Distance from urban	1.5km from Appin township
Easements and Restrictions	The site is bisected north-south by three utility easements: ▪ Electrical for 66kV/330kV power lines ▪ Water easement for 1,200mm trunk water main ▪ Gas easement containing the Eastern Gas Pipeline.
Site Topography	The site has extensive topography ranging from a large level area along the eastern edge, which then slopes down towards the Nepean River as the site extends west.
Vegetation	The site is largely cleared. However, the periphery along the west is heavily vegetated. The vegetation is comprised of Cumberland Plain Woodland which aligns with the streams and creeks that converge along the site's western boundary and feed into the Nepean River. The remainder of the site is largely unencumbered by Cumberland Plain Woodland.

Bushfire	The site is affected by bushfire, largely associated with the protected Cumberland Plain Conservation corridors to the south and west site boundaries.
Existing Services and Utilities	▪ Potable water: There is an existing 125mm main running along Appin Road as well as the 1,200mm Trility main that burdens the site. ▪ Electrical: There are existing electrical feeds along Appin Road as well as the 66kV/330kV feeder lines that burden the site. ▪ Wastewater: Currently wastewater servicing is available via extension of the existing trunk main located on Appin Road that provides connectivity to the Glenfield wastewater treatment plant. ▪ Telecommunications: 5G coverage over the eastern half of the site. NBN fibre connectivity is available via the nearest Fibre Access Point at the corner of Armstrong and Appin Roads. ▪ Gas: Gas servicing is yet to be determined.
Hydrology	The overland flow path associated with the 1 in 100 chance per year flood event is largely limited within the watercourse gorges given they are generally deep. The western portion of the site is characterised by creeks and waterways that flow into the Nepean River further to the west.
Heritage	The site is bordered by European Heritage to its west. Specifically, the Upper Canal System associated with the Upper Nepean scheme. The Upper Canal System is listed on the State Heritage Register (No. 1373) and as item I16 under Schedule 5 of the *Wollondilly Local Environment Plan 2011* (WLEP 2011). Four extant Aboriginal Heritage sites, registered on the Aboriginal Heritage Information Management System (AHIMS) are located to the west and south of the site and are associated with Ousedale Creek.

1.2.2 Zoning

The current zoning is shown in Figure 3 and future proposed zoning is shown in Figure 4.

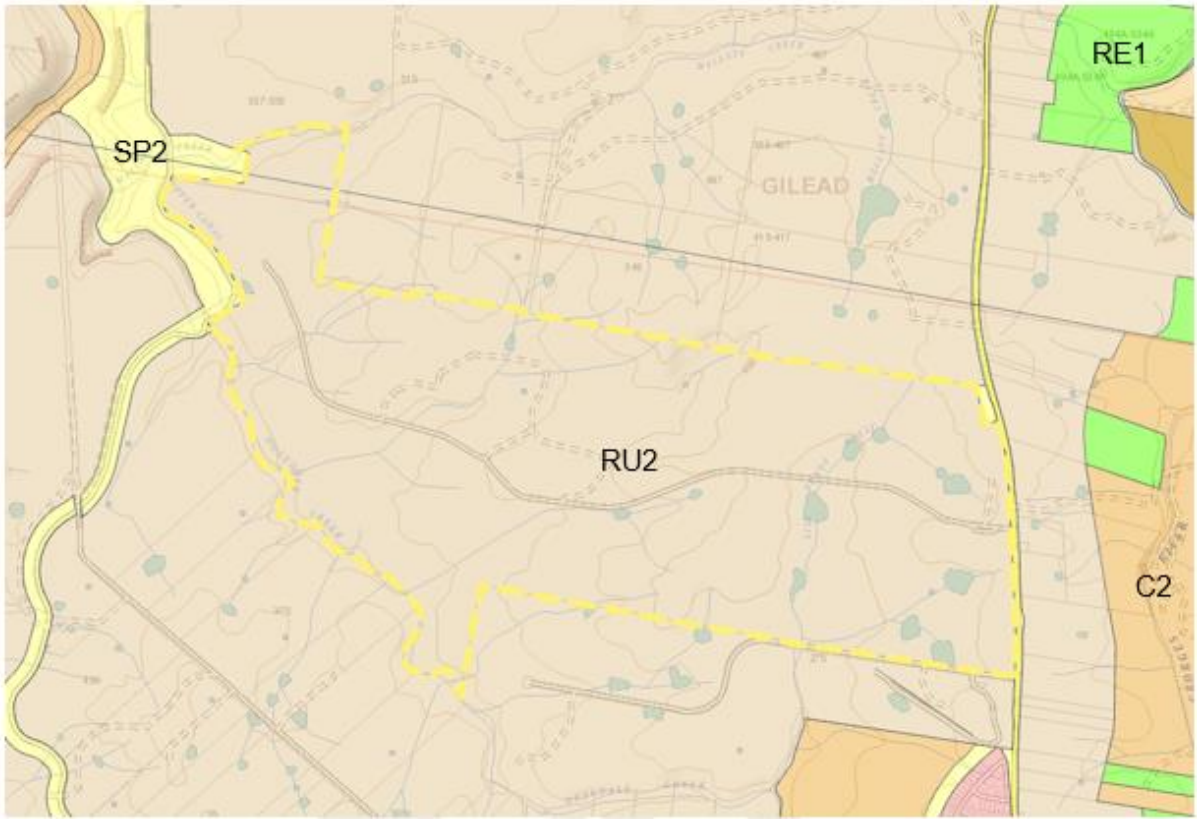

Figure 3 – Existing zoning

1.3 Draft Structure Plan

Ingham Property Group (IPG) and seeks to amend *State Environment Environmental Planning Policy (Precincts - Western Parkland City)* for the site located at 345 Appin Road, Appin.

The Planning Proposal seeks to rezone the site comprising of approximately 301 hectares of land in the North Appin Precinct which forms part of the Greater Macarthur Growth Area (GMGA). The NSW Government Department of Planning and Environment (DPE) has identified the site to deliver up to 3,000 new homes and secure and implement a koala corridor along Ousedale Creek.

The intended outcome of this Planning Proposal is to amend *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* with a new Appendix to include the site and rezone the land to the following:

- UD Urban Development
- SP2 Infrastructure – To be confirmed by DPE
- C2 Conservation.

The proposed amendments will put in place a site-specific planning framework that will support the transition of the site into a new thriving residential community that builds on the NSW government's vision and aspirations established under the Western Sydney Growth Area program and GMGA.

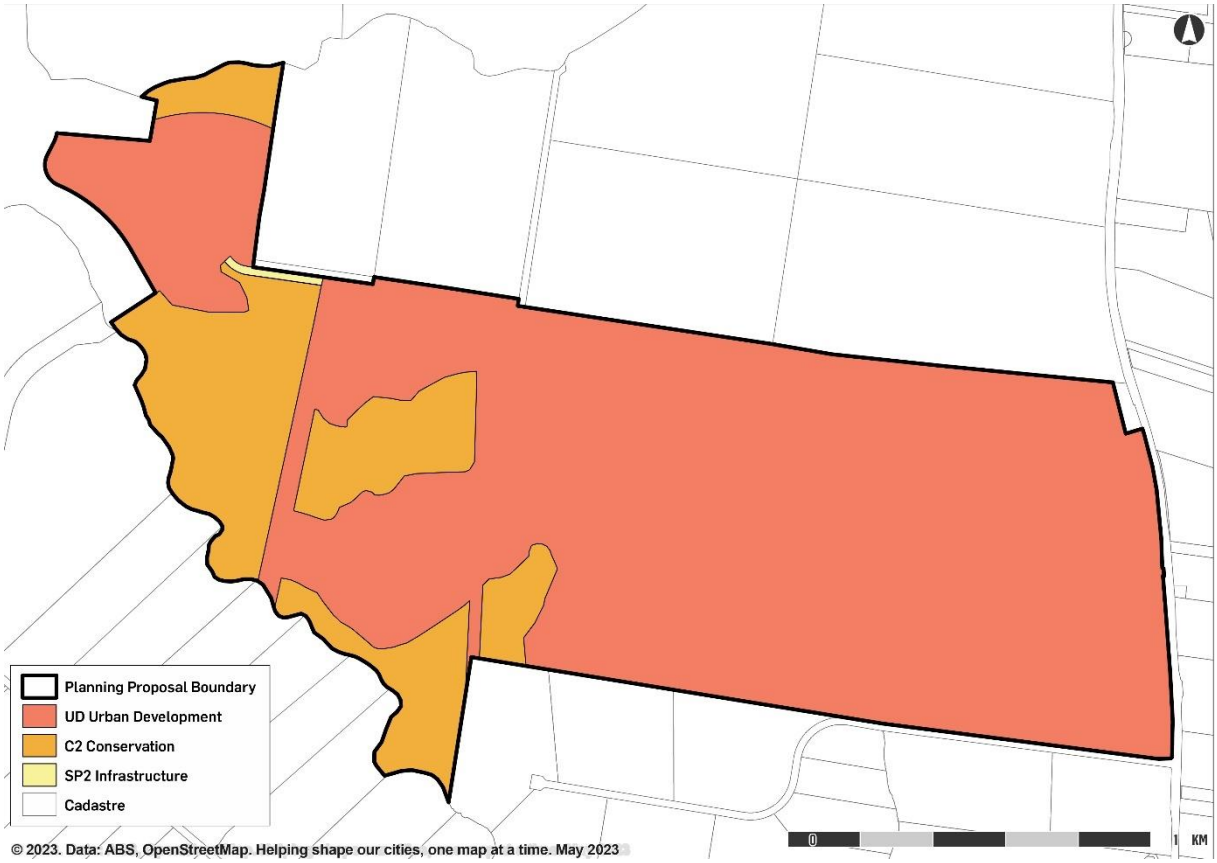

Figure 4 - Proposed Land Zoning Map

2. DESKTOP ASSESSMENT METHODOLOGY

2.1 Pre-survey information collation & resources

A desktop assessment was undertaken to review existing vegetation mapping resources and local threatened species records and potential habitat. A site inspection and target surveys for threatened flora were not undertaken. For the purposes of this report the existing watercourses were also mapped to identify potential riparian corridors subject to detailed site investigation.

Documents reviewed:

The following documents, reports and information sources were utilised in the preparation of this report:

Technical resources utilised:

Legislation

- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*
- *Biodiversity Conservation Act 2016 (BC Act)*
- *Biodiversity Conservation Regulation 2017 (BC Reg.)*
- *Fisheries Management Act 1994 (FM Act)*
- Wollondilly Shire LEP 2010

Mapping resources

- Aerial photographs (Google Earth Pro / Spatial Information Exchange / NearMap)

- Topographical maps (scale 1:25,000)
- LiDAR data for contours (Land and Property Information, est. 2015 estimated)
- ESpade – DPE tool for checking soil types
- Mecone Mosaic planning website
- Hydroline spatial data

Threatened species records

- BioNet database which holds data from a number of custodians (May 2022)

Vegetation mapping/resources:

- BioNet Vegetation Classification System
- NSW Vegetation Communities (SEED)

2.2 Site Overview

The site and surrounding context are partly characterised by various ecological communities, riparian and biodiversity corridors. Along the southwestern site boundary is the Ousedale Creek riparian corridor, which the Cumberland Plain Conservation Plan 2022 (CPCP) identifies as areas of native vegetation for conservation as well as a corridor for the movement of koalas. These areas of native vegetation are partly comprised of Cumberland Plain Woodland.

3. DESKTOP VEGETATION ASSESSMENT

Six vegetation communities were identified within the study site after reviewing the Cumberland Plain West regional mapping tool (OEH 2013). Four endangered ecological communities (EECs) were identified: Shale Sandstone Transition Forest (SSTF) Moist Shale Woodland (MSW), River-Flat Forest and Cumberland Plain Woodland (CPW). As shown below in Figure 5 and further explained in Table 2.

The vegetation communities present on site as per Figure 5 include:

- **PCT 830 Grey Box** - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion
- **PCT 835** - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion
- **PCT 1395** – Narrow-leaved Ironbark - Broad-leaved Ironbark - Grey Gum open forest of the edges of the Cumberland Plain, Sydney Basin Bioregion
- **PCT 1181** – Smooth-barked Apple - Red Bloodwood - Sydney Peppermint heathy open forest on slopes of dry sandstone gullies of western and southern Sydney, Sydney Basin Bioregion
- **PCT 850** – Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion
- **PCT 849** - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion

Table 2 – Vegetation communities

Vegetation Community	*Plant Community Type (PCT)*	*Endangered Ecological Community (EEC)*
Shale Plains Woodland	PCT 849- Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Plain Woodland
Shale Hills Woodland	PCT 850 – Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Cumberland Plain Woodland
Western Sydney Dry Rainforest and Moist Woodland on Shale	PCT 830 Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Moist Shale Woodland
Cumberland River-Flat Forest	PCT 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	River-Flat Eucalypt Forest
Grey Gum / Blackbutt Forest	PCT 1395 – Narrow-leaved Ironbark - Broad-leaved Ironbark - Grey Gum open forest of the edges of the Cumberland Plain, Sydney Basin Bioregion	Shale Sandstone Transition Forest
Upper Georges River Sandstone Woodland	PCT 1181 – Smooth-barked Apple - Red Bloodwood - Sydney Peppermint heathy open forest on slopes of dry sandstone gullies of western and southern Sydney, Sydney Basin Bioregion	N/A

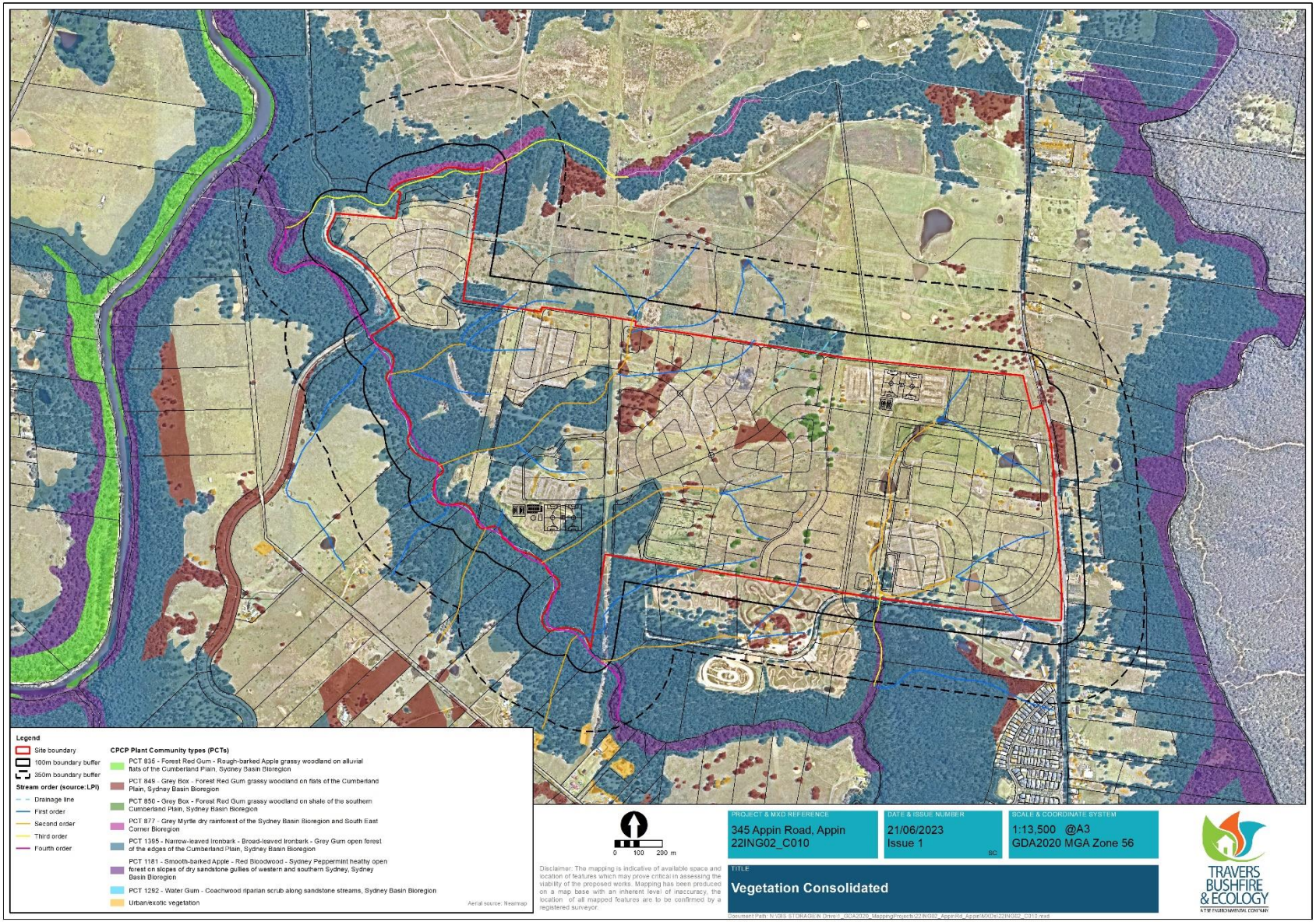

Figure 5 - NSW vegetation community mapping

3.1 Vegetation Community Descriptions

PCT 849- Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion

The gentle topography associated with the shale plains of western Sydney carries an open grassy woodland dominated by grey box (*Eucalyptus moluccana*), forest red gum (*Eucalyptus tereticornis*) and ironbark (*Eucalyptus crebra/Eucalyptus fibrosa*).

Localised patches of spotted gum (*Corymbia maculata*) may occur in the Fairfield LGA. Cumberland Shale Plains Woodland is the second of the grassy woodlands that comprise the Cumberland Plain Woodland in the Sydney Basin Bioregion Critically Endangered Ecological Community listed under the NSW TSC Act.

Like the related community Cumberland Shale Hills Woodland (S_GW02) it is typified by a sparse to moderate cover of shrubs and a high cover of grasses and forbs. Tozer et al. (2010) define the primary habitat for the community as occurring at elevations less than 150 meters above sea level with some sites occurring at higher elevations where the landscape remains gently inclined. Rainfall is restricted to a narrow band between 750 and 950 millimetres per annum. The community occupies the north-west and west zones of the study area but is widespread elsewhere across the Cumberland Plain

Upper Stratum Species: *Eucalyptus moluccana; Eucalyptus tereticornis;*

Mid Stratum *Species: Bursaria spinosa subsp. spinosa*;

Ground Stratum Species: *Dichondra repens; Cheilanthes sieberi subsp. sieberi; Aristida vagans; Microlaena stipoides var. stipoides; Themeda australis; Brunoniella australis; Desmodium gunnii; Opercularia diphylla; Wahlenbergia gracilis; Dichelachne micrantha; Paspalidium distans; Eragrostis leptostachya; Lomandra filiformis; Lomandra multiflora; Dianella longifolia; Oxalis perennans; Euchiton sphaericus; Goodenia hederacea; Aristida ramosa; Arthropodium milleflorum; Austrodanthonia tenuior; Cymbopogon refractus; Echinopogon caespitosus;*

PCT 850 – Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion

Shale Hills Woodland is one of two widespread grassy woodland communities which together are recognised as Cumberland Plain Woodland n the Sydney Basin Bioregion, a Critically Endangered Ecological Community. It is an open woodland of grey box (*Eucalyptus moluccana*) and forest red gum (*Eucalyptus tereticornis*) with narrow-leaved ironbark (*Eucalyptus crebra*) also common. Hickory wattle (*Acacia implexa*) occurs amongst the small tree layer, often amongst regrowth stands.

This species is one of the more distinctive floristic attributes that helps distinguish between the two components of the EEC. Other features are similar in that the two woodland units are characterised by an open shrub layer and a grassy ground cover. Fire history can have an important influence on the abundance of shrubs (Watson et al. 2009), with density of blackthorn (Bursaria spinosa) increasing with time since fire.

The community occupies higher elevations associated with the hills and rises south from Prospect. It is most extensive in Campbelltown and Liverpool local government areas. It

extends beyond the study area west across the Razorback range and once dominated the southern half of the Cumberland Plain. It is restricted to mean annual rainfall of between 750 and 900 millimetres and elevations between 50 and 350 metres above sea level (Tozer et al. 2010). –

Upper Stratum Species: *Acacia implexa; Eucalyptus moluccana; Eucalyptus tereticornis;*

Mid Stratum Species: *Bursaria spinosa subsp. spinosa; Rubus parvifolius;*

Ground Stratum Species: *Dichondra repens; Brunoniella australis; Desmodium gunnii; Aristida ramosa; Microlaena stipoides var. stipoides; Carex inversa; Themeda australis; Cyperus gracilis; Dichelachne micrantha; Asperula conferta; Oxalis perennans; Cheilanthes sieberi subsp. sieberi; Desmodium brachypodum; Sporobolus creber; Wahlenbergia gracilis.*

PCT 830 Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion

Cumberland Moist Shale Woodland (NPWS 2002b, Tozer 2003) occurs on protected aspects on steeper shale hills and rises of the southern half of the Cumberland Plain. It differs from the grassy woodlands found in western Sydney by the prevalence of waxy-leaved shrubs and small trees in the understorey and a ground cover of herbs, fleshy twiners and grasses. Some of these species, such as hairy clerodendrum (*Clerodendrum tomentosum*) and slender grape (*Cayratia clematidea*), are hints of the Hinterland Dry Rainforest (S_RF05), a community that occasionally occurs in more protected situations nearby.

Across its range in western Sydney the canopy is mostly dominated by forest red gum (*Eucalyptus tereticornis*) and grey box (*Eucalyptus moluccana*). However, there is a distinct band of spotted gum (*Corymbia maculata*) that appears along the sheltered slopes between Cecil Hills and Prospect Reservoir. This unit occurs on the Cumberland Plain Wianamatta shale at elevations between 50 and 300 metres above sea level and where mean annual rainfall level reaches between 800 and 900 millimetres (Tozer et al. 2010).

This mapped community is likely a mapping anomaly and possibly the Shale Hills Woodland PCT 850.

Much of this habitat has been extensively cleared, with remaining stands commonly choked by dense thickets of African olive (*Olea europaea subsp. cuspidata*). This reduces species diversity and in chronic situations it may be difficult to correctly diagnose the community due to low numbers of native species. Regional analysis suggests there are affinities between this community and sheltered forests found on the hinterland of the Hunter Valley. Further exploratory work is required.

Upper Stratum Species: *Eucalyptus tereticornis; Eucalyptus moluccana;*

Mid Stratum Species: *Breynia oblongifolia; Clerodendrum tomentosum; Sigesbeckia orientalis; Olearia viscidula; Bursaria spinosa subsp. spinosa;*

Ground Stratum Species: *Desmodium gunnii; Cyperus gracilis; Galium propinquum; Brunoniella australis; Desmodium brachypodum; Solanum prinophyllum; Microlaena stipoides var. stipoides; Arthropodium milleflorum; Echinopogon ovatus; Einadia hastata; Nyssanthes diffusa; Oxalis perennans; Plectranthus parviflorus; Rumex brownii; Wahlenbergia gracilis.*

PCT 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion

Cumberland Riverflat Forest (Benson and Howell 1990) is an open eucalypt forest situated on broad alluvial flats of the Hawkesbury and Nepean River systems. It also forms narrower ribbons alongside streams and creeks that drain the Cumberland Plain. Typically the canopy includes one of either rough-barked apple (Angophora floribunda) or broad-leaved apple (*Angophora subvelutina*) and one or both of forest red gum (*Eucalyptus tereticornis*) and cabbage gum (*Eucalyptus amplifolia*). However, there are a wide variety of other interesting eucalypts that are highly localised.

On the Georges River near Bankstown and on Cabramatta and Prospect creeks blue box (*Eucalyptus baueriana*) is commonly encountered, sometimes as a smaller tree beneath the canopy. Further north and east Sydney blue gum (*Eucalyptus saligna*) and blackbutt (*Eucalyptus pilularis*) occurs. Near Hoxton Park spotted gum (*Corymbia maculata*) forms a minor component of the canopy.

The understorey within this riverflat forest is characterised by an occasional sparse to open small tree stratum of paperbark (Melaleuca spp.) and wattles (Acacia spp.). A sparse lower shrub layer features blackthorn (Bursaria spinosa) at most sites. The ground layer is characterised by an abundant cover of grasses with small herbs and ferns. Cumberland Riverflat Forest occurs at altitudes between one and 160 metres above sea level and with a mean annual rainfall of 750-1000 millimetres. Within the study area the largest remaining areas are situated on the Georges River. Highly disturbed examples occur on Prospect and Orphan School creeks.

Upper Stratum Species: *Eucalyptus tereticornis; Angophora floribunda; Eucalyptus amplifolia subsp. Amplifolia.*

Mid Stratum Species: *Acacia parramattensis; Bursaria spinosa subsp. spinosa; Sigesbeckia orientalis.*

Ground Stratum Species: *Microlaena stipoides var. stipoides; Oplismenus aemulus; Dichondra repens; Entolasia marginata; Solanum prinophyllum; Pratia purpurascens; Desmodium gunnii; Echinopogon ovatus; Commelina cyanea; Veronica plebeian.*

PCT 1395 – Narrow-leaved Ironbark - Broad-leaved Ironbark - Grey Gum open forest of the edges of the Cumberland Plain, Sydney Basin Bioregion

Cumberland Shale-Sandstone Ironbark Forest is found on the fringes of the Cumberland Plain. It is one of a suite of forests that are associated with the subtle intergrade between clay-rich shale soil and the coarse sandy substrates of the sandstone plateau. Within the study area, the forest is restricted to the hinterland where mean annual rainfall is relatively low (800-1000 millimetres), and soils have a distinct clay component. It is most extensively distributed on the western edge of the Woronora Plateau and above the Nepean and Georges rivers between Appin and the Holsworthy defence area.

It is a moderately tall eucalypt forest with a mixed understorey of sclerophyll shrubs and grasses (Tozer et al. 2010). Sites invariably have one of two species of ironbark (*Eucalyptus crebra or Eucalyptus fibrosa*) present in the canopy along with grey gum (Eucalyptus punctata) and red bloodwood (*Corymbia gummifera*). Spotted gum (*Corymbia maculata*) and blackbutt (*Eucalyptus pilularis*) are included amongst the canopy in the Appin and Wedderburn area respectively.

A sparse cover of tall casuarinas (*Allocasuarina littoralis/Allocasuarina torulosa*) is common. The understorey supports a mix of shrubs that are common on shale substrates such as blackthorn (*Bursaria spinosa*) and those more commonly associated with sandstone soils such as geebungs (*Persoonia spp*.). Beneath this diverse mix of shrubs is a high cover of grass and forbs. The grass layer includes a wide range of species, most of which occur more extensively on the Cumberland Plain.

Upper Stratum Species: *Eucalyptus crebra; Eucalyptus fibrosa; Allocasuarina littoralis; Eucalyptus punctata;*

Mid Stratum *Species: Persoonia linearis; Bursaria spinosa subsp. spinosa; Ozothamnus diosmifolius; Hibbertia aspera;*

Ground Stratum Species: *Lepidosperma laterale; Cheilanthes sieberi subsp. sieberi; Aristida vagans; Pratia purpurascens; Microlaena stipoides var. stipoides; Entolasia stricta; Lomandra multiflora; Themeda australis; Panicum simile; Echinopogon caespitosus; Pomax umbellata; Dichondra repens; Billardiera scandens; Opercularia diphylla*

PCT 1181 – Smooth-barked Apple - Red Bloodwood - Sydney Peppermint heathy open forest on slopes of dry sandstone gullies of western and southern Sydney, Sydney Basin Bioregion

Hinterland Sandstone Gully Forest (DSF p142) is equivalent to DSF 142 identified by Tindall et al. (2004) and is an open eucalypt forest with an abundant sclerophyll shrub stratum and a groundcover dominated by sedges. This forest surrounds the Cumberland plain, occurring along the western portion of the Hornsby and Woronora plateaux and in the lower Blue Mountains.

Within this distribution Hinterland Sandstone Gully Forest occurs on lower slopes of dry sandstone gullies up to 600m ASL where average annual rainfall ranges from 850 to 1300mm. Hinterland Sandstone Gully Forest grades into Sandstone Riparian Scrub (FoW p58) immediately adjacent to creeklines and is replaced by Coastal Sandstone Ridgetop Woodland (DSF p131) or Wingecarribee-Burragorang Sandstone Forest (DSF p144) on upper slopes and exposed positions. As rainfall increases toward the coast, it is replaced by Coastal Sandstone Gully Forest (DSF p140).

About one third of Hinterland Sandstone Gully Forest's original extent has been supplanted by urban development. Large areas remain, including examples in conservation reserves, though edge effects such as weed invasion and high fire frequency are evident in some locations

Upper Stratum Species: *Angophora costata; Corymbia gummifera; Banksia serrata; Eucalyptus piperita; Eucalyptus pilularis; Eucalyptus punctata; Syncarpia glomulifera; Eucalyptus agglomerata;*

Mid Stratum Species: *Persoonia linearis; Persoonia levis; Phyllanthus hirtellus; Leptospermum trinervium; Lomatia silaifolia; Banksia spinulosa; Platysace linearifolia; Ceratopetalum gummiferum; Acacia ulicifolia; Acacia terminalis; Allocasuarina littoralis; Xylomelum pyriforme; Banksia serrata; Dodonaea triquetra; Grevillea mucronulata; Eriostemon australasius;*

Ground Stratum Species: *Entolasia stricta; Pteridium esculentum; Dianella caerulea; Smilax glyciphylla; Xanthosia pilosa; Lomandra longifolia; Lepidosperma laterale; Lomandra obliqua; Phyllanthus hirtellus; Lomandra multiflora; Lomandra filiformis; Gonocarpus teucrioides; Pomax umbellata; Austrostipa pubescens; Lomandra cylindrica; Xanthorrhoea arborea;*

4. THREATENED SPECIES

The BioNet vegetation classification system and BioNet species sighting search was used to assess which threatened species have potential to occur on site. Threatened flora and fauna species assessed are listed in Table 3. The likelihood of occurrence is based on association with the predicted regionally mapped PCT's on site, known local records, age of records, topography, known distribution, geology, and soils.

Significant habitat trees will need to be recorded across the subject site, as these may be suitable for a number of threatened fauna species which will determine the likelihood of hollow dependant threatened fauna occurring onsite.

Table 3 – Threatened species with potential to occur

Common name	*Scientific name*	Listing status	
		BC Act	EPBC Act
Flora			
Woronora Beard-heath	*Leucopogon exolasius*	*V*	*V*
Prickly Bush-pea	*Pultenaea aristata*	*V*	*V*
Matted Bush-pea	*Pultenaea pedunculata*	*E1*	
Bynoe's Wattle	*Acacia bynoeana*	*E1*	*V*
Narrow-leaf Finger Fern	*^^Grammitis stenophylla*	*E1,3*	
Narrow-leaved Black Peppermint	*Eucalyptus nicholii*	*V*	*V*
Deane's Paperbark	*Melaleuca deanei*	*V*	*V*
Magenta Lilly Pilly	*Syzygium paniculatum*	*E1*	*V*
Bauer's Midge Orchid	*^Genoplesium baueri*	*E1,P,2*	*E*
Sydney Plains Greenhood	*^Pterostylis saxicola*	*E1,P,2*	*E*
Small-flower Grevillea	*Grevillea parviflora subsp. parviflora*	*V*	*V*
Bargo Geebung	*Persoonia bargoensis*	*E1,P*	*V*
Hairy Geebung	*^^Persoonia hirsuta*	*E1,P,3*	*E*
Brown Pomaderris	*Pomaderris brunnea*	*E1*	*V*
Spiked Rice-flower	*Pimelea spicata*	*E1*	*E*
Fauna			
Giant Burrowing Frog	*Heleioporus australiacus*	*V,P*	*V*
Rosenberg's Goanna	*Varanus rosenbergi*	*V,P*	
Broad-headed Snake	*^Hoplocephalus bungaroides*	*E1,P,2*	*V*
Spotted Harrier	*Circus assimilis*	*V,P*	
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	*V,P*	
Little Eagle	*Hieraaetus morphnoides*	*V,P*	
Square-tailed Kite	*^^Lophoictinia isura*	*V,P,3*	
Black Falcon	*Falco subniger*	*V,P*	
Bush Stone-curlew	*Burhinus grallarius*	*E1,P*	

Common name	*Scientific name*	Listing status	
		BC Act	EPBC Act
Gang-gang Cockatoo	*^^Callocephalon fimbriatum*	*V,P,3*	*E*
Glossy Black-Cockatoo	*^Calyptorhynchus lathami*	*V,P,2*	*V*
Little Lorikeet	*Glossopsitta pusilla*	*V,P*	
Swift Parrot	*Lathamus discolor*	*E1,P*	*CE*
Powerful Owl	*^^Ninox strenua*	*V,P,3*	
Masked Owl	*^^Tyto novaehollandiae*	*V,P,3*	
Brown Treecreeper (eastern subspecies)	*Climacteris picumnus victoriae*	*V,P*	
Regent Honeyeater	*Anthochaera phrygia*	*E4A,P*	*CE*
Varied Sittella	*Daphoenositta chrysoptera*	*V,P*	
Dusky Woodswallow	*Artamus cyanopterus*	*V,P*	
Scarlet Robin	*Petroica boodang*	*V,P*	
Flame Robin	*Petroica phoenicea*	*V,P*	
Spotted-tailed Quoll	*Dasyurus maculatus*	*V,P*	*E*
Southern Brown Bandicoot (eastern)	*Isoodon obesulus*	*E1,P*	*E*
Koala	*Phascolarctos cinereus*	*E1,P*	*E*
Eastern Pygmy-possum	*Cercartetus nanus*	*V,P*	
Squirrel Glider	*Petaurus norfolcensis*	*V,P*	
Greater Glider	*Petauroides volans*	*E1,P*	*E*
Grey-headed Flying-fox	*Pteropus poliocephalus*	*V,P*	*V*
Yellow-bellied Sheathtail-bat	*Saccolaimus flaviventris*	*V,P*	
Eastern Coastal Free-tailed Bat	*Micronomus norfolkensis*	*V,P*	
Large-eared Pied Bat	*Chalinolobus dwyeri*	*V,P*	*V*
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*	*V,P*	
Southern Myotis	*Myotis macropus*	*V,P*	
Golden-tipped Bat	*Phoniscus papuensis*	*V,P*	
Greater Broad-nosed Bat	*Scoteanax rueppellii*	*V,P*	
Little Bent-winged Bat	*Miniopterus australis*	*V,P*	
Large Bent-winged Bat	*Miniopterus orianae oceanensis*	*V,P*	
Cumberland Plain Land Snail	*Meridolum corneovirens*	*E1*	

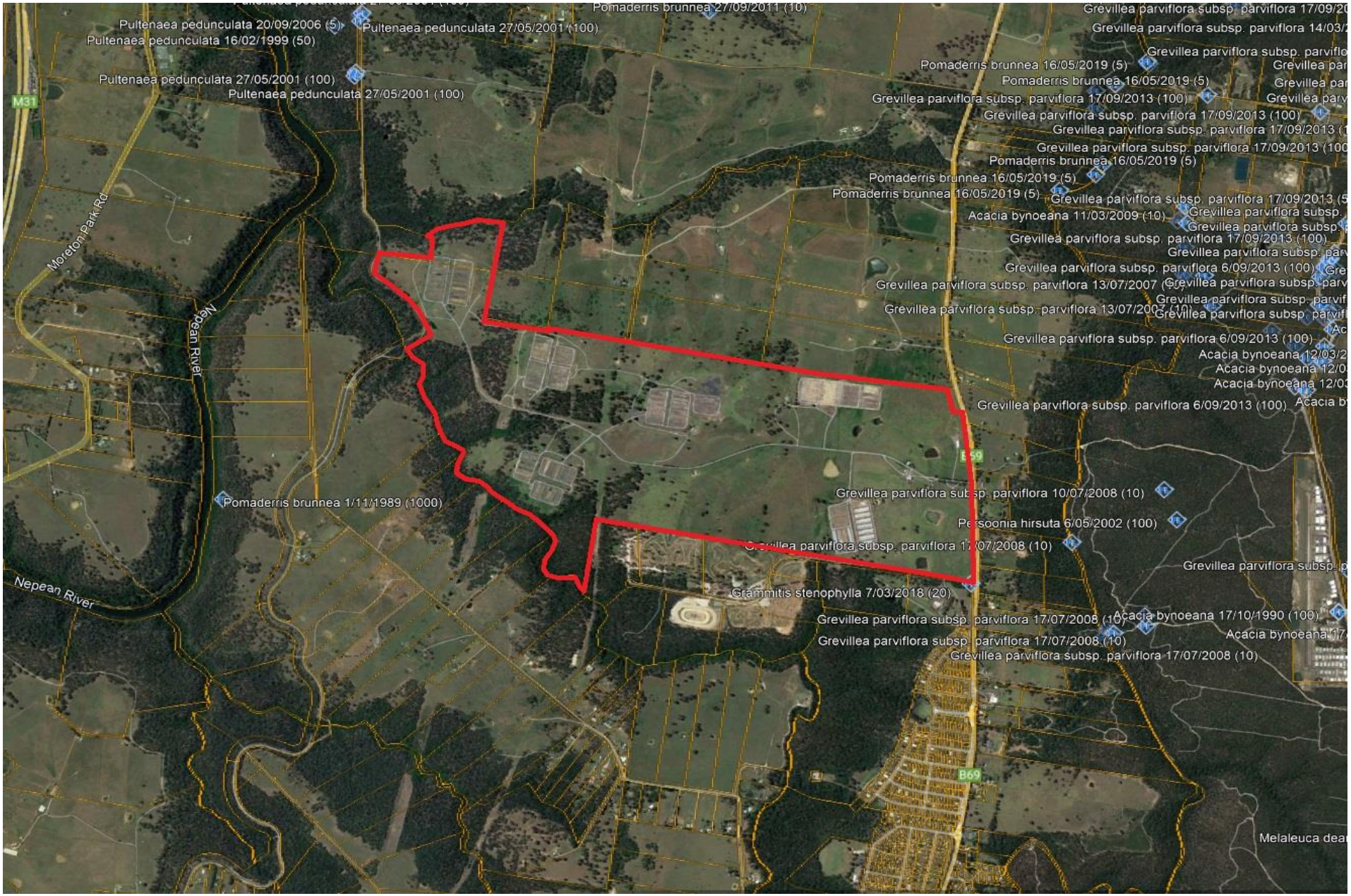

Figure 6 – Threatened flora species recorded within 10 km of the study site

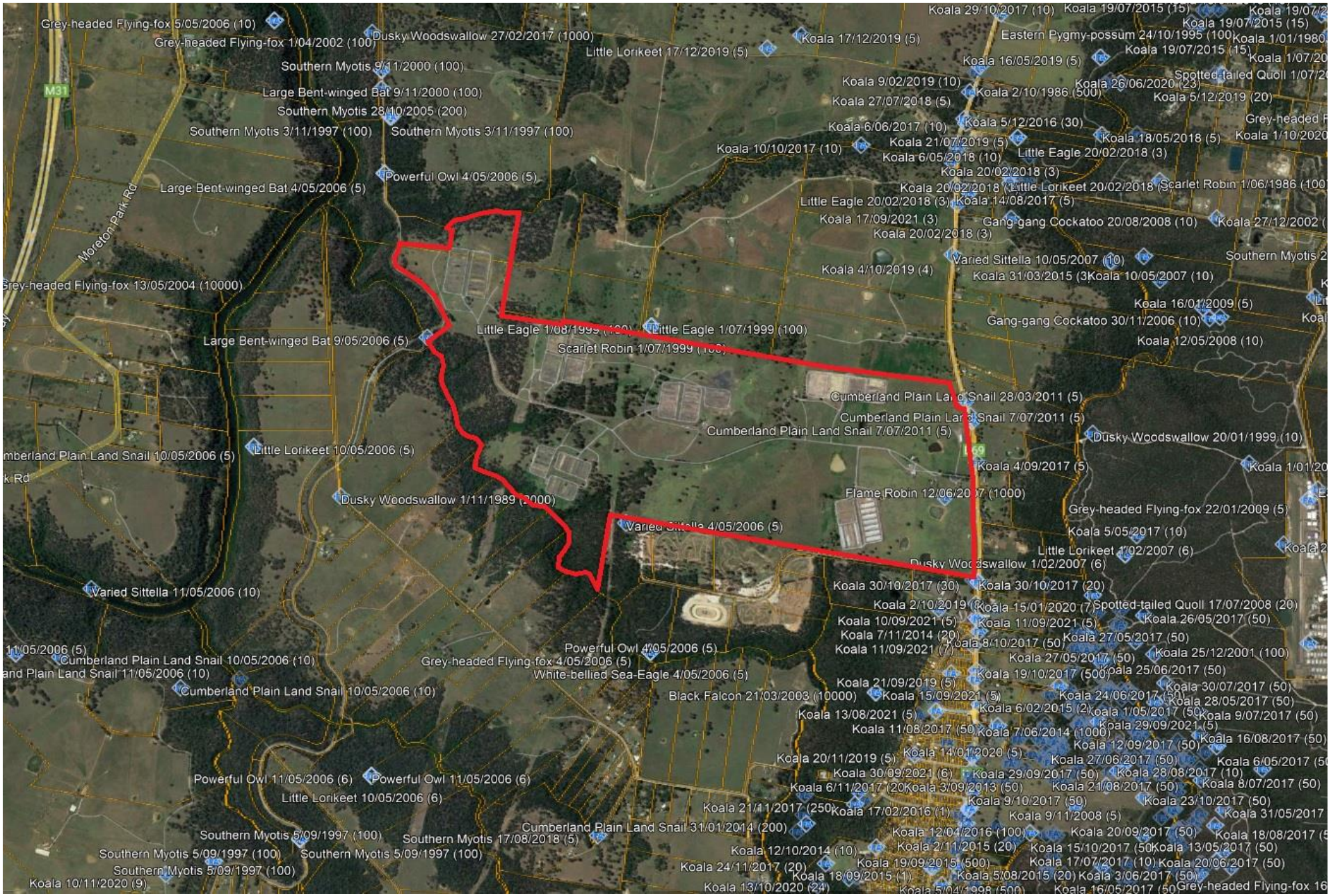

Figure 7 – Threatened fauna species recorded within 10 km of the study site

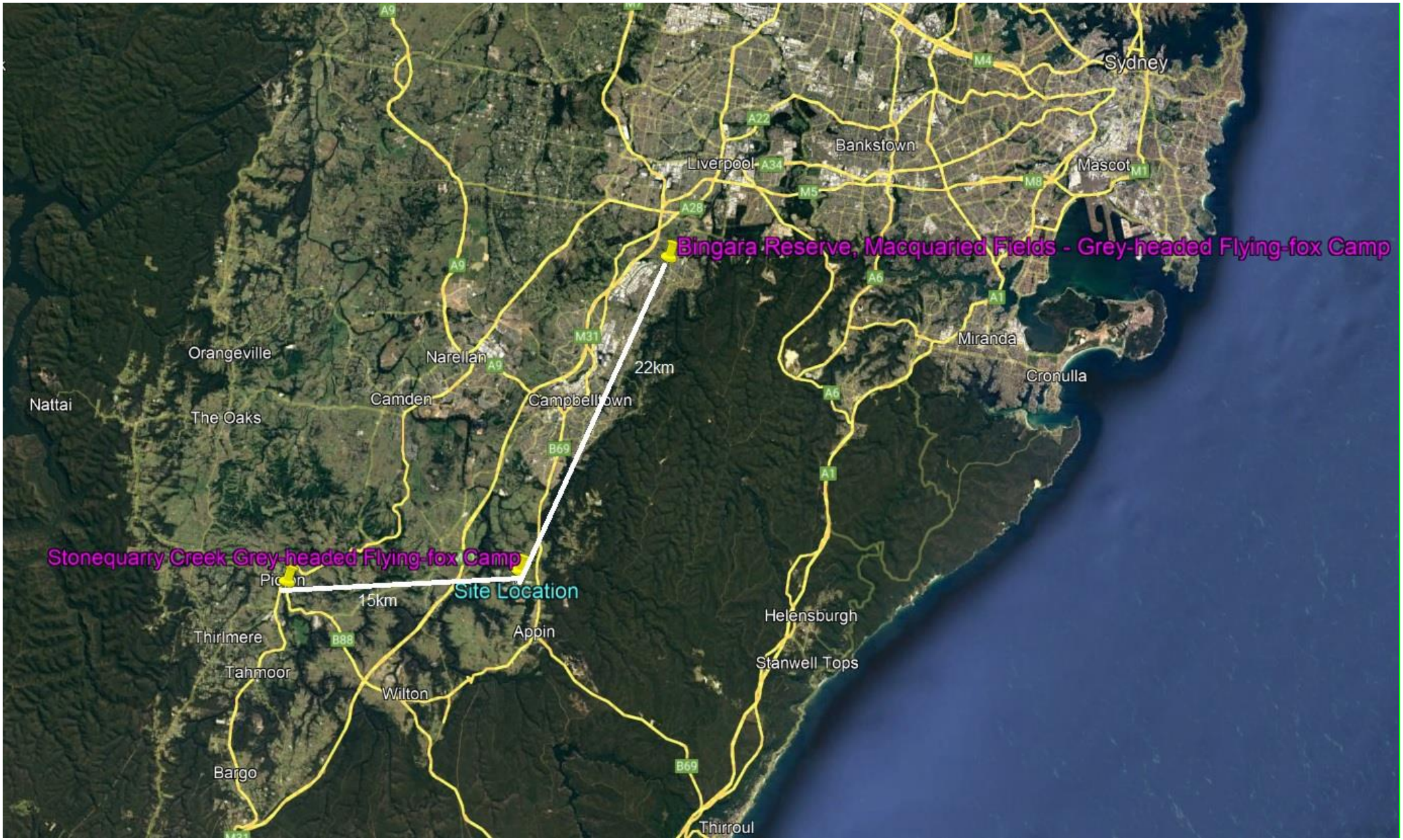

Figure 8 - Proximity of Grey-headed Flying Fox Camps

5. CONSERVATION ASSESSMENT

5.1 Land-use compatibility with the Cumberland Plain Conservation Plan

The Cumberland Plain Conservation Plan (CPCP) is intended to facilitate growth in Western Sydney to 2056 and beyond and delivers important development and biodiversity outcomes. This CPCP is critical to the Western Parkland City by supporting the delivery of housing, jobs and infrastructure while protecting important biodiversity including threatened plants and animals.

The CPCP has been developed to meet requirements for strategic biodiversity certification under the Biodiversity Conservation Act 2016 (NSW) (*BC Act*) and strategic assessment under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) (*EPBC Act*).

The CPCP identifies important biodiversity areas in Western Sydney's nominated areas that will not be certified and where development will be limited. These areas are identified in the plan's mapping as 'avoided land.'

The CPCP also identifies areas suitable for development within the nominated areas. These areas are mapped as certified-urban capable land or certified-major transport corridors (see Figure 8 to Figure 11 of the report - *https://shared-drupal-s3fs.s3.ap-southeast-2.amazonaws.com/master-test/fapub_pdf/Lisa+Drupal+Documents/Cumberland-Plain-Conservation-Plan-202208.pdf).*

Development in certified-urban capable land or certified-major transport corridors areas, will not require further biodiversity approvals under the *BC Act* and *EPBC Act* if development is in accordance with the CPCP. It is noted that development controls apply to the certified lands in accordance with the CPCP. The CPCP is intended to be endorsed under the *EPBC Act* to approve sections of the 4 major transport corridors that are outside of the nominated areas but within the CPCP Area.

The CPCP mapping that identifies certified and avoided lands was released in August 2022.

Potential conservation land has been identified through the strategic conservation planning process. These are mapped as 'Avoided' lands. Avoided lands are intended to be conserved land will include new or additions to national parks and public reserves, investment in biodiversity stewardship sites on public or privately-owned land, direct purchase and retiring of species and ecosystem credits from the Biodiversity Offsets Scheme, and ecological restoration of the Cumberland subregion's native vegetation communities.

The Draft Structure Plan will impact a minor part of the avoided land if the southern-most bushfire access route to development Precinct 14 is pursued. The permissibility of this access route will need to be investigated and supported by the Determining Authority.

In accordance with the proposed land zoning (Figure 4), all mapped avoided areas will be rezoned for conservation (C2), SP2 (to be confirmed by DPE) to facilitate a potential bushfire access route and the remainder as UD Urban Development.

5.1.1 Certified-urban capable land & environmental controls

This category identifies where future urban development is likely to occur, subject to other approvals. Certified-urban capable land has been subject to strategic biodiversity certification for development under Part 8 of the *BC Act* and class of actions approval under Part 10 of the *EPBC Act*. Development in these areas does not require further biodiversity assessment under the *BC Act* or *EPBC Act*, if consistent with the CPCP and its approvals.

The department has used a strategic conservation planning approach to locate and design the certified-urban capable land in the nominated areas to avoid and minimise impacts on biodiversity values as part of the CPCP. This has been undertaken in accordance with the CPCP avoidance criteria.

Biodiversity certification under Part 8 of the *BC Act* has been approved as part of the strategic biodiversity certification for the site. Within certified urban capable land, development can proceed in these areas without further NSW biodiversity approvals if the necessary development consent is obtained, prescriptions or conditions of approval are met, and any unavoidable impacts are addressed through the conservation program.

Development that occurs outside the certified land is not part of the biodiversity certification associated with the CPCP. Future development outside of certified land in any of the 4 nominated areas will need to seek separate biodiversity approvals under the BC Act or a formal modification to the strategic biodiversity certification. Development would also need to meet additional considerations set out in the planning controls that will apply through the Biodiversity and Conservation SEPP.

Mitigation measures are to be considered, in accordance with the *Cumberland Plain Conservation Plan Mitigation Measures Guideline*, as stated in clause 13.16 (1) of the amendment to the State Environmental Planning Policy (Biodiversity and Conservation) 2021:

> *Development consent must not be granted to development on certified urban capable land unless the consent authority has considered whether the development is consistent with the Cumberland Plain Conservation Plan Mitigation Measures Guideline.*

Mitigation measures will apply to certified-urban capable land and certified-major transport corridors within the nominated areas to address indirect impacts from development to biodiversity in or adjacent to certified land. These will be implemented as development requirements through the planning system by applying:

- a development control plan (DCP) template to guide state led DCPs for nominated areas
- the Cumberland Plain Conservation Plan Mitigation Measures Guidelines for nominated areas that do not have a state-led DCP in place – Greater Macarthur Growth Area and Greater Penrith to Eastern Creek Investigation Area.

Two (2) broad types of development controls will be implemented through State led DCPs to protect biodiversity values and address the mitigation measures:

- general environmental controls that will benefit the environment, including biodiversity values (described in Chapter 15 of the Cumberland Plain Assessment Report).
- specific controls that apply to specific species and threatened ecological communities (TEC's) specific locations or broader nominated areas (described in 'Appendix E. Species and TEC-specific mitigation measures').

An extract of Appendix E of the CPCP is attached to this report as **Appendix 1.**

5.1.2 Avoided land

This category identifies land with high biodiversity values that will be protected and is therefore not certified for future urban development.

In determining the certified-urban capable land for strategic biodiversity certification, the department first identified areas with important biodiversity through a strategic conservation planning process. These areas should be avoided in future development.

This land is described in the CPCP as 'avoided land.' Identifying and protecting avoided land will avoid and minimise the impacts to biodiversity from development in the nominated areas, as required under the *BC Act* and *EPBC Act.*

Avoided land will be subject to development assessment and controls to avoid and minimise impacts on nationally and state-listed threatened species and ecological communities from development in the nominated areas, as required under the *BC Act* and *EPBC Act*.

Development controls to protect important biodiversity will be applied to avoided land in the CPCP. These controls will be applied through the Biodiversity and Conservation SEPP 2021. The controls require permission for the clearing of native vegetation. The consent authority must consider the impact of the proposed development on the biodiversity values of the land before granting consent for clearing.

A ministerial direction made under section 9.1 of the *Environmental Planning and Assessment Act* (1979) restricts future rezoning of land to more intensive land uses on avoided land and ensure that the proposed development in the new precincts is confined to the certified-urban capable land identified under the CPCP.

5.1.3 Excluded land

Excluded land is land that is excluded from NSW strategic biodiversity certification and strategic assessment under the EPBC Act. These areas will not receive any biodiversity approvals under the CPCP because the land:

- is already identified for urban use, such as, existing urban areas or has specific urban zoning, such as business, industrial, residential, or special purpose (either already developed or to be developed)
- is in the nominated areas and already assessed as part of another development approval (such as Bingara Gorge), or is progressing through an alternative development assessment and biodiversity certification approval process (such as Mount Gilead and Menangle Park)
- has approved major projects in the avoided land
- is environmentally protected, including reserves and existing offset site
- is Commonwealth land (such as the Defence Establishment Orchard Hills)
- has roads or easements that intersect with areas of high biodiversity value (the avoided land).

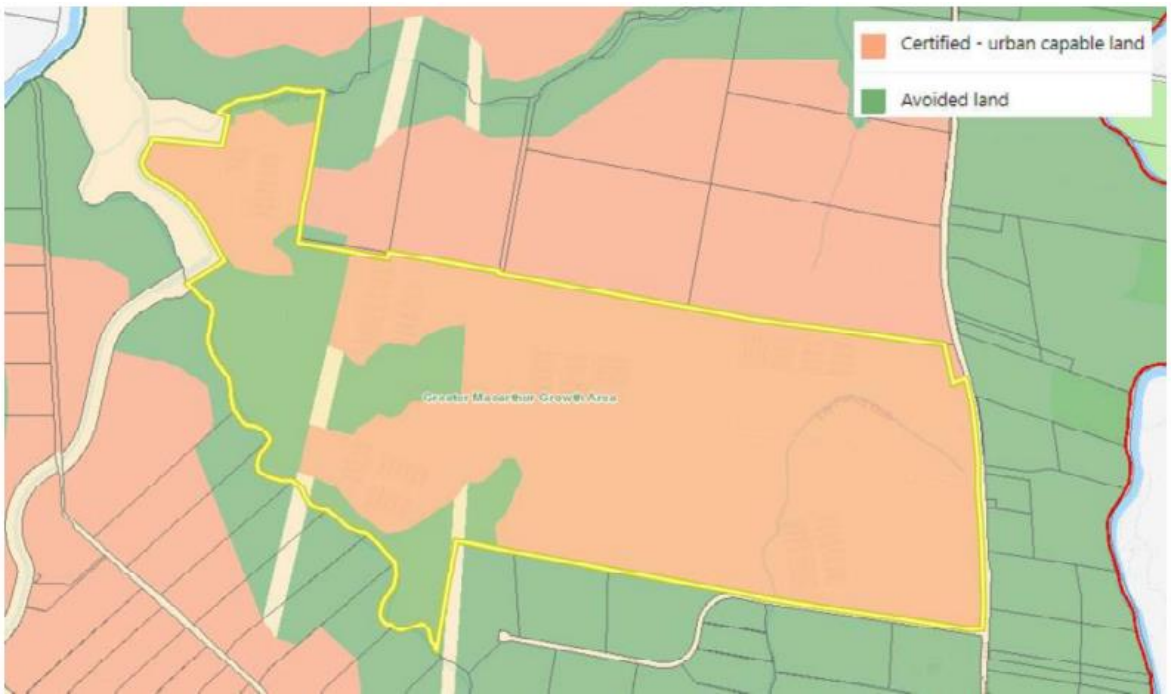

Figure 9 - Cumberland Plain Conservation Plan land classification (study site in yellow)

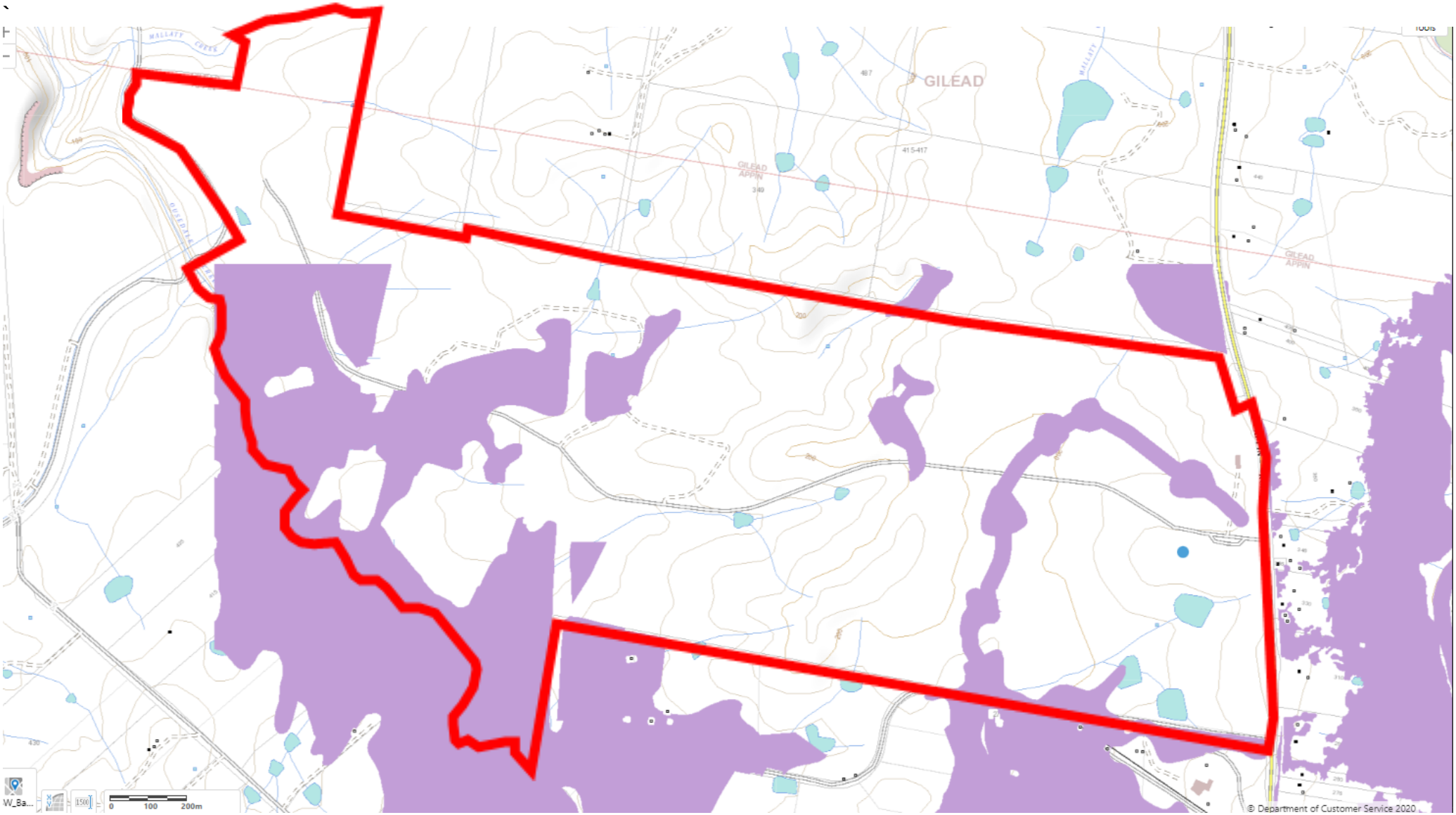

Figure 10– Biodiversity values land

5.1.4 CPCP relating to the mitigation of impacts of Koala habitat

Following the notification of the conferral of the strategic biodiversity certification - Cumberland Plain Conservation Plan (CPCP conferral) on the 17 August 2022, the CPCP conferral framework requires a Koala Plan of management is to be prepared for non-certified land. The proposed Koala Corridor Map is shown below and is reflected in the lands mapped as Avoided Lands under the CPCP.

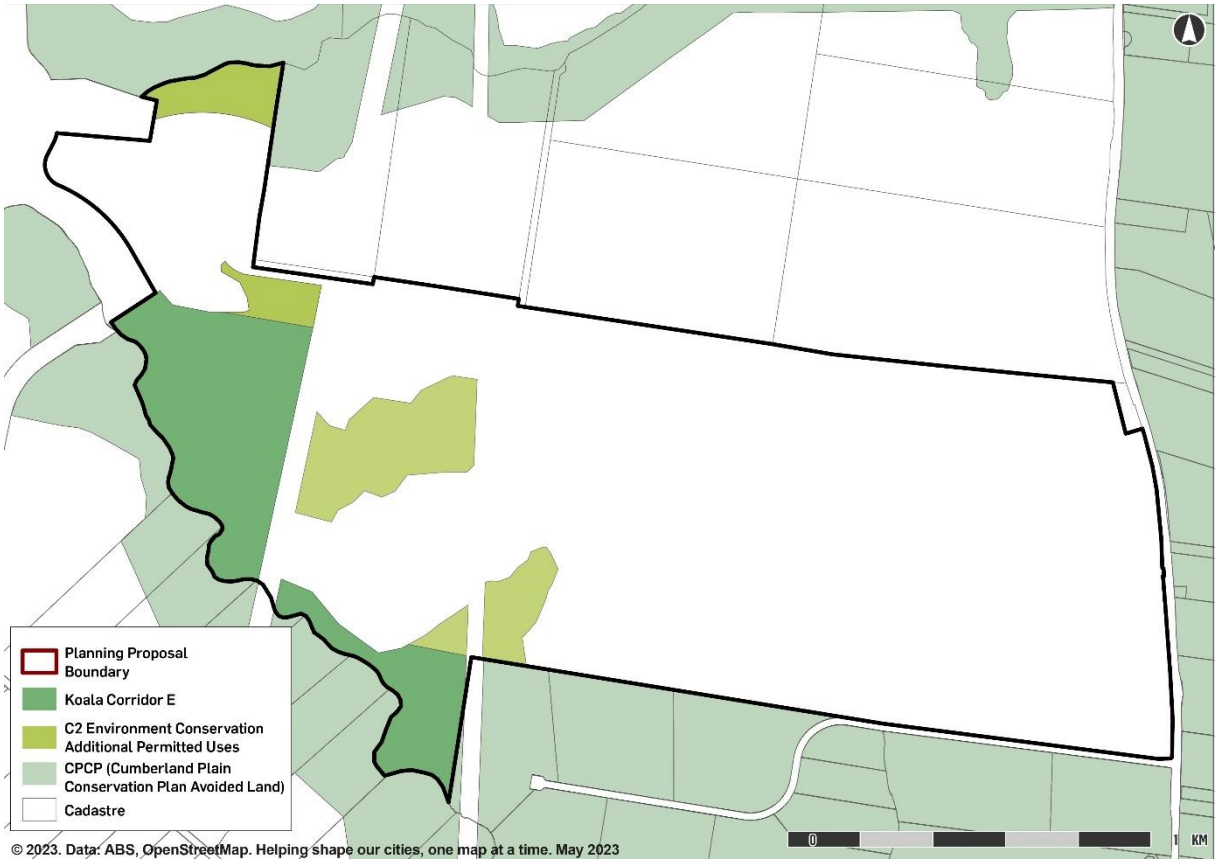

Figure 11 – Proposed Koala Corridor Map

The Draft Structure Plan does not impact on the proposed Koala Corridor which is mostly associated with the proposed SP2 (to be confirmed by DPE) to facilitate a potential bushfire access route. The approval is subject to the approval of the determining authority. The Draft Structure Plan aims to mitigate any potential impacts on koala habitat, the Planning Proposal proposes the following permissible uses for C2 Environmental Conservation koala corridor land including:

- Environmental facilities and
- Environmental protection works

Within C2 Environmental Conservation land outside of the koala corridor, the Planning Proposal proposes the following permissible uses, consistent with other precincts within the Greater Macarthur Growth Area:

- Flood mitigation works;
- Kiosks;
- Recreation areas;

- Roads;
- Drainage Infrastructure.

(a) Planning Controls relating to Koala *on land in a strategic conservation area*.

The planning controls defined by the CPCP relating to the mitigation of the degradation of Koala habitat is reproduced below:

*"**State Environmental Planning Policy (Biodiversity and Conservation) Amendment (Strategic Conservation Planning) 2022 Chapter 13.12 Development on land in strategic conservation area generally***

(1) The objectives of this section are as follows —

(a) to minimise the impacts of development on areas with regionally significant biodiversity, including threatened ecological communities, threatened species and their habitats,

(b) to maintain and enhance ecological function,

(c) to protect and enhance koala habitat and corridors.

(2) Development consent must not be granted to development on land in a strategic conservation area unless the consent authority has considered whether the development is likely to cause an adverse impact on the following —

(a) the biodiversity values of the land,

(b) threatened ecological communities, threatened species and their habitats, both on the site of the development and on adjoining land in a strategic conservation area,

(c) habitat connectivity and fauna movement, including koala and wildlife corridors and links to ecological restoration areas, both on the site of the development and on adjoining land in a strategic conservation area,

(d) the integrity and resilience of the biophysical, ecological, and hydrological environments, including surface and groundwater, and the quality of the natural flow of water in a riparian corridor,

(e) matters of national environmental significance set out in the Environment Protection and Biodiversity Conservation Act 1999 of the Commonwealth, Chapter 2, Part 3, Division 1.

(3) Development consent must not be granted to development on land in a strategic conservation area unless the consent authority has considered whether the cumulative impact of the development and other development for which consent, or an approval has been granted in relation to the land is likely to cause an adverse impact on the following—

(a) the matters referred to in subsection (2)(a)–(e),

(b) the potential for the ecological restoration of the land,

(c) adjoining land identified as a strategic conservation area.

(4) Development consent must not be granted to development on land in a strategic conservation area unless the consent authority is satisfied that—

(a) the development is designed, sited, and will be managed to avoid or minimise an adverse impact referred to in subsection (2) or (3) (an adverse impact), and

(b) the height, bulk, scale, size, and proposed use of the development avoids or minimises an adverse impact, and

(c) supporting infrastructure required for the development avoids or minimises an adverse impact. (5) Subsection (4) does not apply to land identified by this Chapter as avoided land

and land in a strategic conservation area.

13.13 Subdivision of land in strategic conservation area

Development consent must not be granted for the subdivision of land in a strategic conservation area unless the consent authority is satisfied the subdivision—

(a) will allow for the continued protection of threatened ecological communities, threatened species and their habitats, and

(b) will facilitate the long-term biodiversity conservation management of the land, and

(c) will not increase the risk of disturbance to threatened ecological communities, threatened species and their habitats, and

(d) will not increase the potential for land use conflict or intensify land uses.

13.16 Mitigation measures

(1) Development consent must not be granted to development on certified urban capable land unless the consent authority has considered whether the development is consistent with the Cumberland Plain Conservation Plan Mitigation Measures Guideline.

(2) In this section —

***Cumberland Plain Conservation Plan Mitigation Measures Guideline** means the document titled "Cumberland Plain Conservation Plan Mitigation Measures Guideline" published by the Department on the commencement of this Chapter and available on the NSW planning portal.*

Section 9.1 Ministerial Direction (Strategic Conservation Planning)

Requires a planning proposal to demonstrate that it protects or enhances biodiversity. This includes native vegetation, threatened ecological communities, koala habitat and corridors and matters of national environmental significance within the avoided lands or strategic conservation areas.

In accordance with Section 4.4 (3)c of Koala Habitat Protection (SEPP 21), SEPP21 does not apply *to land on which Biodiversity certification has been conferred, and is in force, under clause 8 of the Biodiversity Conservation Act 2016.* The Cumberland Plain Conservation Plan (**CPCP**) Biodiversity certification was conferred under part 8 of the *Biodiversity Conservation Act 2016* in August 2022 Therefore, SEPP 2021 only applies to the non-certified land and does not apply to land that is land mapped as Certified Urban Capable in the CPCP.

The Urban Development Zone as proposed by the Draft Structure Plan is wholly contained on land mapped as. Urban Capable. A KPoM is required for the **non-certified land** within the

Study Site such as for proposed infrastructure works. The SP2 Zone (to be confirmed by DPE) and associated works will require approval and appropriate biodiversity assessment.

(b) Planning Controls relating to Koala *on land certified as Urban Capable*

Based on the CPCP requirements, a DA is required to comply with the mitigation measures as outlined in Appendix E of the CPCP. These measures are provided in Section 5.3

5.2 Consistency with the CPCP

The primary criterion of consistency is whether the Structure Plan impacts on land mapped as Avoided Lands.

In review of Figure 5 & Figure 12, the Structure Plan **has avoided** all areas mapped as Avoided Lands under the CPCP. It is noted that existing easements across the Avoided Lands which is part of the existing infrastructure that is retained in the landscape.

In the event that any infrastructure or other works are proposed within the Avoided Lands then further biodiversity assessment will be required.

As advised earlier in the CPCP, two (2) broad types of development controls will be implemented through State led DCPs to protect biodiversity values and address the mitigation measures:

- general environmental controls that will benefit the environment, including biodiversity values (described in Chapter 15 of the Cumberland Plain Assessment Report).
- specific controls that apply to specific species and TEC specific locations or broader nominated areas (described in 'Appendix E. Species and TEC-specific mitigation measures').

We have not been able to access the general environmental controls described in Chapter 15 of the Cumberland Plain Assessment Report, as only a summary of this report is available to review. We expect that these general controls will be reflected within amended SEPPS and the Development Control Plan.

5.3 Mitigation Measures from the Cumberland Plain Conservation Plan (GMAC)

Appendix E of the CPCP Species and TEC Specific mitigation measures are provided as an attachment. The mitigation measures are specified for the Greater Macarthur Growth Area and are required to be implemented through the future DCP for the precinct.

For Urban and Industrial development mitigation measures are required to be implemented.

<u>Subdivision Design</u>

- Design subdivision layout including perimeter roads and asset protection zones should reduce impacts on and protect areas of koala habitat.
- Retain large trees (including dead trees but excluding noxious weeds) (≥50cm DBH) during precinct planning where possible and avoid impacts to soil within the dripline of these trees during construction.

- Establish a 100 m minimum setback for development around flying fox camps. The setback area should be maintained free of flying fox roosting habitat.
- Raptor nests require a 500 m circular setback from nest locations in undisturbed bushland or 250 m for nests adjacent to existing development. Owl nests require a 100 m circular setback from nest locations.
- Where planned linear infrastructure such as gas and electricity transmission crosses existing koala- exclusion fencing, consider appropriate access treatments such as gates to ensure integrity of koala-exclusion fencing.
- Where public road infrastructure crosses koala corridors, ensure:
  (a) exclusion fencing is in place to prevent koalas from entering the road
  (b) suitable koala connectivity structures are installed to protect corridor integrity.
- Consult with relevant land managers to implement critical actions for Cumberland Plain land snail under the Save our Species program (EES, 2020) on public land adjacent to urban development during construction and operation of the development, taking into account relevant guidance in the weed control implementation strategy and the fire management strategy.
- Implement 'open structure design' when designing structures such as roads adjacent to known populations of Cumberland Plain land snail where possible, consistent with the critical actions for this species under the Save our Species program (EES 2020).
- Implement the following traffic-calming measures for all development not subject to wildlife- and koala exclusion fencing. Apply speed limit restrictions on local roads for areas adjacent to open space and land identified as avoided under CPCP. Signpost perimeter roads and roads adjacent to wildlife habitat areas in accordance with Austroads, RMS technical guidelines, council guidelines and relevant Australian standards. Install traffic-calming devices such as speed humps and audible surfacing along perimeter roads adjacent to wildlife habitat.
- Where permitted and appropriate, contain domestic cats and dogs in new residential areas during operation of the development at the urban/bushland interface consistent with relevant Council guidelines.

<u>Landscaping</u>

- Retain areas of high density Proteaceae shrubs where possible, particularly along riparian corridors.
- Do not plant koala feed trees, as listed in Koala SEPP Schedule 2 Koala use tree species in open space and recreation areas.
- Dog-proof fenced areas are to be designated within open space and public recreation areas.
- Dog-proof fencing is a design requirement for each residential lot in accordance with Council requirements.
- Signpost areas adjoining koala habitat with signage indicating koalas are in the area, the permitted/prohibited activities, and associated penalties that apply for noncompliance.
- Install koala-friendly road design structures such as underpasses, fauna bridges and overpasses consistent with any approval conditions. Consider and apply RMS Biodiversity Guidelines.

<u>Preconstruction</u>

- Undertake pre- construction surveys prior to removal or disturbance (seasonally dependent, before torpor) to human made structures to ensure any roosting habitat for

microbat species including mine shafts, storm water tunnels, old or derelict buildings, bridges, and culverts, are retained where possible.
- Undertake site assessment and pre-clearance survey prior to removal of vegetation and undertake koala survey and implement translocation plan if required.
- Erect temporary protective fencing around areas identified for conservation on or adjoining the site at pre-construction phase to ensure adequate protection is in place during construction.

<u>During and Post Construction</u>

- Undertake site assessment and pre-clearance survey prior to removal of vegetation and undertake koala survey and implement translocation plan if required.
- Modify pest control techniques implemented during construction and operation of the development and under the pest control strategy to reduce the risk of secondary poisoning (e.g. from Pindone or second-generation rodenticides).
- Erect temporary protective fencing around areas identified for conservation on or adjoining the site at pre-construction phase to ensure adequate protection is in place during construction.
- Implement a tree-felling protocol to avoid impacts to koalas in trees that are to be cleared.
- Manage roadside vegetation adjacent to koala habitat areas to minimise height of ground cover and increase visibility of any roadside fauna. Mow turfed areas, mechanically trim low ground covers.
- Have an onsite ecologist present throughout the duration of pre-clearance surveys and clearing works.
- Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as Phytophthora and myrtle rust within or adjacent to potential habitat for relevant species.
- Strictly enforce vehicle wash down points for machinery, equipment, and tyres prior to entering and leaving the construction site. Use hygiene procedures in instances where vegetation pathogens known to affect koala trees may be spread.
- Make sure all vehicles, machinery, maintenance equipment, tyres and work boots are free of mud, soil, and vegetation prior to entering and leaving a development construction site.
- Consult with managers of land containing known populations or habitat for relevant species to mitigate indirect impacts from fire during construction and operation of the development, considering guidance in the fire management strategy. Further mitigation measures apply to Infrastructure (including essential infrastructure) and Intensive plant agriculture as per Appendix E of the CPCP.
- Consult with land managers of land containing known populations or habitat for relevant species to mitigate indirect impacts from human disturbance during construction and operation of the development, including controlling public access, managing maintenance activities such as mowing and slashing, and managing rubbish dumping. Additionally, for Pimelea spicata ensure weed management activities involving the use of herbicides will minimise risks and maintain the species.
- Undertake fire hazard management within the asset protection zone at this location to protect existing Pimelea spicata individuals and is sympathetic ongoing recruitment of new individuals of this species.

- Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as Phytophthora and myrtle rust adjacent to potential habitat for relevant species.
- Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as Phytophthora and myrtle rust adjacent to potential habitat for relevant TECs.

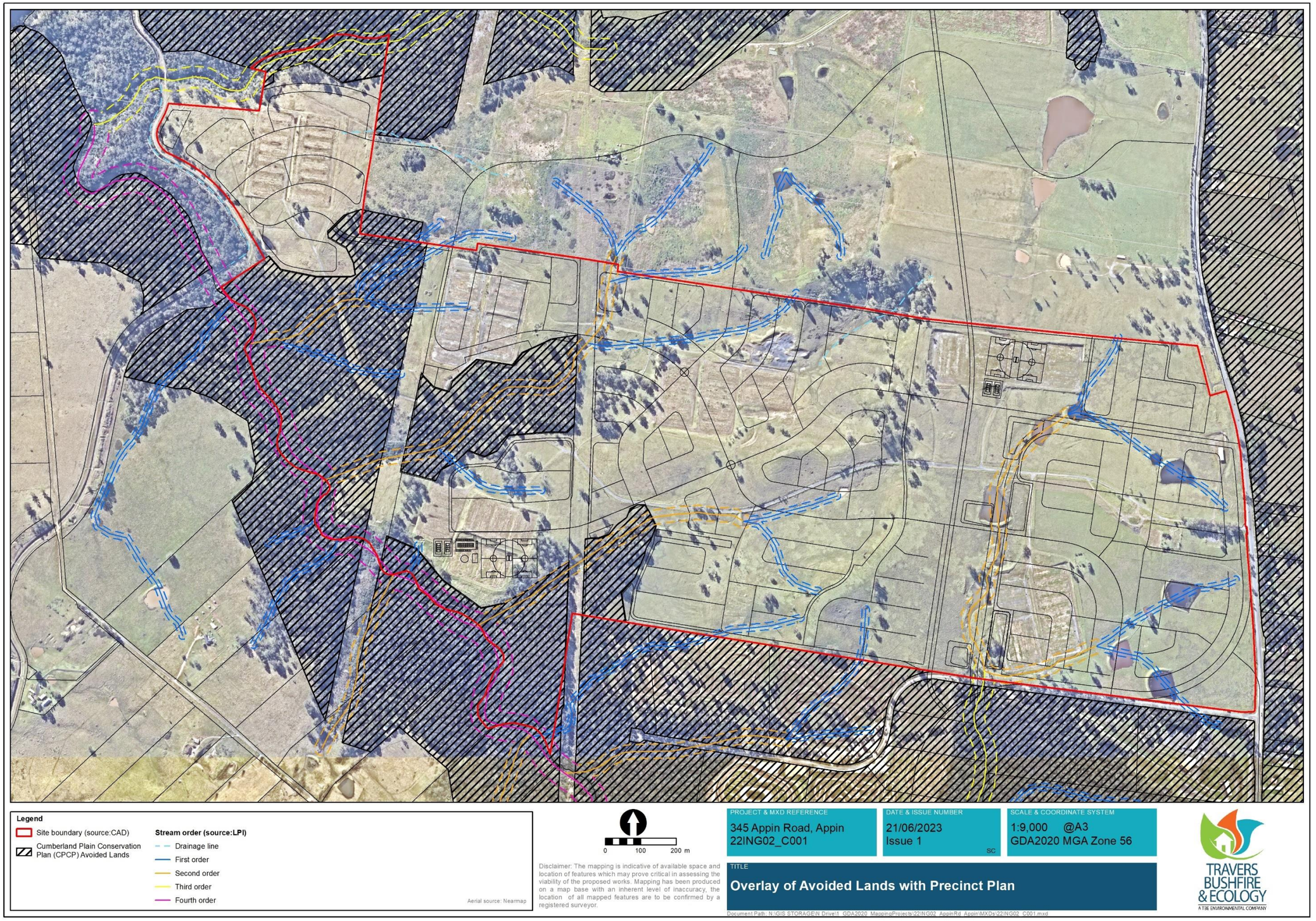

Figure 12– Overlay of Planning proposal with 'Avoided Lands' under the CPCP

6. CONCLUSION & RECOMMENDATIONS

The Draft Structure Plan has been reviewed against the CPCP that was enforced in August 2022. The Draft Structure Plan is largely consistent with the CPCP except for the proposed bushfire access within the SP2 (to be confirmed by DPE) Proposed zone.

Proposed vegetation impacts within urban capable lands will need to meet future DCP general environmental controls and mitigation measures guidelines as per Appendix E of the CPCP (supplied as Attachment 1).

With regard to Koalas, a Koala Plan of Management will be required to mitigate impacts on Koala Populations where infrastructure works are to be undertaken within 'avoided lands' only. The mitigation measures include specific measures to mitigate impacts on koala populations within the land certified as Urban Capable.

6.1 Recommendations

For the purposes of a future subdivision DA, as listed in Section 4.3, the mitigation measures provide a series of actions that must be demonstrated at each stage of the development.

- To comply with these requirements survey will need to be undertaken for evidence of significant biodiversity features such as Flying Fox camps, raptor nests and Owl nests all of which attract buffers. The location of these features will need to be mapped and appropriate mitigation applied subject to their proximity with the proposed works.
- We note that Flying Fox camps have not been recorded in close proximity to the site and is unlikely to be an issue for future development applications on site.
- We note that Powerful Owl and Little Eagle have been recording near the site and therefore recommend that target survey for nests are completed to ensure adequate buffer setbacks are provided for future development applications within the site.
- Provide Koala crossings at appropriate locations that minimise predation and risk of dog attack and roadkill.
- Implement within lot Koala mitigation measures that provide escape routes from urban lots.
- Provide within site bushfire refuges for Koalas.
- Relocate and repurpose hollows where appropriate for habitat enrichment purposes within the conservations areas.
- Provide biodiversity offsets for any impacted avoided lands in accordance with the Appendix D2 of the CPCP - Table 10 – Vegetation offset Target Method.

The permissibility of the proposed bushfire access is to be clarified through the CPCP modification process and may be subject to further appropriate biodiversity assessment.

ATTACHMENT 1

Species and TEC Mitigation Measures Guidelines
(an extract from Appendix E of the CPCP)

Appendix E. Species and TEC-specific mitigation measures

In the following tables:

- GPEC = Greater Penrith to Eastern Creek Investigation Area
- WSA = Western Sydney Aerotropolis
- GMAC = Greater Macarthur Growth Area
- WTN = Wilton Growth Area
- CPCP = Cumberland Plain Conservation Plan

Urban and industrial, infrastructure and intensive plant agriculture

Mitigation measures to address residual risks to threatened fauna

Table 13. Habitat features and connectivity – Threatened fauna risk mitigation

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Retain large trees (including dead trees but excluding noxious weeds) (≥50cm DBH) during precinct planning where possible and avoid impacts o soil within the dripline of these trees during construction.	Large trees within urban landscapes are likely to be important for the persistence of several species within the subregion. Microbats benefit directly through roosting opportunities and indirectly through foraging opportunities. Flying foxes and nectivorous birds benefit directly through foraging opportunities (high volumes of nectar). Owls and raptors benefit indirectly through large trees providing habitat for prey species.	**Microbats:** southern myotis, little bent-winged bat, eastern coastal free-tailed bat, large bent-winged bat, yellow-bellied sheathtail bat, eastern false pipistrelle, greater broad-nosed bat **Flying foxes and nectivorous birds:** grey-headed flying fox, regent honeyeater, swift parrot, little lorikeet, painted honeyeater, black-chinned honeyeater **Owls and raptors:** barking owl, powerful owl, masked owl, little eagle, white-bellied sea eagle, square-tailed kite, spotted harrier	**5**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**Yes**	**Yes**	**Yes**	**Yes**	**NA**
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Retain areas of high density proteaceae shrubs where possible, particularly along riparian corridors.	Proteaceae shrubs such as banksias are a favoured foraging resource for the species and the species is likely to use riparian corridors as habitat or for moving between other areas of suitable habitat.	eastern pygmy-possum	**5**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**Yes**	**Yes**	**Yes**	**Yes**	**NA**

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Undertake pre-construction surveys prior to removal or disturbance (seasonally dependent, before torpor) to human made structures to ensure any roosting habitat for microbat species including mine shafts, storm water tunnels, old or derelict buildings, bridges and culverts, are retained where possible.	Minimises the potential impacts of urban development to human-made structures that may be used by microbats for roosting or breeding	eastern coastal free-tailed bat, little bent-winged bat, large bent-winged bat, southern myotis, yellow-bellied sheathtail-bat	**5**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**Yes**	**Yes**	**Yes**	**Yes**	**NA**
• **Urban & industrial**	Design subdivision layout including perimeter roads and asset protection zones should reduce impacts on and protect areas of koala habitat.	Minimises the potential impacts of precinct operation to koala habitat	koala	**7**	DCP template Mitigation Measures Guideline	**NA**	**NA**	**Yes**	**Yes**	**NA**
• **Urban & industrial**	Do not plant koala feed trees, as listed in *Koala SEPP Schedule 2 Koala use tree species* in open space and recreation areas.	Koala feed trees and/or endangered ecological communities are contained to open space and recreational areas in precinct design in certified urban-capable land	koala	**7**	DCP template Mitigation Measures Guideline	**NA**	**NA**	**Yes**	**Yes**	**NA**

Table 14. Pest/domestic animal – Threatened fauna risk mitigation

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Modify pest control techniques implemented during construction and operation of the development and under the pest control strategy to reduce the risk of secondary poisoning (e.g. from Pindone or second-generation rodenticides).	Risk of pest control measures causing secondary poisoning of raptors	white-bellied sea-eagle, little eagle, square-tailed kite, spotted harrier	**5 and 16**	**Nominated areas:** DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development **Strategic conservation area**: Pest animal implementation strategy	**Yes**	**Yes**	**Yes**	**Yes**	Strategic conservation area
• **Urban & industrial**	Where permitted and appropriate, contain domestic cats and dogs in new residential areas during operation of the development at the urban/bushland interface consistent with relevant Council guidelines.	Increased numbers of domestic cats and dogs associated with urban development increases the threat of predation to native animals	eastern pygmy-possum, spotted-tailed quoll	**5**	DCP template Mitigation Measures Guideline	**No**	**No**	**Yes**	**Yes**	**NA**
• **Urban & industrial**	Dog-proof fenced areas are to be designated within open space and public recreation areas	Provides protection to fauna, including koala, up-front in precinct design for public spaces	koala	**7**	DCP template Mitigation Measures Guideline	**NA**	**NA**	**Yes**	**Yes**	**NA**
• **Urban & industrial**	Dog-proof fencing is a design requirement for each residential lot in accordance with Council requirements	Provides protection to fauna, including, koala up-front in precinct design for residential areas	koala	**7**	DCP template Mitigation Measures Guideline	**NA**	**NA**	**Yes**	**Yes**	**NA**

Table 15. Human disturbance - Threatened fauna risk mitigation

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & Industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Establish a 100 m minimum setback for development around flying fox camps. The setback area should be maintained free of flying fox roosting habitat.	Minimises disturbance to known populations	grey-headed flying fox	**5**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**Yes**	**Yes**	**Yes**	**Yes**	**NA**
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant Agriculture**	Raptor nests require a 500 m circular setback from nest locations in undisturbed bushland or 250 m for nests adjacent to existing development. Owl nests require a 100 m circular setback from nest locations	Minimises disturbance to known populations	little eagle, white-bellied sea eagle, square-tailed kite, spotted harrier, barking owl, powerful owl, masked owl.	**5**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**Yes**	**Yes**	**Yes**	**Yes**	**NA**
• **Urban**	Work with NSW DPI – Fisheries to address risk of illegal and incidental recreational fishing capture along stretches of known habitat for Macquarie perch in Erskine Creek, Glenbrook Creek, Georges River and Cordeaux River. Consult with relevant resource managers on installing signs/ interpretive displays at appropriate sites used to access fishing locations at Erskine Creek, Glenbrook Creek, Georges River and Cordeaux River to help with identification and awareness of threats	Minimises the risk of increased recreational fishing affecting the species due to larger urban populations associated with urban development	Macquarie perch	**5**	Consultation with NSW DPI – Fisheries, local councils and other public agencies	**No**	**No**	**No**	**No**	Erskine Creek Glenbrook Creek Georges River Cordeaux River

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)**	Undertake site assessment and pre-clearance survey prior to removal of vegetation and undertake koala survey and implement translocation plan if required.	At pre-construction phase of development, translocation plan and koala survey protects any koala on site	koala	**7**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**Yes**	**NA**
• **Urban & industrial** • **Infrastructure (including essential infrastructure)**	Erect temporary protective fencing around areas identified for conservation on or adjoining the site at pre-construction phase to ensure adequate protection is in place during construction.	At the pre-construction phase of development, temporary protective fencing prevents koala entering the construction site	koala	**7**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**Yes**	**NA**
• **Infrastructure (including essential infrastructure)**	Where planned linear infrastructure such as gas and electricity transmission crosses existing koala-exclusion fencing, consider appropriate access treatments such as gates to ensure integrity of koala-exclusion fencing.	Minimises indirect impacts to koala populations due to urban development. This action is consistent with a critical action for this species under Chief Scientist & Engineer's Koala Report (2020)	koala	**7**	CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**Yes**	**NA**
• **Infrastructure (including essential infrastructure)**	Where public road infrastructure crosses koala corridors, ensure: • exclusion fencing is in place to prevent koalas from entering the road • suitable koala connectivity structures are installed to protect corridor integrity.	As per critical actions for this species under the Chief Scientist & Engineer's Koala Report (2020), maintains connectivity in koala corridors and separation of koalas from landscape threats including traffic.	koala	**7**	CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**Yes**	**NA**

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)**	Implement a tree-felling protocol to avoid impacts to koalas in trees that are to be cleared.	Protects koalas when clearing a site by identifying trees that have koalas in them	koala	**7**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**Yes**	**NA**
• **Urban & industrial** • **Infrastructure (including essential infrastructure)**	Manage roadside vegetation adjacent to koala habitat areas to minimise height of ground cover and increase visibility of any roadside fauna. Mow turfed areas, mechanically trim low ground covers.	Visibility of koala in roadside vegetation is enhanced along motorways and roadsides for koalas crossing roadways	koala	**7**	DCP template Mitigation Measures Guideline	**NA**	**NA**	**Yes**	**Yes**	**NA**
• **Urban & industrial** • **Infrastructure (including essential infrastructure)**	Have an onsite ecologist present throughout the duration of pre-clearance surveys and clearing works.	Protects koalas in trees identified to be cleared on site	koala	**7**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**Yes**	**NA**

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)**	Implement the following traffic-calming measures for all development not subject to wildlife- and koala-exclusion fencing. Apply speed limit restrictions on local roads for areas adjacent to open space and land identified as avoided under CPCP. Signpost perimeter roads and roads adjacent to wildlife habitat areas in accordance with Austroads, RMS technical guidelines, council guidelines and relevant Australian standards. Install traffic-calming devices such as speed humps and audible surfacing along perimeter roads adjacent to wildlife habitat.	Protects koalas adjacent to or along motorways, roads and development	koala	**7**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**Yes**	**NA**
• **Urban & industrial** • **Infrastructure (including essential infrastructure)**	Install koala-friendly road design structures such as underpasses, fauna bridges and overpasses consistent with any approval conditions. Consider and apply RMS Biodiversity Guidelines.	Protects koalas along motorways and roads	koala	**7**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**Yes**	**NA**

Table 16. Disease – Threatened fauna risk mitigation

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as *Phytophthora* and myrtle rust within or adjacent to potential habitat for relevant species.	Minimises the spread of pathogens due to construction activities adjacent to potential habitat for the species	greater glider	**5**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**Yes**	**Yes**	**Yes**	**Yes**	**NA**
• **Urban & industrial** • **Infrastructure (including essential infrastructure)**	Strictly enforce vehicle wash down points for machinery, equipment and tyres prior to entering and leaving the construction site. Use hygiene procedures in instances where vegetation pathogens known to affect koala trees may be spread	Minimises the risk of the spread of pathogens due to construction activities adjacent to potential habitat for the species	koala	**7**	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**Yes**	**NA**
• **Urban & industrial** • **Infrastructure (including essential infrastructure)**	Make sure all vehicles, machinery, maintenance equipment, tyres and work boots are free of mud, soil and vegetation prior to entering and leaving a development construction site.	Minimises the spread of pathogens and disease during the construction and/or operation phase of a development	koala	**7**	DCP Template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**Yes**	**NA**

Table 17. Other – Threatened fauna risk mitigation

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial**	Consult with relevant land managers to implement critical actions for Cumberland Plain land snail under the Save our Species program (EES, 2020) on public land adjacent to urban development during construction and operation of the development, taking into account relevant guidance in the weed control implementation strategy and the fire management strategy.	Minimises indirect impacts to Cumberland Plain land snail adjacent to urban capable land	Cumberland Plain land snail Key indirect impacts/threats to be managed are: • weed invasion • inappropriate fire regimes • removal of fallen logs for firewood and slashing of habitat	**5**	Consultation with local councils and other public agencies Weed control implementation strategy Fire management strategy	**Yes**	**Yes**	**Yes**	**Yes**	**NA**
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Implement 'open structure design' when designing structures such as roads adjacent to known populations of Cumberland Plain land snail where possible, consistent with the critical actions for this species under the Save our Species program (EES 2020)	Prevents creation of isolated patched of habitat in the nominated areas consistent with a critical action for this species under the Save our Species program (EES 2020)	Cumberland Plain land snail	**5**	DCP template Mitigation Measures Guideline	**Yes**	**Yes**	**Yes**	**Yes**	**NA**
• **Urban & industrial**	Signpost areas adjoining koala habitat with signage indicating koalas are in the area, the permitted/prohibited activities, and associated penalties that apply for non-compliance.	Promotes permitted activities and educates public in areas adjoining koala habitat	koala	**7**	DCP template Mitigation Measures Guideline	**NA**	**NA**	**Yes**	**Yes**	**NA**

Mitigation measures to address residual risks to flora

Table 18. Weed invasion – Threatened flora risk mitigation

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Manage weeds for flora populations and habitat adjacent to urban and infrastructure development during construction and operation of the development, considering relevant guidance in the weed control implementation strategy.	Minimises indirect impacts to flora populations and habitat adjacent to major infrastructure corridors	*Dillwynia tenuifolia* *Pultenaea parviflora* *Persoonia nutans*	5 and16	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development Weed control implementation strategy	**Yes**	**Yes**	**No**	**No**	**NA**
As above	As above	As above	*Pultenaea pedunculata*	5 and16	As above	**No**	**No**	**Yes**	**No**	**NA**
As above	As above	As above	*Grevillea parviflora* subsp. *parviflora* (important pop. no. 104)	5 and16	As above	**No**	**No**	**No**	**Yes**	**NA**

Table 19. Altered fire regime – Threatened flora risk mitigation

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial**	Consult with managers of land containing known populations or habitat for relevant species to mitigate indirect impacts from fire during construction and operation of the development, considering guidance in the fire management strategy	Minimises indirect impacts to flora populations and habitat adjacent to urban-capable land	*Dillwynia tenuifolia* *Grevillea juniperina* subsp. *juniperina* *Pultenaea parviflora*	5 and 18	Consultation with local councils and other public agencies Fire management strategy	**Yes**	**Yes**	**No**	**No**	**NA**
As above	As above	As above	*Persoonia nutans*	5 and 18	As above	**Yes**	**No**	**No**	**No**	**NA**
As above	As above	As above	*Pultenaea pedunculata*	5 and 18	As above	**No**	**No**	**Yes**	**No**	**NA**
As above	As above	As above	*Grevillea parviflora* subsp. *parviflora* (important pop. no. 104)	5 and 18	As above	**No**	**No**	**No**	**Yes**	**NA**
As above	As above	As above	*Persoonia bargoensis*	5 and 18	As above	**No**	**No**	**Yes**	**Yes**	**NA**

Table 20. Human disturbance – Threatened flora risk mitigation

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Consult with land managers of land containing known populations or habitat for relevant species to mitigate indirect impacts from human disturbance during construction and operation of the development, including controlling public access, managing maintenance activities such as mowing and slashing, and managing rubbish dumping. Additionally, for *Pimelea spicata* ensure weed management activities involving the use of herbicides will minimise risks and maintain the species	Minimises indirect impacts to flora populations and habitat adjacent to urban-capable land	*Dillwynia tenuifolia* *Grevillea juniperina* subsp. *Juniperina* *Pultenaea parviflora*	5 and 5.3	Consultation with local councils and other public agencies	**Yes**	**Yes**	**No**	**No**	**NA**
As above	As above	As above	*Persoonia nutans*	5 and 5.3	As above	**Yes**	**No**	**No**	**No**	**NA**
As above	As above	As above	*Grevillea parviflora* subsp. *parviflora* (important pop. no. 104)	5 and 5.3	As above	**No**	**No**	**No**	**Yes**	**NA**
As above	As above	As above	*Pultenaea pedunculata* *Genoplesium baueri* (important pop. 21)	5 and 5.3	As above	**No**	**No**	**Yes**	**No**	**NA**
As above	As above	As above	*Persoonia bargoensis* *Melaleuca deanei* *Pterostylis saxicola*	5 and 5.3	As above	**NA**	**NA**	**Yes**	**Yes**	**NA**
As above	As above	As above	*Pimelea spicata*	5 and 5.3	As above	**Yes**	**Yes**	**Yes**	**Yes**	**NA**

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure**	Undertake fire hazard management within the asset protection zone at this location to protect existing *Pimelea spicata* individuals and is sympathetic ongoing recruitment of new individuals of this species	Protects an important population of *Pimelea spicata* located within the asset protection zone at this location	*Pimelea spicata*	5	Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**NA**	**NA**	**Yes**	**NA**	Population 532 in GMAC identified in Cumberland Plain Assessment Report (Lots 3002, 3003 and 3004, DP 802845 and Lot 2000 DP 790848)

Table 21. Disease – Threatened flora risk mitigation

Development	Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as Phytophthora and myrtle rust adjacent to potential habitat for relevant species.	Minimises the risk spreading pathogens due to construction activities adjacent to potential habitat for the species	*Persoonia bargoensis*	5	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**No**	**No**	**Yes**	**Yes**	**NA**
As above	As above	As above	*Persoonia nutans*	5	As above	**Yes**	**Yes**	**No**	**No**	**NA**

Mitigation measures to address residual risks to threatened ecological communities

Table 22. General risk mitigation measures for threatened ecological communities

Development	Mitigation measure	Rationale for measure	Ecological community	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	When implementing mitigation measures to manage indirect impacts to Cooks River/ Castlereagh Ironbark Forest, undertake mitigation in accordance with Best Practice Guidelines: Cooks River/ Castlereagh Ironbark Forest (NSW DECC, 2008) within and adjacent to the TEC.	Minimises the risk of several types of indirect impact on the TEC adjacent to urban development	Cooks River/ Castlereagh Ironbark Forest (NSW & Cth)	5	DCP template CPCP Guidelines for Infrastructure Development	**No**	**Yes** (Kemps Creek)	**No**	**No**	**NA**
• **Urban & industrial** • **Infrastructure (including essential infrastructure)** • **Intensive plant agriculture**	Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as *Phytophthora* and myrtle rust adjacent to potential habitat for relevant TECs	Minimises the risk of spreading pathogens due to construction activities for urban development adjacent to TECs	Cooks River/ Castlereagh Ironbark Forest (NSW & Cth)	5	DCP template Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**No**	**Yes** (Kemps Creek)	**No**	**No**	**NA**
As above	As above	As above	Cumberland Plain Woodland (NSW & Cth)	5	As above	**Yes**	**Yes**	**No**	**No**	**NA**
As above	As above	As above	River-flat Eucalypt Forest (NSW)/ Coastal Floodplain Eucalypt Forest (Cth)	5	As above	**Yes**	**Yes**	**Yes**	**Yes**	**NA**
As above	As above	As above	Shale Gravel Transition Forest (NSW)	5	As above	**Yes**	**Yes** (Kemps Creek)	**No**	**No**	**NA**
As above	As above	As above	Shale Sandstone Transition Forest (NSW & Cth)	5	As above	**No**	**No**	**Y**	**Y**	**NA**

Development	Mitigation measure	Rationale for measure	Ecological community	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
As above	As above	As above	Swamp Oak Floodplain Forest (NSW)/Coastal Swamp Oak Forest (Cth)	5	As above	**Yes**	**Yes**	**No**	**No**	**NA**

Mitigation measures to address residual risks to other protected matters

Table 23. General risk mitigation measures for other protected matters

Development	Mitigation measure	Rationale for measure	Protected matter	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
• **Urban & industrial** • **Infrastructure (including essential infrastructure)**	Ensure development adjacent to the southern and western boundaries of Commonwealth land comprising the Orchid Hills Defence Establishment mitigates impacts to surface water flows and the water quality of Blaxland Creek	Minimises the risk of indirect impacts from hydrological disturbance on an important waterway on Commonwealth land that occurs adjacent to urban development	Commonwealth land	5	Mitigation Measures Guideline CPCP Guidelines for Infrastructure Development	**Yes**	**No**	**No**	**No**	Orchard Hills Defence Site

Major transport corridors

Mitigation measures to address residual risks to threatened fauna

Table 24. Habitat features and connectivity – Threatened fauna risk mitigation in major transport corridors

Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
Incorporate artificial breeding and roosting habitat (e.g. bat boxes, structural cavities) in the design of bridges associated with the major infrastructure corridors in accordance with relevant guidelines or standards.	Minimises the potential impacts of the major infrastructure corridors to human-made structures that may be used by microbats for roosting or breeding	eastern coastal free-tailed bat, little bent-winged bat, large bent-winged bat, southern myotis, yellow-bellied sheathtail bat	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	All major transport corridors within and outside nominated areas

Table 25. Disease – Threatened fauna risk mitigation in major transport corridors

Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as *Phytophthora* and myrtle rust within or adjacent to potential habitat for relevant species	Minimises the risk of spreading pathogens due to construction activities adjacent to potential habitat for the species	greater glider	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	All major transport corridors within and outside nominated areas

Table 26. Other – Threatened fauna risk mitigation in major transport corridors

Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
Consult with relevant land managers to manage indirect impacts to known populations and habitat for Cumberland Plain land snail on public land adjacent to major infrastructure corridors during construction and operation of the development, taking into account relevant guidance in the weed control implementation strategy and the fire management strategy.	Minimises indirect impacts to Cumberland Plain land snail adjacent to major infrastructure corridors	Cumberland Plain land snail Key indirect impacts/threats to be managed are: • weed invasion • inappropriate fire regimes • removal of fallen logs for firewood and slashing of habitat	6	Consultation with local councils and other public agencies	NA	NA	NA	NA	All major transport corridors within nominated areas

Table 27. Tunnels – Threatened fauna risk mitigation in major transport corridors

Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
Manage the threat of inadvertent impacts on adjacent habitat of the species.	Minimises the risk of indirect impacts during tunnel construction and operation	Cumberland Plain land snail	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Metro Rail Future Extension tunnel

Mitigation measures to address residual risks to flora

Table 28. Weed invasion – Threatened flora risk mitigation in major transport corridors

Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
Manage weeds for flora populations and habitat adjacent to major infrastructure corridors during construction and operation of the development, considering relevant guidance in the weed control implementation strategy.	Minimises indirect impacts to flora populations and habitat adjacent to major infrastructure corridors	*Dillwynia tenuifolia* *Pultenaea parviflora* *Persoonia nutans*	6 and15	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital in Wianamatta Regional Park M7/Ropes Crossing link Road
As above	As above	*Grevillea juniperina* subsp. *juniperina*	6 and15	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital in GPEC M7/Ropes Crossing link Road Western Sydney Freight Line
As above	As above	*Cynanchum elegans*	6 and15	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital at Cobbity

Table 29. Hydrology – Threatened flora risk mitigation in major transport corridors

Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
Manage hydrology impacts to relevant flora species and habitat adjacent to major infrastructure corridors during construction and operation of the development.	Minimises the risk of hydrological impacts to the species	*Cynanchum elegans*	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital at Cobbity

Table 30. Disease – Threatened flora risk mitigation in major transport corridors

Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as Phytophthora and myrtle rust adjacent to potential habitat for relevant species.	Minimises the risk of spreading pathogens due to construction activities adjacent to potential habitat for the species	*Persoonia nutans*	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital in Wianamatta Regional Park

Table 31. Tunnels – Threatened flora risk mitigation in major transport corridors

Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
Manage key threats to the species, including: • hydrological disturbance • spread of weeds • spread of infection/disease • soil erosion and sedimentation • ground settling or subsidence	Minimises the risk of indirect impacts during tunnel construction and operation	*Eucalyptus benthamii*	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital tunnel
As above	Minimises the risk of indirect impacts during tunnel construction and operation	*Pimelea spicata*	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Metro Rail Future Extension tunnel
As above	Minimises the risk of indirect impacts during tunnel construction and operation	*Pomaderris brunnea*	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital tunnel

Mitigation measures to address residual risks to threatened ecological communities

Table 32. General risk mitigation measures for threatened ecological communities

Mitigation measure	Rationale for measure	Species	Commitment	Implementation mechanism	GPEC	WSA	GMAC	WTN	Other location
When implementing mitigation measures to manage indirect impacts to Cooks River/Castlereagh Ironbark Forest, undertake mitigation in accordance with Best Practice Guidelines: Cooks River/Castlereagh Ironbark Forest (NSW DECC, 2008) within and adjacent to the TEC.	Minimises the risk of several indirect impact types on the TEC adjacent to urban development and major infrastructure corridors	Cooks River/Castlereagh Ironbark Forest (NSW & Cth)	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital at Wianamatta Regional Park
Incorporate best-practice site hygiene protocols to manage the potential spread of pathogens, such as *Phytophthora* and myrtle rust adjacent to potential habitat for relevant TECs.	Minimises the risk of spreading pathogens due to construction activities for urban development or major infrastructure adjacent to TECs	Cooks River/Castlereagh Ironbark Forest (NSW & Cth)	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital at Wianamatta Regional Park
As above	As above	Cumberland Plain Woodland (NSW & Cth)	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital adjacent to WSA Western Sydney Freight Line
As above	As above	River-flat Eucalypt Forest (NSW)/Coastal Floodplain Eucalypt Forest (Cth)	6	State-significant infrastructure assessment and approval	Yes	Yes	Yes	Yes	
As above	As above	Shale Gravel Transition Forest (NSW)	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital at Wianamatta Regional Park
As above	As above	Swamp Oak Floodplain Forest (NSW)/Coastal Swamp Oak Forest (Cth)	6	State-significant infrastructure assessment and approval	NA	NA	NA	NA	Outer Sydney Orbital in GPEC