MOSS ENVIRONMENTAL

Maximum Yield Pty Ltd.

Arcadia Access Roadway Development Project

Biodiversity Assessment Report

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Executive summary

Maximum Yield Pty Ltd. contracted Moss Environmental Pty Ltd to complete a Biodiversity Assessment Report (BAR) for Lot 1 DP 233288 at the northeast corner of Bylong Road. The BAR was prepared in support of the Statement of Environmental Effects (SEE) which is triggered by the Development Consent being prepared to fulfil the requirements of Division 4.15 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and to consider all matters affecting or likely to affect the environment as a result of the proposal, such as the likely impacts to species and ecological communities listed as threatened under the applicable acts.

The site is located within the Nandewar Peel Bioregion within the NSW Mitchell Landscapes Tamworth – Keepit Slopes and Plains. The landform of the proposal site was found to be relatively flat with a ground layer that is highly dominated by non-native grasses, scattered shrubs and scattered White Box trees within a woodland that is in poor condition due to a range of disturbance factors, as the site has been subject to anthropomorphic disturbances and extensively cleared for agricultural use, and urban development. Appropriate erosion and sediment control (ESC) measures and weed management regimes should be implemented prior to, during and after the commencement of any vegetation clearing works.

The development proposes to remove 29 trees (mean diameter breast height (DBH) 0.87m; range 0.4 to 2.3 m, average height 7.5 m), majority of which are juvenile white box trees which are less than 10 years old, (23 trees from the total number of trees to be removed were identified as juvenile trees) that do not contain viable hollows for wildlife. Impacts are expected to be negligible. One mature white box tree is to be removed. The vegetation indicated for removal is not considered to be of outstanding Biodiversity Value (BV). A previous Flora and Fauna Assessment report has found that a Threatened Ecological Community (TEC, White Box Yellow Box Blakely's Red Gum Woodland and derived native grassland) was present on site. However, the present study identified that the TEC present is in a highly degraded nature that doesn't meet the definition of this particular TEC. The proposed development involves the minor clearing of an already fragmented land parcel which will result in minor impact to the area. as it will remove one mature tree and four young Whitebox trees (the rest will be juvenile trees). The extent of habitat likely to be removed or modified because of the proposed development is minor (0.45 ha). It is considered unlikely to alter the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction. Compensatory planting (4:1 ratio) of appropriate native tree species (White Box; *Eucalyptus albens*) should also be provided to improve fauna habitat values in the long-term. This study recommends compensatory replanting of 116 native white box trees along the 'Burkes Gully' floodplain area or any other suitable area.

On-site 10 fauna species that were recorded, none were threatened species, despite the desktop assessment identifying 19 threatened fauna under the EPBC Act and 17 under the BC Act. The Little Eagle (*Hieraaetus morphnoides*; Vulnerable and Protected under the BC Act), Little Lorikeet (*Glossopsitta pusilla*; Vulnerable and Protected under the BC Act) and Turquoise Parrot (*Neophema pulchella;* Vulnerable and protected under the BC Act) are not expected to be adversely impacted by this project so long as key mitigation recommendations are followed, and care is taken during the vegetation clearing. The impact will be minimal as no habitat trees are to be removed during the work. As a safeguard, a qualified Ecologist and trained wildlife handler is required to assess trees for nests and koalas immediately prior to commencing works and supervise felling of trees that are known to contain hollows, Koalas, or nests to avoid the risk of injury or mortality.

Implementing the key recommendations, safeguards and mitigation measures within this report will minimise or remove the potential impacts during construction, ensuring that the proposed development will not significantly adversely impact upon the environment and will not result in

any significant impacts on matters of state and national environmental significance. It is concluded that the development of the site satisfies the requirements of relevant Commonwealth, State and Local environmental legislation and is supported from an ecological perspective.

Tables and Figures

Definitions	
Anthropogenic	Environmental change, either influenced or caused by people, directly or indirectly.
Cumulative impact	The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant

	actions taking place over a period of time. Refer to Clause 228(2) of the EP&A Regulation 2000 for cumulative impact assessment requirements.
Ground-truthed	Ground-truthed is a term used to refer to information that is known to be real or true, provided by direct observation and measurement as opposed to information provided by inference.
Direct impact	Where a primary action is a substantial cause of a secondary event or circumstance which has an impact on a protected matter (ref http://www.environment.gov.au/system/files/resources/0b0cfb1e-6e28-4b23-9a97-fdadda0f111c/files/environment-assessment-manual.pdf).
Habitat	An area or areas occupied, or periodically or occasionally occupied, by a species, population or ecological community, including any biotic or abiotic component (OEH 2014).
Indirect impact	Where an event or circumstance is a direct consequence of the action.
Matters of NES	A matter of national environmental significance (NES) protected by a provision of Part 3 of the EPBC Act
Mitchell landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000 (OEH 2014).
Mitigation	Action to reduce the severity of an impact. (OEH 2014).
Mitigation measure	Any measure that facilitates the safe movement of wildlife and/or prevents wildlife mortality.
Population	All the individuals that interbreed within a given area.
Proposal area/ Proposal site	The area of land that is directly impacted on by a proposed Major Proposal that is under the EP&A Act, including access roads, and areas used to store construction materials (OEH 2014).
Study area	The area directly affected by the development and any additional areas likely to be affected by the development, either directly or indirectly (OEH 2014).
Target species	A species that is the focus of a study or intended beneficiary of a conservation action or connectivity measure.

Abbreviations	
ALA	Atlas of Living Australia
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BBCC	Biobanking Credit Calculator
BVT	Biometric Vegetation Type
CEMP	Construction Environmental Management Plan
DPIE	Department of Planning, Environment and Industry
DPI	Department of Primary Industries
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999* (Federal).
FBA	Framework for Biodiversity Assessment
FM Act	*Fisheries Management Act 1994* (NSW)
GDE	Groundwater dependent ecosystems
IBRA	Interim Biogeographically Regionalisation of Australia
MNES	Matters of National Environmental Significance
OEH	Office of Environment and Heritage
PCT	Plant Community Type
SEE	Statement of Environmental Effects
SEPP	State Environmental Planning Policy
TECs	Threatened Ecological Communities
TSPD	Threatened Species Profile Database
TSR	Travelling Stock Reserve
VIS	Vegetation information system

1 Introduction

1.1 Proposal background

Maximum Yield Pty Ltd. proposes to construct a new entrance road at Lot 1 DP233288 located in the northeast corner of Bylong Road, to allow access for Arcadia Development. This is the access corridor between Bylong Road and Arcadia main project area.

The area is under the Interim Biogeographic Regionalisation for Australia (IBRA) classification system (version 7; IBRA7) as located within the Nandewar (NAN) bioregion, Peel sub-region and the NSW Mitchell Landscapes Ecosystem Meso Grouping layer (version 3.1) (**Appendix H**) classify the area as Tamworth - Keepit Slopes and Plains. According to the NSW Mitchell Landscapes Ecosystem Meso Grouping layer, the project area has an over-cleared status of 0.64. The area has been previously cleared for agriculture and urban development surrounding the project area. The site is surrounded by open grazing pasture and a recent residential subdivision is located approximately 100 m downslope along the Bylong Road and to the west of the site.

There is no National Parks and Wildlife Services (NPWS) estate over the project area. The project segment is situated approximately 20 km south of the Attunga State Forest. There is a Travelling Stock Reserve (TSR, **Appendix I**) located about 3.97 km southwest of the proposal, which is flagged to have a high conservation value, mapped as category 3 in the TSR state classification map and will not be impacted by the proposed proposal project. 'Burkes Gully' and 'Barnes Gully' are the identified watercourses within the vicinity of the project site, which are tributaries of Peel River flowing adjacent to the project respectively in 1.1 km west and 1.8 northeast to the site. However, no recorded freshwater threatened species are predicted in these two waterways and no wetlands or any other recognized aquatic habitats under the *Fisheries Management Act 1994* (FM Act) will be affected.

1.2 The proposal

Maximum Yield Pty. Ltd proposes constructing a new entry roadway at Lot 1 DP233288, Bylong Road, South Tamworth (**Figure 1.2**). Site address is 136-144 Bylong Road Hillvue, NSW, 2340 and the land currently being used as vacant/storage area. The objective of the works is to construct a main access road for 600 lot subdivision. This site has been identified as one of the main access points and thus would create easy access to a number of subdivisions.

Maximum Yield Pty Ltd proposes to clear this parcel by removing trees to allow access road construction. Prior to works commencing a qualified ecologist will assess the trees to be removed for hollows, nests and koalas. During tree felling a qualified a qualified Ecologist and/or licensed wildlife carer (In accordance with the NSW Government, Transport Roads & Traffic Authority Guidelines – Guide 4, page 38) shall supervise felling of habitat trees that are known to contain hollows or nests to avoid the risk of injury or mortality of native fauna. The equipment to be used aren't likely to cause unintended impact to identified wildlife and vegetation. However, the use of drum rollers, vibratory rollers might cause short term impact to animals and birds.

Key features of the proposal include (**Appendix J**):

- Grubbing and Removal of vegetation as per the requirement of the design plan (which has to be finalized).
- Construction of the new entry road;
- Installation of drainage;

The proposal is anticipated to involve the following work methodology:

- Establishment of site compound, stockpile, and spoil sites in the area;

- Locate all services and have current dial before dig plans on site at all times;
- Identify all existing utilities in the area, install the appropriate markers/delineate and undertaking potholing if required.
- Installation of erosion and sediment controls;
- Delineation of environmentally sensitive areas and No-Go zones, if identified;
- Spraying weeds prior to and after clearing;
- Clear and grub, tree trimming works, as required;
- Cleaning of table drains and re-establishing longitudinal grade to ensure drainage function;

1.3 Legislative context

A Statement of Environmental Effects (SEE) is prepared to satisfy Maximum Yield Pty Ltd's duties under section 4.15 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This biodiversity impact assessment will be attached to the *SEE being* prepared for the *Arcadia entry road Development Project* and assesses the biodiversity impacts of the proposal to meet the requirements of the EP&A Act.

Under section 4.15 of the EP&A Act, Maximum Yield Pty Ltd must consider the effect of an activity on:
Impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts on the locality.

As a result, the Maximum Yield Pty Ltd proposal is being assessed via a BAR to determine all matters affecting or likely to affect the environment and complete a Test if Significance to determine if any threatened species or ecological communities or their habitats will be significantly impacted and therefore require an Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR).

The Maximum Yield Pty Ltd environmental impact assessment must,

- Address and consider potential impacts on nationally listed threatened species, populations, ecological communities, and migratory species, including application of the "avoid, minimise, mitigate and offset" hierarchy; and

Therefore, significance of impacts is determined in accordance with the *Matters of National Environmental Significance: Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act EPBC Act 1999*. Where the action of the proposal is likely to have a significant impact on a matter of national environmental significance (MNES), the proposal will be referred to the Commonwealth Environment Minister via the Department of Agriculture, Water and the Environment. The Minister then determines if the proposal is a 'controlled action'. When a controlled action is indicated, an assessment of the action is carried out and the Minister decides whether to approve, approve with conditions, or not approve the proposed action.

Sections 7.2 A of the *Biodiversity Conservation Act 2016* (BC Act) and Part 7A of the *Fisheries Management Act 1994* (FM Act) require that the significance of the impact on threatened species, and endangered ecological communities is assessed using a test of significance outlined in Division 12 of the FM Act ('properly assessed' under the FM Act). Where a significant impact is likely to occur, a species impact statement (SIS) must be prepared in accordance with the Environment Agency head's requirements, or a Biodiversity Development Assessment Report (BDAR) must be prepared by an accredited assessor in accordance with the Biodiversity Assessment Method (BAM).

Figure 1.1 – The Proposal site (indicated in red) in regional context

Figure 1.2 – The Proposal site (indicated in red)

2 Methods

2.1 Personnel

Shonelle Gleeson-Willey
Director and Principal of Moss Environmental Pty Ltd

Qualifications:

- Bachelor of Applied Science (Environmental Management and Tourism), The University of Western Sydney
- Master of Environmental Management, The University of New England
- Certified Professional of Erosion and Sediment Control (CPESC), Envirocert International Inc
- Infrastructure Sustainability Accredited Professional (ISAP), The Infrastructure Sustainability Council of Australia
- Certified Environmental Practitioner (CEnvP), The Environment Institute of Australia and New Zealand

Shonelle has over twelve years' experience working in the environmental sector, as an Environmental Manager on medium to large construction proposals across Australia. Shonelle has worked for several small to medium-sized consultancies, specializing in contaminated land management, construction environmental management and sustainability.

Shonelle has extensive fieldwork experience monitoring water, air, soil and noise quality and impact across Australia.
Key proposals Shonelle has worked on include:

- New England Highway Safety Improvements, Kootingal tree assessments and dawn surveying;
- Groundwater monitoring and treatment via a purpose-built water treatment plant;
- Application of Expression of Interest for Biodiversity Stewardship agreement in context with the BC Act through the NSW BCT;
- Surface water monitoring for impacts from legacy gas facility contamination;
- Soil sampling and analysis for HIL based assessments of potentially and known contaminated sites;
- Soil sampling for site validation of UPSS;
- Air sampling for dust deposition and asbestos fibres;
- Noise and over blast monitoring and analysis at construction and mining sites;
- Mammal and bird identification and counts;
- Spotlighting for the National Parks and Wildlife Services (NPWS);
- Radio-tracking Brush Turkeys for the NPWS;
- Ibis population surveys in Western Sydney for the NPWS; and
- Weed surveys for Tamworth Regional Council (TRC).

Bronwyn Brennan
Senior Environmental Consultant

Qualifications:

- Bachelor of Science in Agriculture, The University of Sydney
- Graduate Certificate in Sustainable Grains Production, The University of New England
- Enrolled in a Master of Agriculture, The University of New England

Bronwyn has 10 years of experience working across agricultural, construction and landscape sectors, with a primary focus on soil and crop monitoring proposals.

Key proposals that Bronwyn has worked on include:

- Waterfall Way Highway Safety Improvements:
    - Marx Hill Culvert, Bellingen – Rapid Assessment Report (fieldwork and report)
    - Ebor – Surveying for Metcalfe's Greenhood, a BC Act Endangered orchid
- New England Highway Safety Improvements – Kootingal tree assessment for Step 2 Memo
- Sydney soil surveying for housing development
- Timing of Waratah (*Telopea* sp.) species to delay anthesis to allow producers to capture the Christmas market, from the Dandenong Ranges to Dorrigo, NSW.
    - Publication: R. McConchie, B. Woodward, B. Gollnow, C.A. Offord, A. Bokshi, P. Geelan-Small (2014), Environmental predictors of flowering time in waratahs. ISHS Acta Horticulturae 1031.
- Ethics approval applications.
- Soil stripping and reuse plans for housing development plans.
- A variety of summer grains research trials to assist producers in maximising yields.

Dasuni Algiriyage
Junior Environmental Consultant (Ecology)

Qualifications

- Master of Environmental Science and Technology, Royal Melbourne Institute of Technology (RMIT), Melbourne
- Bachelor of Science in Zoology, University of Colombo Sri Lanka

Dasuni has 3 years of field experience working across environmental sector in Australia and 6 years in Sri Lanka as a zoologist.

Key proposals which Dasuni has worked on include:

- National Bird Ringing programme, organized by FOGSL with Department Wildlife and Conservation, Sri Lanka 2017;
- Hobsons Bay City Council waste composition audit.

- Writing ecological literature reviews on pest amphibians in Australia and eco bricks for a consulting company
- Waterfall Way Highway Safety Improvements:
- Review Environmental factors (REF) of pedestrian infrastructure around 19 schools in Tamworth Regional Council

Other various surveying in Australia:

- Camera trapping;
- Bat detection using passive bat detectors and active bat detectors (Anabat) for acoustic monitoring and number of other flora and fauna surveys.

2.2 Background research

The following desktop assessment was completed (using the GPS coordinates -31.126384°, 150.904273° where searches required them) using a minimal 10km search radius:

- Relevant environmental datasets accessed through the Sharing and Enabling Environmental Data (SEED) portal (NSW Government, 2020); accessed 13 December 2021;
- Office of Environment & Heritage (OEH) Threatened biodiversity profile search; accessed 13 December 2021;
- Department of Environment & Climate Change NSW (DECC) Descriptions for NSW (Mitchell) Landscapes V2 (2002); accessed 13 December 2021;
- Travelling Stock Reserves State Classification Map, TSR Conservation Value 2019: accessed 13 December 2021;
- The Commonwealth Bureau of Meteorology's (BOM) Atlas of Groundwater Dependent Ecosystems (GDE); accessed 13 December 2021;
- EPBC Act Protected Matters Search Tool (PMST) with 10 km buffer: accessed 13 December 2021
- DPI WeedWise database for the North West region; accessed 13 December 2021;
- Department of Primary Industries (DPI) Threatened Species; accessed 13 December 2021;
- Critical habitat register available on the OEH website and on the DPI NSW (Fisheries) website and on the federal Department of the Environment website; accessed 13 December 2021;
- Department of Environment's directory of important wetlands; accessed 13 December 2021;
- BioNet the website for the Atlas of NSW Wildlife and OEH Biobanking Threatened Species Sightings Database: accessed 13 December 2021;
- National Flying-fox monitoring viewer accessed 13 December 2021;
- BioNet Vegetation Information System (VIS), accessed 13 December 2021;
- OEH Key threatening processes, accessed 13 December 2021;
- DPI's spatial database for aquatic TECs; accessed 13 December 2021;
- Atlas of Living Australia (ALA); accessed 13 December 2021
- Water Management (General) Regulation. (2018). Hydro line Spatial Data 1.0; accessed 13 December 2021;
- NSW Government Native Vegetation Regulatory Map Viewer. (NVR Map); accessed 13 December 2021;
- NSW Government Biodiversity Values Map and Threshold Tool (BMAT); accessed 13 December 2021;
- State Environmental Planning Policy (Koala Habitat Protection) 2021 (SEPP 2021); accessed 13 December 2021;
- Aerial imagery (Google Earth Professional).

2.3 Habitat assessment

The following table provides a summary of the main database searches undertaken as part of the desktop assessment (using GPS Coordinates -31.126384°, 150.904273° with a minimal 10 km radius) and the results of these searches:

Table 2.1 – Desktop Assessment Results

Database	Search Parameters	Desktop Assessment Results
BioNet (NSW) Threatened Fauna Species Sightings	Proposal area and site locale	Avian: • Little Eagle (*Hieraaetus morphnoides*) BC Act- V, P* • Black Falcon (*Falco subniger*) BC Act- V, P* • Little Lorikeet (*Glossopsitta pusilla*) BC Act- V, P* • Square-tailed Kite (*Lophoictinia isura*) BC Act- V, P, 3* • Powerful Owl (*Ninox strenua*) BC Act- V,P,3 Mammals: • Spotted-tailed Quoll (*Dasyurus maculatus*) BC Act- V, P* EPBC Act- E* • Koala (*Phascolarctos cinereus*) BC Act- V, P* EPBC Act- V* • Squirrel Glider (*Petaurus norfolcensis*) BC Act- V, P* • Grey-headed flying-fox (*Pteropus poliocephalus)* BC Act- V, P* EPBC Act- V* Amphibians: • Border Thick-tailed Gecko (*Uvidicolus sphyrurus*) BC Act- V, P* EPBC Act- V* *E = Endangered, CE = Critically V = Vulnerable P = Protected, 3 = category 3 sensitive species.
BioNet (NSW) Threatened Flora Species Sightings	Proposal area and site locale	• Bluegrass (*Dichanthium setosum*) BC Act- V* EPBC Act- V* • Magenta Lilly Pilly (*Syzygium setosum*) BC Act- E1

		EPBC Act- V *V = Vulnerable, E = Endangered
NSW OEH SEED Threatened Fauna Species Sightings	Proposal area and site locale	Avian: • Turquoise parrot (*Neophema pulchella*) BC Act- V, P*, 3 • Red-tailed Black-Cockatoo (*Calyptorhynchus banksii samueli*) BC Act- V, P*, 2 • Regent Honeyeater (*Anthochaera phrygia*) BC Act- E4A, P* EPBC Act- CE* • Swift Parrot (*Lathamus discolor*) BC Act- E1, P*, 3 EPBC Act- CE* • Powerful Owl (*Ninox strenua*) BC Act- V, P, 3 • Black Falcon (*Falco subniger*) BC Act- V, P* Mammals: • Koala (*Phascolarctos cinereus*) BC Act- V, P* EPBC Act- V* • Grey-headed Flying fox (*Pteropus poliocephalus*) BC Act- V, P* EPBC Act- V* • Spotted-tailed Quoll (*Dasyurus maculatus*) BC Act- V, P* EPBC Act- E* • Squirrel Glider (*Petaurus norfolcensis*) BC Act- V, P* Amphibians: • Border Thick-tailed Gecko (*Uvidicolus sphyrurus)* BC Act- V, P* EPBC Act- V* *E = Endangered, CE = Critically V = Vulnerable P = Protected, 3 = category 3 sensitive species.
NSW OEH SEED Threatened Flora Species Sightings	Proposal area and site locale	• Blue Grass (Dichanthium setosum) BC Act- V*

		EPBC Act- V* *E = Endangered, V = Vulnerable
ALA (Atlas of Living Australia)	Proposal area coordinates and a 10km buffer	There was a total of 2264 species, including 1097 flora and 1073 fauna species recorded within the site locale. This list was generated to be used as resource to inform the site assessment, particularly with respect to the occurrence of species not listed under State or Commonwealth legislation.
EPBC Act Protected Matters Search Tool (PMST)	Proposal area coordinates and a 10km buffer	Under the EPBC Act, the following have the potential to occur within the site locale (10km buffer): • 4 TECs • 30 threatened species • 11 migratory species See **Appendix B**
SEPP Koala Habitat Protection 2020/2021	Tamworth Regional Council LGA	The TRC LGA is listed in Schedule 1 of the SEPP both in 2020 and 2021, and the project area is zoned as R5 Large Residential Lots. Therefore, an assessment has been completed against the SEPP 2021 rather than SEPP 2020 (below in **Section 3.6**).
NSW DPI Fisheries Fish Records Viewer	Proposal site and locale	'Burkes Gully' and 'Barnes Gully' are the two water courses running adjacent to the project site respectively in 1.1 km west and and 1.8 km northeast to the site. The two water courses are mapped to have a very poor fish community and no threatened fish species have been recorded here.
Critical habitats register	Proposal area and locale	The proposal area is not considered a critical habitat under the relevant Government databases. The proposal area is classed as over cleared (estimated fraction cleared: 0.64) as per the Mitchell Landscape Map (**Appendix H)**
OEH VIS Database	Project area and locale	Vegetation within the road reserve is not mapped in SEED Common canopy species for this region were: • White Box (*Eucalyptus albens)* • *Yellow Box (Eucalyptus mellidora)* present study area doesn't fits the description of White Box- Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland. This is because, majority of the trees present on site were juvenile Whitebox trees (23 out of 29) and the understorey doesn't composed majority of native grass to support classification under this TEC.
OEH Travelling Stock Reserves – Conservation Values 2017	Proposal area and site locale	There are no TSRs associated with the project area. The closest TSR (high conservation values;2019) is approximately 3.97 km southwest to the site (**Appendix I**).

OEH Key Threatening Processes (KTPs)	All KTPs listed in NSW	A total of 39 KTPs were listed under the BC Act for the state of NSW.
NSW OEH Plant Community Types (PCTs)		PCT is not mapped on SEED. However, a previous assessment has identified PCT 1383 (White Box grassy woodland of the Nandewar Bioregion and Brigalow Belt South Bioregion) present on site.
EPBC Register of Critical Habitat	Site and locale	The project area is not considered as critical habitat under relevant government databases. The project area is classed as over cleared (fraction 0.64) as per the Mitchell Landscape Map (**Appendix H**)
The federal Bureau of Meteorology's Atlas of GDEs	NSW wide and locale	Terrestrial: No terrestrial GDE found. Aquatic: Groundwater flow systems were determined to have local flow systems in Palaeozoic rocks or Mesozoic intrusive. Palaeozoic aquifers have low yielding permeability and fracture, and their temporal and spatial recharged is often influenced by rainfall patterns and slope. Mesozoic aquifers are porous and consolidated. No GDEs were detected.
Department of Environment's directory of important wetlands	NSW wide and locale	There are no listed wetlands within the proposal area.
Department of Planning's SEPP 14 wetlands spatial data	Proposal area and locale	No results were found for the proposal area.
DPI's database for aquatic TECs	NSW wide and locale	No aquatic TECs for the proposal locale were found.
DPI WeedWise database	The region, inclusive of Gunnedah, Gwydir, Liverpool Plains, Moree Plains, Narrabri, Tamworth, and Walgett	134 taxa were identified as occurring weeds for the region.
NVR Map and BMAT	Proposal Site and Locale	Vulnerable Regulated Land is detected 1.66 km northwest of the proposal site. No impact is anticipated (**Appendices C & D**).
National Flying-fox monitoring viewer	Project area and locale	Not recorded within the project area

Table 2.2 – Past reports within the proposal **area or locale**

Document Name	Study Location/ date	Flora and fauna within the locale

Fauna and Flora Impact Assessment Report	Lot 1 DP 233288, study conducted in 2015	The report was conducted in 2015 for all subdivisions in the larger Arcadia development (not included in this assessment). It has found that Grassy White-box woodland Endangered Ecological community was identified as occurring within this project site (Lot 1 DP 233288).

2.4 Field survey

A total of 25 threatened species listed under the BC Act and 17 under EPBC Act may potentially occur within the site or site locale and were targeted during field surveys to determine their presence or likely occurrence. No threatened flora and fauna species were recorded under the BC Act or EPBC Act on-site. However, it should be noted that threatened species may still occur even though they were not detected as the assessment should be regarded as a snapshot in time. Some threatened species may be cryptic (*i.e.*, specific flowering times) or only occur periodically onsite.

The landform of the proposal site was found to be gently flat highly dominated by native and non-native grass species. (**Figures 2.1, 2.2 and 2.3**). The boundary of the project site is marked with a wired fence and there is an access gate to the land parcel facing Bylong Road. Vegetation within the project area ranges from grassland dominated by rank non-native species to vegetation that appears to be naturally occurring without slashing or grazing over the past few years. However, a previous study shows that the project area has been extensively cleared for agricultural purposes and recent developmental purposes. As a result, few isolated white box trees (*Eucalyptus albens*) were present on the eastern portion of the land. Historically, the land would have been grassy White Box woodland; however, it has been degraded over the years due to weed invasions and other anthropogenic factors. 'Burkes Gully' and 'Barnes Gully' are the identified watercourses that flow adjacent to the site. They are tributaries of Peel River and flow respectively 1.1 km west and 1.8 km northeast to the site. Aquatic surveys were not conducted as the two watercourses are not located close to the project site, and thus, no impacts are anticipated. A more detailed description of the existing vegetation within the proposed proposal area is provided in the vegetation survey in **section 2.4.1**.

2.4.1 Targeted flora surveys

Where relevant, the Threatened Biodiversity Survey and Assessment Guidelines for Developments and Activities – Working Draft 2004 was applied during field assessments to complete targeted surveys for potentially occurring threatened species.

The flora site assessment focused on targeting the presence of the following identified 11 threatened flora species under the EPBC Act and 10 under BC Act, which may or are likely to occur within a 10km radius of the site.

Table 2.3 – Targeted Threatened Flora

Species	NSW Status (BC Act)	National Status (EPBC Act)	Potential occurrence (Low, Moderate, High, Recorded)
Magenta Lilly Pilly (*Syzygium paniculatum*)	E1*	V*	Low

Blue Grass (*Dichanthium setosum*)	V*	V*	Low
Ooline (*Cadellia pentastylis*)	V*	V*	Low
Callistemon pungens	-	V*	Low
Euphrasia arguta	E4A*	CE*	Low
Homoranthus prolixus	V*	V*	Low
Winged Pepper-cress (*Lepidium monoplocoides*)	E1*	E*	Low
Hawkweed (*Picris evae*)	V*	V*	Low
Leek-orchid (*Prasophyllum* sp.)	P*	CE*	Low
Austral Toadflax (*Thesium austral*)	V*	V*	Low
(*Tylophora linearis*)	V*	E*	Low

*CE = Critically Endangered, E = Endangered, E1 = Endangered (BC Act), E2 = Endangered Population, E4A = Critically Endangered (BC Act), V = Vulnerable. P = Protected (BC Act) (refers to fauna not listed in Schedule 11 of the NPW Act 1974), 2 = Category 2 sensitive species, 3 = Category 3 sensitive species, M = Marine, MW = Migratory Wetlands, MM = Migratory Marine, MT = Migratory Terrestrial.

The grassland had few canopy trees with a median canopy height of 10 m, and the estimated canopy cover was approximately 5 %. Canopy species recorded within the project area (**Appendix A**) were mainly native White Box (*Eucalyptus albens*) and Yellow Box (*Eucalyptus melliodora).*

The shrub layer ranges from sparse to relatively dense and is dominated African Boxthorn (*Lycium ferocissimum*). Native ground layer species included Pink tounge (*Rostellularia adscendens*), Purple bell shape flower (*Wahlenbergia sp*.), Windmill Grass (*Enteropogon acicularis*), Common wheatgrass (*Elymus scaber*), Plump windmill grass (*Chloris ventricosa*), Spear Grass (*Austrostipa scabra*), Queensland Bluegrass (*Dichanthium sericeum*), Wallaby Grass (*Rytidosperma racemosum*), Western rat tail grass (*Sporobolus creber*), Purple wire grass (*Aristida ramosa*), Rock Fern (*Cheilanthes sieberi*) and Common Woodruff (*Asperula conferta*).

The ground layer throughout the entire project area was highly disturbed and dominated by non-native flora species, in particular Fleabane (*Erigeron bonariensis*), Common sowthistle (Sonchus oleraceus), Blue Heliotrope (Heliotropium amplexicaule), Kikuyu (*Pennisetum clandestinum*), *Rubus* sp. , Kidney weed (*Dichondra* sp.), Hare's foot Clover (*Trifolium arvense*), Slender centaury (Centaurium tenuiflorum), Cut-leaved Crane's bill (*Geranium dissectum*), Narrowleaf Plantain (*Plantago lanceolata*), Rat tail Grass (*Vulpia muralis*), Australian Finegrass (*Chloris truncata*), Common Wild Oat (*Avena fatua*), Yellow burr daisy (*Calotis lappulacea*), Panic Grass (*Panicum* Sp.), African Boxthorn (Lycium ferocissimum), Soft Brome (*Bromus hordeaceus*), invasive Narrow Leaf Cotton Bush (*Gomphocarpus fruticosus*). African Boxthorn is identified as a weed of national significance in NSW.

The communities found within the survey were in moderate condition because nearly half of the ground cover was native. However, a high level of disturbance (primarily due to weed intrusion and land clearing) limits the richness and diversity within the ground stratum. Therefore, appropriate weed management protocols must be in place before and after constructing the project entry road

No flora species recorded under the EPBC Act or BC Act were observed on-site.

2.4.2 Targeted fauna surveys

Where relevant, the Threatened Biodiversity Survey and Assessment Guidelines for Developments and Activities – Working Draft 2004 was applied during field assessments to complete targeted surveys for potentially occurring threatened species.

The fauna site assessment focused on targeting the presence of the following identified 17 threatened fauna species under the EPBC Act and 25 under the BC Act, which may or are likely to occur within a 10km radius of the site.

Table 2.4 –Targeted Threatened Fauna

Species	NSW Status (BC Act)	National Status (EPBC Act)	Potential occurrence (Low, Moderate, High, Recorded)
Avian			
Little Eagle (*Hieraaetus morphnoides*)	**V, P***	**-**	**High**
Black Falcon (*Falco subniger*)	V, P*	-	Low
Little Lorikeet (*Glossopsitta pusilla*)	**V, P***	**-**	**High**
Turquoise Parrot (*Neophema pulchella*)	**V, P, 3***	**-**	**Moderate**
Regent Honeyeater (*Anthochaera phrygia*)	E4A, P*	CE*	Low
Australasian Bittern (*Botaurus poiciloptilus*)	E1, P*	E*	Low
Red Goshawk (*Erythrotriorchis radiatus*)	E4A, P, 2*	V*	Low
Grey Falcon (*Falco hypoleucos*)	E1, P, 2*	-	Low
Painted Honeyeater (*Grantiella picta*)	V, P*	V*	Low
White-throated Needletail (*Hirundapus caudacutus*)	P*	V, C, J, K*	Low
Swift Parrot (*Lathamus discolor*)	E1, P, 3*	CE*	Low
Superb Parrot (*Polytelis swainsonii*)	V, P, 3*	V*	Low
Australian Painted Snipe (*Rostratula australis*)	E1, P*	E*	Low
Red-tailed Black-Cockatoo (*Calyptorhynchus banksii samueli*)	V, P, 2*	-	Low
Powerful Owl (Ninox strenua)	V, P, 3	-	Low
Amphibians			

Booroolong Frog (*Litoria booroolongensis*)	E1, P*	E*	Low
Reptiles			
Border Thick-tailed Gecko (*Uvidicolus sphyrurus*)	V, P*	V*	Low
Mammals			
Large-eared Pied Bat (*Chalinolobus dwyeri*)	V, P*	V*	Low
Spot-tailed Quoll (*Dasyurus maculatus maculatus*)	V, P*	E*	Low
Corben's Long-eared Bat (*Nyctophilus corbeni*)	V, P*	V*	Low
Greater Glider (*Petauroides volans*)	P*	V*	Low
Brush-tailed Rock-wallaby (*Petrogale penicillate*)	E1, P*	V*	Low
Koala (*Phascolarctos cinereus*)	V, P*	V*	Low
Grey-headed Flying-fox (*Pteropus poliocephalus*)	V, P*	V*	Low
Squirrel Glider (*Petaurus norfolcensis*)	V, P*	-	Low

*CE = Critically Endangered, E = Endangered, E1 = Endangered (BC Act), E2 = Endangered Population, E4A = Critically Endangered (BC Act), V = Vulnerable. P = Protected (BC Act) (refers to fauna not listed in Schedule 11 of the NPW Act 1974), 2 = Category 2 sensitive species, 3 = Category 3 sensitive species, M = Marine, MW = Migratory Wetlands, MM = Migratory Marine, MT = Migratory Terrestrial, J = Listed on Japan Australia Migratory Bird Agreement, K = Listed on Republic of Korea Australia Migratory Bird Agreement, C = Listed on China Australia Migratory Bird Agreement.
1Listed under the EPBC Act as *Dasyurus maculatus* (SE mainland population).
2 Listed under the BC Act as *Myuchelys bellii* (Western Sawshelled Turtle).

Opportunistic fauna sightings were recorded in the field assessment (**Appendix A**), with a total of 10 species (not inclusive of invertebrates) recorded over the survey period. These sightings included common native avian species, such as the Australian Magpie (*Cracticus tibicen*), Laughing Kookaburra (*Dacelo novaeguineae*), Galah (*Eolophus roseicapilla*), Noisy Minar (*Manorina melanocephala*), Crimson Rosella (*Platycercus elegans*), Eastern Rosella (*Platycercus eximius*), Magpie Lark (*Grallina cyanoleuca*), Crested pigeon (*Ocyphaps lophotes*) and Fan-tailed Cuckoo (*Cacomantis flabelliformis*). Recorded mammalian species was a Macropod (a Kangaroo and it was identified using scat).

It is possible that the forementioned threatened species within **Table 2.3** above may occur within the project area. However, while they were vigilantly searched for, care should be taken during tree-felling and the alternation of the existing track. It is also recommended that an Ecologist is present pre, during and after clearing activities as per the standard requirements.

With the implementation of relevant safeguards, the proposed activity is expected to minimise the risk of injury/mortality to native fauna during works.

No fauna species recorded under the EPBC Act or BC Act were observed on-site.

Figure 2.1 – Survey Location

Figure 2.2- Landscape photographs site entry and exit gates

Figure 2.3- Landscape photographs of Lot 1 DP233288

2.4.3 Summary of survey effort

The survey was undertaken on 23 December 2021. Weather was clear with no rainfall, low wind speeds and temperature ranged between 28.7-29.0℃ (BOM 2021)

The ability to detect and/or identify flora and fauna can vary greatly with season, ambient temperature, access to sites and weather. Surveys were vigilantly conducted, and every effort has been made to detect targeted threatened species where possible (**Table 2.4**).

Table 2.5 – Targeted species survey details

Species	Minimum survey requirements	Survey completed
Flora Target Species (as above in section 2.4.2)	Observational surveying for 8-person hours on 23 December 2021	The entire proposal site (to the fence line, Lot 1 DP 233288) was assessed via visual observations. Data was logged using a non-commercial handled GPS device.
Fauna Target Species (as above in section 2.4.3)	Fauna opportunistic sightings were also noted during the flora survey. Methods included opportunistic surveying, looking for scatts, scratches, urine stains on trees from Koalas, bird calls, and direct observation of species.	Animals were identified from vocalization, observed sightings, and scatts. Surveying was completed using binoculars, high quality SLR cameras, bird guides and logged using a non-commercial handheld GPS device.

2.5 Limitations

The ability to detect plants and accurately identify them to species level can vary greatly with season, prevailing climatic conditions, dormancy, and the presence of reproductive material (*e.g.*, flowers, fruit, and seed capsules). The survey undertaken as part of this assessment only represents a 'snapshot' in time and therefore may not provide a true indication of the presence of any given species within the proposal site. Some cryptic flora species may only be detected during flowering periods that may not coincide during the survey period. The identification of birds and amphibians also relied on visual cues for species recognition; however, some species are morphologically difficult to distinguish, and analysis is often resolved using calls, making identification of species difficult.

The detection of microbats can also be highly dependent on desirable ambient conditions, as microbats are likely to exhibit longer torpor durations when insect abundance is low because of cooler weather conditions. However, the study was conducted during summer where high insect abundance present, but no sign of microbat habitat was noted. This is likely to be due to the absence of suitable habitat trees for microbats. The ability to detect migratory species is also limited by timing and the patterns of migration for each species. This assessment should not completely rule out the possibility of migratory species utilising the area at different times of the year.

This survey is not to be regarded as conclusive evidence that certain protected flora and fauna do not occur at the site. However, every effort has been made to detect these species wherever possible.

Tree locations recorded during the field survey have been recorded with non-commercial grade handheld GPS receivers and are subject to positional inaccuracy. This is especially pronounced within areas that have more extensive tree canopy cover, and in low reception areas, which is likely to result in multipath interference having a significant impact on horizontal accuracy.

3 Existing environment

The landscape area of the project is under the IBRA classification system (version 7; IBRA7), and the site is located within the Nandewar (NAN) bioregion and Peel sub region. The NSW Mitchell Landscapes Ecosystem Meso Grouping layer (version 3.1) classifies the area as Tamworth - Keepit Slopes and Plains, classifying the area to have an over cleared status of 0.64. The arial imagery and site-assessment ground-truthed that the site area has been previously cleared mainly for farming.

The landform of the project area was found to be flat on the western section and slightly undulating in the eastern aspect. The boundary of the project site is marked with a wired fence. Few young white box trees were present, with one mature tree and regrowth. All the trees are scattered to the eastern side of the land parcel, and a moderate weed incursion was recorded, indicating a poor woodland condition. Many non-native grass species were recorded during the survey. The closest water courses were 'Burkes Gully' and 'Barnes Gully,' running approximately 1.1 km west and 1.8 km northeast to the site. Both are tributaries of the Peel River. These watercourses were not supporting any recognized aquatic habitats under the FM Act.

The project is unlikely to affect groundwater levels, given that no groundwater extractions are proposed; however, earthworks will be undertaken according to the new road construction plan. Soil nutrient levels would not be changed from existing circumstances. However, surface water drainage patterns are also likely to be substantially different from the existing situation. Appropriate erosion and sediment controls would be put in place to ensure the community and nearby waterways are not affected by any run-off from the works.

Twenty-three (23) juvenile trees which are less than 10 years of age, four (4) young trees, and one mature (1) tree were recorded. None of the recorded trees were identified as habitat trees and majority were White box trees. Hollow-bearing trees support nesting and breeding habitat for several hollow dependant fauna, such as some bird species, microbats, and gliders. The site has a moderate source of *Eucalyptus* species and when flowering, the native trees would provide a food source for many birds, bees, possums, gliders and flying foxes.

The ecological values of the project area are limited due to the diminished condition due in part to the lack of floristic structural diversity, species richness and species diversity within existing patches of native vegetation, as well as the ongoing disturbance associated with cattle grazing, management regimes and weed incursion (**Figure 3.1**).

Figure 3.1- Weed Intrusion within the project site (African Boxthorn; Weed of National Significance)

Figure 3.2- Existing items within the project site

3.1 Threatened ecological communities/Plant community Types

The site assessment focused on targeting the presence of the following identified 4 TECs under the EPBC Act, which may or are likely to occur within a 10km radius of the site detected in the PMST results:

- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland.
- Weeping Myall Woodlands
- New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands
- Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland.

Vegetation within the road reserve was not found to be mapped as a particular Plant Community Type (PCT) and the onsite assessment revealed that the site does not encompass a TEC within the grassy White Box woodland. However, the previous flora and fauna assessment (conducted in 2015) has resulted that the TEC White Box- Yellow Box- Blakely's Red Gum Grassy Woodland and derived native grassland was present on site. The same assessment has resulted that PCT 1383 was present on site. However, the site does not encompass Blakely's Red Gum which is a characteristic tree species in this TEC and does not exhibit a majority of native grasses in the understory required for this particular PCT and majority of Whitebox trees present onsite, were less than 10 years of age. This might now be more degraded due to a number of above-mentioned anthropogenic activities. It was also recorded that the project site and surrounding area have previously been extensively cleared for agriculture use and urban development. Vegetation within the project area ranges from grassy verges and grassland with native, non-native grasses. However, the White Box shrubby woodland was in poor condition due to range of disturbance factors like historic cropping and pasture improvements. The ground layer is highly disturbed and dominated by invasive flora species, in particular rank, non-native grasses and shrubs (**Figures 2.1 & 2.2**). The on-site assessment revealed that the previously identified PCT and the TEC don't exist at present.

White Box (*Eucalyptus albens*) was recorded as the most common over-storey species which is present in small, disturbed patches with native understorey. However, a number of invasive flora species were also recorded on site, in particular, Coolatai Grass and Common Prickly Pear. This yields a low species richness and diversity, particularly within the ground stratum.

The Department of the Environment listing information guide/policy statement for the EPBC-listed TEC defines a patch as a continuous area containing the ecological community, and requires that when determining the patch size, the patch is defined as the larger of:

1. an area that contains 5 or more trees in which no tree is no greater than 75 m from another tree; or
2. the area over which the understorey is predominantly native.

Based on the proposed works and vegetation clearing, the proposed development will result in minimal impacts to the existing vegetation. The total impact area anticipated is composed of approximately 4500 m^2 (*i.e.,* 0.45 ha) based on aerial imagery interpretation. The overall vegetation condition of the entire project site is low, and the White-Box woodland community has a native vegetation foliage cover < 25% and < 50% of the perennial vegetation cover in the ground layer is made up of non-native species. Based on this assessment and review of aerial imagery, it is confirmed that the woodland does not satisfy the criteria for the listed EPBC TECs. None of the habitat trees are to be removed. Removing one mature white box tree (GPS Coordinates -31.127°, 150.9044°) will be required, and existing small juveniles, scattered bushes will be removed as per the construction requirement.

Figure 3.3- Tree removals proposed within the project site (mature and young trees are indicated in green tree markers and juveniles are indicated in purple markers)

3.2 Groundwater dependent ecosystems

There were no terrestrial GDEs identified for the project site within the desktop search. The project is unlikely to affect groundwater levels, given that no groundwater extractions are proposed. However, there will be earthworks. The earthworks generally will be undertaken in locations that were disturbed during the original land clearing. Potential impacts on GDE include groundwater drawdown, but as this vegetation associated with the GDE was not recorded within the site, no impacts are anticipated. Soil nutrient levels would not be changed from existing circumstances, and surface water drainage patterns are also unlikely to be substantially different to the existing situation. Appropriate erosion and sediment controls would be put in place to ensure the environment is not affected by any run-off from the works (**Figure 3.4**).

Figure 3.4 – Hydroline spatial data of site location (Lot 1 DP233288, indicated in a red dot)

3.3 Wildlife connectivity corridors

The vegetation indicated for removal is not considered to be of outstanding biodiversity value and is not mapped on the NSW Biodiversity Values Map and Threshold Tool (BMAT, **Appendix D**). The closest protected Riparian land is located 1.66 km northwest to the project site, along the 'Burkes Gully'. The area was not mapped on the NVR map, and the closest vulnerable regulated land is located 1.66 km northwest to the project site. There will be no tree removal in the areas mapped on the NVR or BMAT maps and no impacts are anticipated. However, the vegetation within the site is unlikely to provide an important service to wildlife, as there are no areas of continuous tree and shrub cover (the area does not contain 5 or more trees within 75 m of each other) to provide wildlife corridors within the subject site and vegetation beyond this area composed of lower quality habitat value; hence the impacts will be minimal. No mature trees are being removed and no further impact is to occur from extra works to the already cleared land area.

3.4 SEPP (Koala Habitat Protection) 2020/2021

The State Environmental Planning Policy (Koala Habitat Protection) 2020 (SEPP 2020) aims to encourage proper conservation and management of areas of natural vegetation that provide habitat for koalas (*Phascolarctos cinereus*) to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline by:

- Requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and
- Encouraging the identification of areas core koala habitat; and
- Encouraging the inclusion of areas of core koala habitat in environment protection zones.

The policy identifies areas of potential and core koala habitat as:

- Potential koala habitat is defined as areas of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component. Trees in this schedule include:
    - Forest Red Gum (*Eucalyptus tereticornis*)
    - Tallowwood (*Eucalyptus microcorys*)
    - Grey Gum (*Eucalyptus punctata*)
    - Ribbon or Manna Gym (*Eucalyptus viminalis*)
    - River Red Gum (*Eucalyptus camaldulensis*)
    - Broad Leaved Scribbly Gum (*Eucalyptus haemastoma*)
    - Scribbly Gum (*Eucalyptus signata*)
    - White Box (*Eucalyptus albens*)
    - Bimble Box or Poplar Box (*Eucalyptus populnea*)
    - Swamp Mahogany (*Eucalyptus robusta*)
- Core koala habitat is defined as an area of land with a resident population of koalas, evidenced by attributes such as breeding females (females with young) and recent sightings of and historical records of a population.

The Tamworth Regional Council local government area (LGA) is listed in Schedule 1 of the policy for SEPP 2020 and 2021, and the area is zoned as R5 Large Residential Lots. Therefore, an assessment has been completed against the SEPP 2021 rather than the SEPP 2020. The site may support potential koala habitat and an assessment against the SEPP 2021 was completed.

The proposal area supports koala habitat and feed tree species; however, this is not composed of at least 15% of the trees outlined in Schedule 2. White Box (*Eucalyptus albens*) was identified on site as Koala feeding trees. The closest recorded koala was approximately 4.58 km southwest from the proposal site in 2010 (**Figure 3.6**; SEED data); 5 koala records have been noted within proximity of the proposal (NSW OEH) dated between 1980 to 2010 (**Figure 3.5**).

No direct (*i.e.*, visual sightings) or indirect (*i.e.*, observed scatts, scratches and urine stains on trees) signs were observed during the field survey no impact is expected

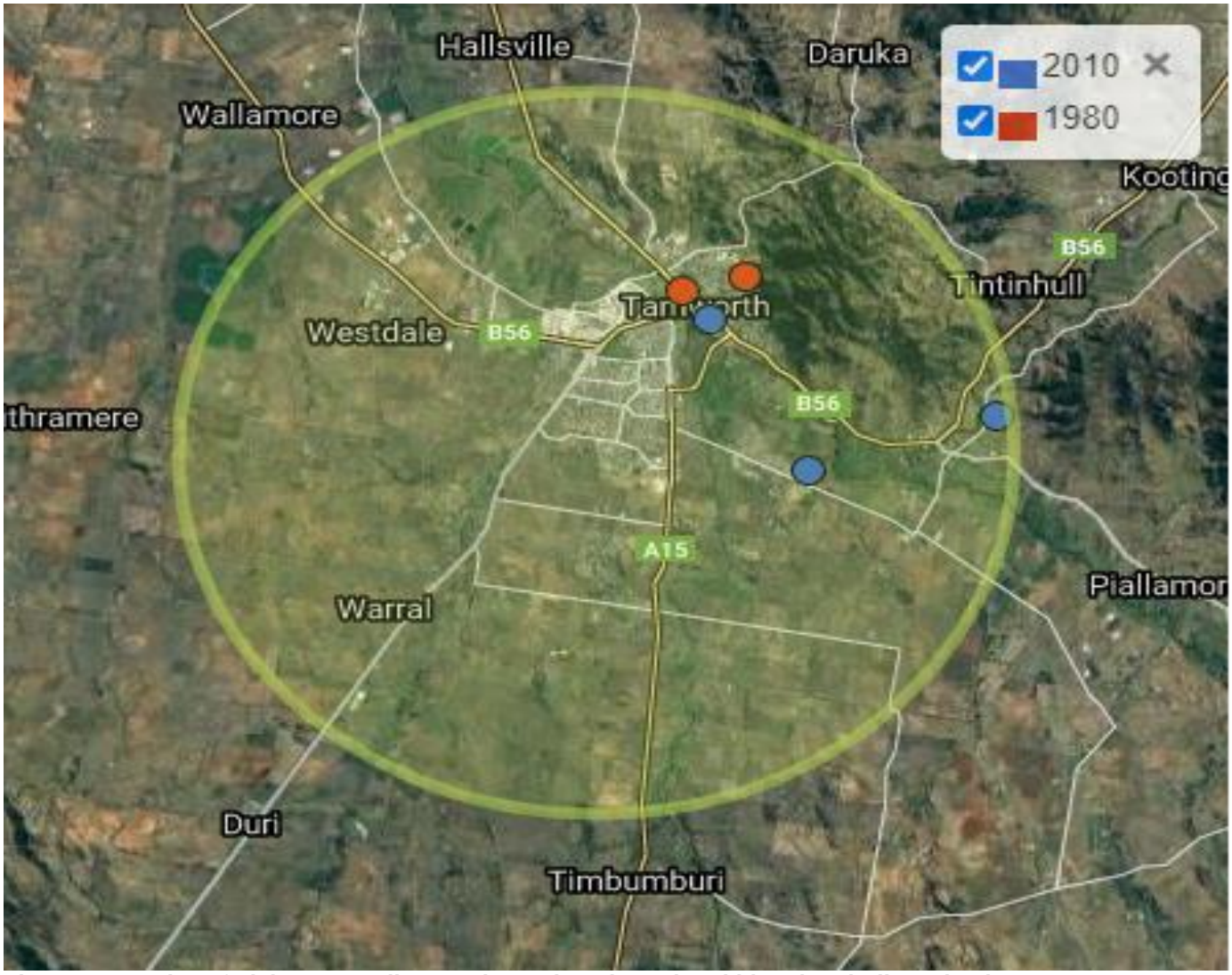

Figure 3.5 – Atlas of Living Australia search results. The red and blue dots indicate koala sightings

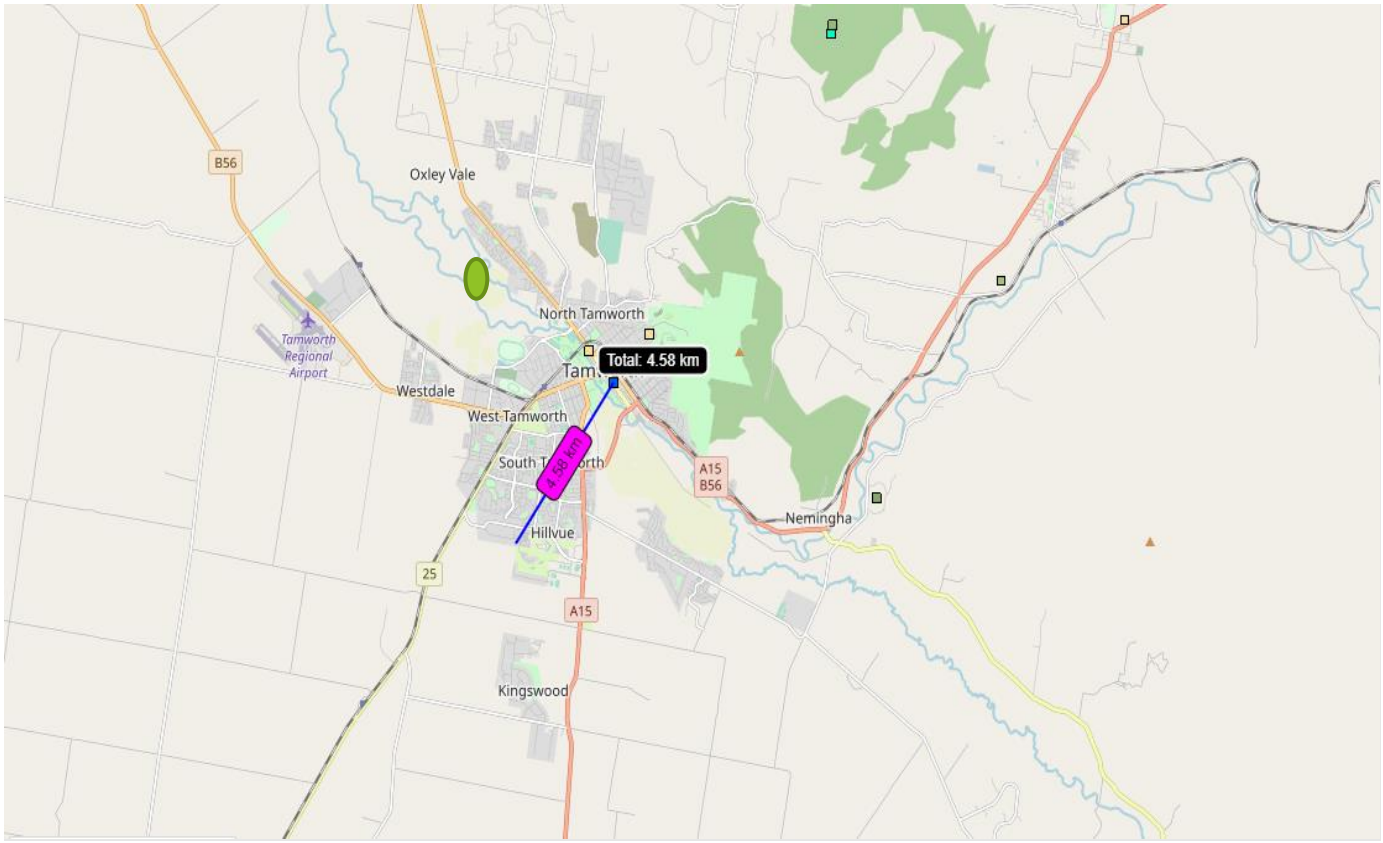

Figure 3.6- SEED search results. Closest Koala sighting in 2010, 4.58 km from the project site (blue dot)

3.5 Matters of National Environmental Significance

Under the EPBC Act an action will require an approval from the minister if an action has, will have or is likely to have a significant impact on a matter of national environmental significance (MNES). Matters of national environmental significance are:

- World heritage properties
- National heritage places
- Wetlands of international importance (also referred to as 'Ramsar' wetlands)
- Nationally threatened species and ecological communities
- Migratory species
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Nuclear actions (including uranium mining)
- A water resource, in relation to coal seam gas development and large coal mining development

This assessment aimed to identify and assess matters of state and national environmental significance, such as threatened species, populations and ecological communities listed as threatened under the BC Act, FM Act and MNES listed under the EPBC Act.

The extent of vegetation likely to be removed or modified because of the proposed development is negligible. The proposed development involves the minor vegetation clearing of an existing affected land area and would not introduce a new impact to the area. The project will result in minimal impacts to the existing vegetation, with the removal of 29 trees and scattered bushes with approximately 3.4 % mature (n=1), 79.3 % juveniles (n=23) and 17.2 % young trees (n=5). Removal shall be undertaken on the eastern portion of the woodland, where all the trees are scattered. This site is already subject to significant disturbance and edge effects due to adjacent

residential constructions and will not result in additional fragmentation. None of the habitat trees will be removed. However, one mature white box tree will be removed. Removals are mostly to be juvenile Whitebox trees and scattered bushes. Vegetation removal for the proposed project would not result in a substantial reduction in the extent or area of occupancy of the Woodland.
A variety of non-native invasive flora species have been recorded in the White Box Woodland area. Weed management controls will be developed for the works which will outline mitigation measures to reduce the likelihood of spreading invasive flora found on site. It is not expected that the project will increase the number or populations of invasive species if measures are developed and followed in accordance with the standard requirements. This may include the use of herbicides to assist in the localised control of invasive weeds, particularly in disturbed and rehabilitated areas.

Implementing key mitigation recommendations (i.e., erosion and sediment controls, weed management, etc.) designed to minimise impacts during construction, the proposed development will not significantly adversely impact upon the environment and will not result in any significant impacts on matters of state and national environmental significance. It is concluded that the development of the site satisfies the requirements of relevant Commonwealth, State and Local environmental legislation and is supported from an ecological perspective.

4 Impact assessment

The following impact assessment identifies and discusses each of the potential environmental impacts of the proposed construction works, such as:

4.1 Construction impacts

4.1.1 Removal of native vegetation

The proposed works are likely to result in the removal of a total of 29 native trees, most trees were not flowering during the time of assessment (29 November 2021). DBH was only recorded where trees were >0.3m and/or if it was safe to do so (*i.e.*, long grass and probability of snakes). Details of these trees are provided in table 4.1

Table 4.1 – Impacts on vegetation

Tree #	Species	Latitude	Longitude	Tree Age	Diameter at Breast Height (DBH) (m)	Hollows present (Yes/No)	Nests present (Yes/No)
Trees assessed for removal							
1	White Box (*Eucalyptus albens*)	-31.1269	150.9044	Young	2.86	no	no
2	Sweet viburnum (*Viburnum odoratissimum*)	-31.126	150.9048	Young	<0.20 est.	no	no
3	White Box (*Eucalyptus albens*)	-31.126	150.9044	Young	<0.25 est.	no	no
4	White Box (*Eucalyptus albens*)	-31.1261	150.9043	Young	0.22	no	no
5	White Box (*Eucalyptus albens*)	-31.127	150.9044	Mature	0.73	no	no
6	White Box (*Eucalyptus melliodora*)	-31.1261	150.9047	Young	<0.20 est.	no	no
7	White Box (*Eucalyptus albens*)- 23 trees	-31.127	150.9046	Juvenile	<0.20 est.	no	no

The vegetation indicated for removal is not considered to be of outstanding BV and is not mapped on the NSW BV Map. No habitat trees will be removed, and the impact will be minimal as the existing vegetation is fragmented, and the woodland is in poor condition due to range of disturbance factors. The mean DBH was 0.87 m (range: 0.4 m to 2.3 m), and there are no trees with hollows that are to be removed within the project site. It is recommended to have a qualified Ecologist and a trained animal handler, during and after clearing activities. Based on the proposed trees for removal, works and clearing widths outlined in the design, the proposed

development will result in minimal impacts to existing vegetation. The proposed works are considered unlikely to result in a significant impact on the White Box woodland community.

4.1.2 Removal of threatened fauna habitat

Under the BC Act Test of Significance, the following criteria are used for determining whether a proposed development or activity is likely to significantly affect threatened species and/or their habitats:

- The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity;
- Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity;
- The importance of the habitat to be removed, modified, fragmented, or isolated to the long-term survival of the species in the locality;
- Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly); and
- Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The following species were not identified during the field survey, however, are likely to occur due to records of them found near the proposed construction site. An assessment of potential impact on these species habitats was conducted out of due diligence.

Little Lorikeet Habitat

The removal of hollow-bearing trees is a threatening process for the Little Lorikeet. The extent of habitat likely to be removed because of the proposed development is considered to be negligible with no hollow-bearing trees were found on site or proposed to be removed. The proposed development involves the minor clearing of an existing fragmented patch. Given there are no hollow-bearing trees within site, there is unlikely to be a notable reduction in the breeding habitat opportunities for this species in the local area. Further, the overall extent of tree removal is also likely to be negligible given the existing woodland remnants in the locality, such that there is unlikely to be any notable reduction in foraging habitat resources for the species in this area.

Little Eagle Habitat

This species is found throughout the Australian mainland excepting the most densely forested parts of the dividing range escarpment and occurs as a single population throughout NSW. Little Eagle occupy open Eucalypt forest, woodland or open woodland, Sheoak or Acacia woodlands and riparian woodlands of interior NSW. This species generally nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Accordingly, their breeding period does not coincide the project and as the vegetation of the project is sparse, it is unlikely that the Little Eagle will not occur and be affected by the work.

Turquoise Parrot Habitat

Their extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. They usually live on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Turquoise parrot prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants or browsing on vegetable matter. Their nesting period is from August to December. It lays four or five white, rounded eggs on a nest of decayed wood dust. This project does not coincide their breeding period and as the vegetation of the site is sparse, it is likely an unsuitable habitat for this species, therefore, it is unlikely that this species will be affected by the works.

Further, the overall extent of tree removal is also likely to be negligible given the existing woodland remnants in the locality, such that there is unlikely to be any notable reduction in foraging habitat resources for the species in this area.

Further predicted impacts on the threatened fauna can be seen above in **section 2.4.3**.

4.1.3 Removal of threatened flora

Under the BC Act Test of Significance, the following criteria are used for determining whether a proposed development or activity is likely to significantly affect threatened species and/or endangered flora communities:

- Are the works likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
- likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction;
- The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity;
- Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity;
- The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality;
- Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly); and
- Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The proposed development involves the minor clearing including and would not introduce a new impact to the area. The extent of habitat likely to be removed or modified because of the proposed development is minor (0.45 ha) and is considered unlikely to modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction (and supported by the mitigation measures proposed, particularly around sediment and erosion and weed management to further reduce the likelihood of impacts on the existing White Box woodland outside of the development footprint). The woodland area is in relatively poor condition and already subject to several impacts including weed invasion and other anthropogenic disturbances. The proposed clearing of a small area of low condition White Box woodland that has already been subjected to existing and ongoing disturbances is considered unlikely to exacerbate a threatening process.

4.1.4 Aquatic impacts

'Burkes Gully' and 'Barnes Gully' are the identified water courses associated to the site but no impacts are anticipated due to the significant proximity to site. Accordingly, no wetlands or any other recognized aquatic habitats are anticipated to be affected under the FM Act. Appropriate erosion and sediment controls are to be put in place to ensure the community, river and creeks are not affected by any run-off from the works.

4.1.5 Injury and mortality

Macropods are known to periodically utilise the area (Kangaroo scat was found within the project site), and construction personnel should be vigilant during construction activities to take care to avoid potential collisions. Particularly around dusk and dawn and during drier conditions where they are found near the pond area searching for food and water.

Workers should also be aware of the possibility of the threatened Little Lorikeet, Little Eagle and Turquoise Parrot in the vicinity of the project area and take care during vegetation clearing. It is recommended that a qualified Ecologist and trained animal handler shall supervise felling of trees that are known to contain hollows, Koalas, or nests to avoid the risk of injury or mortality.

4.1.6 Indirect/operational impacts (Wildlife connectivity/habitat fragmentation/edge effects)

The current state of the site has poor vegetation connectivity for key wildlife. The proposal involves construction of an entry road to the Arcadia residential lots, but the operational impacts will not result in any additional fragmentation because the existing land area already is in poor condition due to ongoing constructions and weed intrusions and no habitat trees are to be removed. Wildlife connectivity issues, further than what already occurs, will not cause any long-term additional impacts to migration of a species. However, if compensatory plantings are completed this will increase the biodiversity value of the area and will support wildlife.

The current project site is already subject to significant disturbance and edge effects. Appropriate weed control and hygiene measures should be implemented prior to and during construction, to reduce the likelihood of introducing and spreading priority and significant environmental weed species.

The project is unlikely to affect groundwater levels, given that no groundwater extractions are proposed, however, there will be earthworks which would be minor. Soil nutrient levels would not be changed from existing circumstances, and surface water drainage patterns are also unlikely to be substantially different to the existing situation. Appropriate erosion and sediment controls would be put in place to ensure the community is not affected by any run-off from the works.

4.2 Cumulative impacts

The proposal has the potential to have cumulative environmental effects with likely future activities (Arcadia residential development), however, the effects would be minimal due to the limited scope of the works and safeguards in place (i.e., erosion and sediment controls, weed management, CEMP, etc.). The significance of these impacts would vary depending on the amount of habitat removal and fragmentation and the type of environmental management measures adopted. Cumulative benefits of this project would relate to supporting easy access to the Arcadia development. With compensatory replanting along the 'Burkes Gully', it will add ecological value to the area.

4.3 Assessments of significance

Assessments of significance are required for each threatened species or ecological community recorded or to have a medium to high potential (as per **sections 2.4.3 & 2.4.2**) to be within the study area. As per **section 3.5** above the White Box woodland community, Little Lorikeet Little Eagle and Turquoise parrot have been evaluated against these criteria for matters of state and national significance have been assessed below (**table 4.3**).

Table 4.2 – Summary of significance assessments findings.

Summary of BC Act significance assessment findings							
Threatened species, or communities	**Significance assessment question[1]**					**Likely significant impact?**
	a	**b**	**c**	**d**	**e**	

Little Lorikeet	N	N	X	N	N	No
Little Eagle	N	N	X	N	N	No
Turquoise parrot	N	N	X	N	N	No

Summary of EPBC Act Significance assessments findings		
Threatened species, or communities	**Important population[2]**	**Likely significant impact?**
Little Lorikeet	No	No
Little Eagle	No	No
Turquoise Parrot	No	No

Notes: Y= Yes (negative impact), N= No (no or positive impact), X= not applicable

Summary of FM Act significance assessment findings								
Threatened species, or communities	**Significance assessment question[1]**							**Likely significant impact?**
	a	**b**	**c**	**d**	**e**	**f**	**g**	
Little Lorikeet	N	X	X	N	N	N	N	No
Little Eagle	X	X	N	N	N	N	N	No
Turquoise parrot	N	X	N	N	N	N	N	No

1. Significance Assessment Questions as set out in the *Fisheries Management Act*
   - a in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,
   - b in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,
   - c in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:
     - (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
     - (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
   - d in relation to the habitat of a threatened species, population or ecological community:
     - (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and
     - (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and
     - (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,
   - e whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),
   - f whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,
   - g whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

2. A 'population of a species' as determined by the *Environment Protection and Biodiversity Conservation Act 1999* is an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:
   a. a geographically distinct regional population, or collection of local populations, or
   a population, or collection of local populations, that occurs within a particular bioregion.

Important Population as determined by the *Environment Protection and Biodiversity Conservation Act 1999*, is one that for a vulnerable species:

a is likely to be key source populations either for breeding or dispersal
b is likely to be necessary for maintaining genetic diversity
c is at or near the limit of the species range.

3. Signicance Assessment Questions as set out in the *Biodiversity Conservation Act 2016*

a- in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

b- in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

c- in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

d- whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

e- whether the proposed development or activity is or is part of a key threatning process or is likely to increase the impact of key threatening process

4.4 Impact summary

Impacts of the removal of native vegetation are expected to be long-term, however, the area is not mapped in BV and is unlikely to affect the already highly disturbed site. It is not predicted that the removal of vegetation will cause any long-term impacts on threatened fauna as the landscape is already fragmentated and subject to edge effects due to the existing agricultural clearing and entry road construction activities, and no further fragmentation will occur because of the project. There may be short-term impacts to fauna during the tree-felling process, however as no hollow bearing trees are to be removed, impact will be minimal. The invasion and spread of weeds will be mitigated through appropriate weed and management measures. In order to minimize the effect the study suggests compensatory replanting in a suitable area close to the site (possible along the 'Burkes Gully'. Further detail is outlined in **table 4.4**.

Table 4.3 – Summary of impacts

Impact	Biodiversity values	Nature of impact	Extent of impact	Duration	Does the proposal constitute or exacerbate a key threatening process?	Confidence in assessment
Removal of native vegetation	Native vegetation	Direct	Site based	Long-term	• Clearing of native vegetation	Known
	White Box woodland	Direct	Site based	Long-term	• Clearing of native vegetation	Known
Removal of threatened fauna habitat	No threatened fauna habitat is known to be removed. No hollow bearing trees to be removed.	Indirect	Site based	Short-term	• Clearing of native vegetation • Bush rock removal • Loss or degradation (or both) of sites used for hill-topping by butterflies	Unknown
Removal of threatened flora	N/A	Indirect	Site based	Short-term	• Clearing of native vegetation • Bush rock removal	Unknown
Aquatic impacts	Burkes Gully and Barnes Gully are the identified water courses. They do not support key fish habitat or vegetation regulated under the FM Act.	Direct	Site-based	Short-term	Leakage of concrete washout bay into waterway reducing water quality The concrete washout bay will be bunded and wrapped for extra caution in preventing contaminants from entering waterway.	Known
Injury and mortality of fauna	Birds in nests, microbats roosting under loose bark and/or hollows, Koalas and other hollow dependent species that	Indirect	Site-based	Short-term	• Clearing of native vegetation	Known/ Unpredicted

Impact	Biodiversity values	Nature of impact	Extent of impact	Duration	Does the proposal constitute or exacerbate a key threatening process?	Confidence in assessment
	may not have been detected.					
Fragmentation of identified biodiversity links and habitat corridors	N/A – should not be impacted further than the already fragmented landscape.	Cumulative	Site-based	Long-term	• Clearing of native vegetation	Known
Edge effects on adjacent native vegetation and habitat	N/A – should not be impacted further than the already occurring edge effects	Indirect	Site-based	Long-term	• Clearing of native vegetation • Risk of spreading weeds and invasive species	Known
Invasion and spread of weeds	• African Boxthorn • Narrow leaf cotton bush	Indirect	Site-based	Long-term	• Invasion and establishment of exotic vines and scramblers • Invasion of native plant communities by African Olive (*Olea europaea* L. subsp. *cuspidata)* • Invasion, establishment and spread of *Lantana camara* • Invasion of native plant communities by Bitou bush and Boneseed *(Chrysanthemoides monilifera*) • Invasion of native plant communities by exotic perennial grasses • Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	Known
Invasion and spread of pests	European Rabbit	Indirect	Site-based	Long-term	• Competition and grazing by the feral European rabbit (*Oryctolagus cuniculus*)	Unpredictable

Impact	Biodiversity values	Nature of impact	Extent of impact	Duration	Does the proposal constitute or exacerbate a key threatening process?	Confidence in assessment
Invasion and spread of pathogens and disease	Unknown	Indirect	Site based	Long-term	• Infection of native plants by *Phytophthora cinnamomi* • Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae • Infection by psittacine circoviral (beak and feather) disease affecting endangered psittacine species and populations • Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	Unpredictable
Groundwater dependent ecosystems	N/A - no groundwater extractions are proposed, and earthworks will be minor	Indirect - operational	Site-based		Unknown	Known
Changes to hydrology	No changes are expected	Direct/ indirect	Site based	Short-term	• Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	Unknown
Noise, light and vibration	Construction impacts	Direct/ indirect	Site-based	Short-term	Noise, light and vibration will occur during the works	Known

5 Avoid, minimise and mitigate impacts

Given the nature of the proposal and the minimal scope, it is expected that no threatened species and/or TECs will be significantly impacted by the proposed works. To ensure compliance within the relevant environmental legislation, mitigation measures and the relevant management plans are required to be in place, the mitigation measures in Section 5.2 will be adhered to.

5.1 Avoidance and minimisation

Where possible, direct impacts must be avoided or minimised for the following BV's identified in the study area:

- Little Eagle
- Turquoise parrot
- Little Lorikeet
- Any other identified threatened species found occurring on site

5.2 Mitigation measures

The proposed development is unlikely to result in any significant impacts to threatened species of native plants or animal, populations, ecological communities, or their habitats, however, to ensure compliance with the relevant environmental legislation, the following is recommended:

- Appropriate weed control and hygiene measures should be implemented prior to and during construction, to reduce the likelihood of introducing and spreading priority and significant environmental weed species, in particular African Boxthorn as it has been identified as a weed of national significance in NSW. Any significant weed infestations (including priority weed species and infestations of environmental weed species which may present management issues) should be treated prior to any vegetation clearing, ground disturbance, removal or stockpiling of material. Materials should not be stockpiled within areas where significant weed infestations are or were previously present and should be regularly monitored for evidence of seed germination and reinfestation.
- Stockpiles must not be placed within the dripline of canopy trees being retained.
- All on-ground activities associated with the proposal should seek to minimise clearing of native canopy trees, in particular hollow-bearing trees and to minimise the extent of direct and indirect disturbance to ensure:
    - Minimal disturbance to the ground layer and the potential spread of weed species; and
    - Long-term retention of canopy vegetation through minimal disturbance to the root systems of trees to be retained.

- Injury or mortality of fauna species is to be minimised by having a qualified Ecologist supervising all clearing activities (in particular, any hollow-bearing trees).
- Where the unavoidable removal of native hollow-bearing trees is required, clearing should ideally be undertaken outside of the main breeding period for threatened hollow-dependent fauna known to utilise hollows within the proposal area (*I.e.*, May- September for Little Lorikeet) and soft-felling is advised.
- Appropriate erosion and sediment control (ESC) measures should be implemented prior to commencement of any vegetation clearing works.
- Following construction, disturbed and exposed areas within the ground layer should be revegetated with appropriate species.
- Compensatory offset planting (4:1) of appropriate native tree species is recommended also be provided to improve fauna habitat values in the long-term.

Table 5.1 – Mitigation measures

Impact	Mitigation measures	Timing and duration	Likely efficacy of mitigation	Residual impacts anticipated
Removal of native vegetation	Native vegetation removal will be minimised through detailed design.	Detailed design	Effective	The loss of native vegetation may lead to potential long term residual impacts. In order to mitigate these anticipated impacts, it is advised to undertake compensatory native replanting to offset vegetation losses.
	Pre-clearing surveys will be undertaken in accordance with *Guide 1: Pre-clearing process* of the *Biodiversity Guidelines:* Vegetation removal will be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bush rock* of the *Biodiversity Guidelines:*	Prior to construction During construction	Effective	
	Native vegetation will be re-established in accordance with *Guide 3: Re-establishment of native vegetation* of the *Biodiversity Guidelines:*	Post construction	Effective	
	The unexpected species find procedure is to be followed under *Biodiversity Guidelines:*	During construction	Proven	
Removal of threatened species habitat and habitat features	Habitat removal will be minimised through detailed design.	Detailed design	Effective	The anticipated impacts to habitat loss will be minimal to negligible, as nests were rarely found at the proposal site and none of the habitat trees or mature trees will be removed.
	Habitat removal will be undertaken in accordance with *Guide 4: Clearing of vegetation and removal of bush rock* of the *Biodiversity Guidelines:*	During construction	Effective	
	Habitat will be replaced or re-instated in accordance with *Guide 5: Re-use of woody debris and bush rock* and *Guide 8: Nest boxes* of the *Biodiversity Guidelines:*	During construction	Proven	

Impact	Mitigation measures	Timing and duration	Likely efficacy of mitigation	Residual impacts anticipated
				It is recommended that complementary nest boxes be installed if hollow or nest habitat becomes disturbed.
	The unexpected species find procedure is to be followed under *Biodiversity Guidelines:*	During construction	Proven	No impacts are expected to occur to threatened fauna.
Removal of threatened plants	Pre-clearing surveys will be undertaken in accordance with *Guide 1: Pre-clearing process* of the *Biodiversity Guidelines:*	During construction	Proven	There are no anticipated impacts to the loss of threatened plant species. Desktop assessments and physical inspections have been conducted with no expected impacts on threatened plant species or biodiversity.
	The unexpected species find procedure is to be followed under *Biodiversity Guidelines:*	During construction	Proven	
Aquatic impacts	Aquatic habitat will be protected in accordance with *Guide 10: Aquatic habitats and riparian zones* of the *Biodiversity Guidelines:*	During construction	Effective	There are no anticipated impacts to aquatic habitat due to effective mitigation measures. Residual impacts from the washdown bay will be managed by being both bunded and wrapped and to be located at a minimum 100m from the gully.

Impact	Mitigation measures	Timing and duration	Likely efficacy of mitigation	Residual impacts anticipated
Groundwater dependent ecosystems	Interruptions to water flows associated with groundwater dependent ecosystems will be minimised through detailed design.	Detailed design	Effective	No interruptions to water flows associated with GDEs will occur.
Changes to hydrology	Changes to existing surface water flows will be minimised through detailed design.	Detailed design	Effective	No interruptions to water flows will occur.
Fragmentation of identified habitat corridors	Connectivity measures will be implemented in accordance with the *Wildlife Connectivity Guidelines for Road* Proposals	Detailed design, during construction and post construction	Effective	There will be no extra residual impacts from loss of connectivity for fauna species than what already occurs.
Edge effects on adjacent native vegetation and habitat	Exclusion zones will be set up at the limit of clearing in accordance with *Guide 2: Exclusion zones* of the *Biodiversity Guidelines:*	During construction	Effective	There will be no added residual impacts from the loss of habitat in the edge areas than what already exists.
Injury and mortality of fauna	Fauna will be managed in accordance with *Guide 9: Fauna handling* of the *Biodiversity Guidelines:*	During construction	Effective	None
Invasion and spread of weeds	Weed species will be managed in accordance with *Guide 6: Weed management* of the *Biodiversity Guidelines:*	During construction	Effective	No impacts are expected to occur so long as the appropriate weed managements are in place, especially regarding Prickly Pear a NSW priority weed.
Invasion and spread of pests	Pest species will be managed within the proposal site.	During construction	Effective	None
Invasion and spread of	Pathogens will be managed in accordance with *Guide 2: Exclusion zones* of the *Biodiversity Guidelines:*	During construction	Effective	None

Impact	Mitigation measures	Timing and duration	Likely efficacy of mitigation	Residual impacts anticipated
pathogens and disease				
Noise, light and vibration	Shading and artificial light impacts will be minimised through detailed design.	Detailed design	Effective	Residual impacts are expected to be short term during anticipated construction hours.

6 Offset strategy

6.1 Quantification of impacts

Maximum Yield Pty Ltd will provide compensatory replanting or where offsets are not reasonable or feasible, supplementary measures for impacts that exceed the following thresholds:

Table 6.1 – Assessment for biodiversity offsets

Description of activity or impact	Consider offsets or supplementary measures
Works on cleared land, plantations, exotic vegetation where there are no threatened species or habitat present	No
Works involving clearing of vegetation planted as part of a road corridor landscaping program (this includes where threatened species or species comprising listed ecological communities have been used for landscaping purposes)	No
Works involving clearing of national or NSW listed critically endangered ecological communities (CEEC)	No- there is no clearing of a CEEC in moderate to good condition
Works involving clearing of nationally listed threatened ecological community (TEC) or nationally listed threatened species habitat	No- 0.45 ha of a woodland which is in poor condition is to be cleared.
Works involving clearing of NSW endangered or vulnerable ecological community	No – less than 5 ha is to be removed
Works involving clearing of NSW listed threatened species habitat where the species is a species credit species as defined in the OEH Threatened Species Profile Database (TSPD)	No- 0.45 ha of a woodland area is to be cleared.
Works involving clearing of NSW listed threatened species habitat and the species is an ecosystem credit species as defined in OEH's Threatened Species Profile Database (TSPD)	No- 0.45 ha is to be cleared
Type 1 or Type 2 key fish habitats (as defined by NSW Fisheries)	No – no type 1 or 2 fish habitats are in the near vicinity of the project.

7 Conclusion

This BAR has been prepared in support of the Review Environmental Factors, Arcadia entry road development Project. Field surveys were undertaken by a qualified ecologist in December 2021 studying the Lot 1 DP233288 project site, in conjunction with the Flora and Fauna Impact Assessment Report that was undertaken by a Senior Ecologists for the same area in 2015.

The project area is mostly flat and ranges from grassy verges and grassland dominated by non-native grasses with scattered native canopy trees to White Box grassy woodland that is in poor condition due to range of disturbance factors. Historically, the land would have been grassy White Box woodland; however, it has been repeatedly cleared and modified following adjoining residential constructions. The ground layer is highly dominated by non-native grasses and weed species like African Boxthorn, which is a weed of national significance.

The field survey did not conclusively confirm matters of State and National Environmental Significance to be present or likely to be present within the project area. In addition, while the Little Lorikeet, Little Eagle, and Turquoise parrot were not detected at the time of the survey, the species may intermittently utilize resources within the project area. Although, unlikely due to the lack of flowering species at this time of year and due to the project not being within a riparian area. If a threatened species is found onsite, Maximum Yield Pty Ltd will need to follow the CEMP unexpected finds protocol.

Few invasive weed species were present onsite, particularly African Boxthorn and it is recommended that the appropriate weed management procedures will be put in place prior to and after tree removals to avoid the spread of weeds.

The ecological values of the project area are limited due to the diminished condition from the ongoing disturbance associated with agriculture land use, management regimes, weed invasion and the prolonged drought resulting in a lack of floristic structural diversity, species richness and species diversity within existing patches of native vegetation.

‘Burkes Gully’ and ‘Barnes Gully’ are the watercourses associated adjacent to the project area and impacts are not anticipated due to the large proximity to the site. These watercourses do not support any notable aquatic areas, are not connected to wetlands or any other recognised aquatic habitats, and do not support fish habitat or vegetation regulated under the FM Act.

The proposed work requires the removal of 29 trees (23 saplings, 4 young trees and one mature white box tree) and none of the hollow-bearing trees will be removed. The overall impact for the proposed works is expected to be minimal to native fauna already present within the project area, particularly for hollow dependent fauna as there won’t be any hollow-bearing tree removals. All the trees are scattered on the eastern side of the land parcel, the trees are generally isolated on this side of the patch.

Implementing the key recommendations, safeguards and mitigation measures designed to minimise or remove potential impacts during construction, ensures that the proposed development will not significantly adversely impact upon the environment and will not result in any significant impacts on matters of state and National Environmental Significance.

It is concluded that the development of the site satisfies the requirements of relevant Commonwealth, State and Local environmental legislation and is supported from an ecological perspective.

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Appendix A – Species recorded

Recorded flora

Family	Common Name	Scientific Name
Acanthaceae	Pink Tounge	*Rostellularia adscendens*
Campanulaceae	Purple bell shape flower	*Wahlenbergia* sp
Myrtaceae	White Box	*Eucalyptus albens*
Poaceae	Curley Windmill Grass	*Enteropogon acicularis*
Poaceae	Common Wheat Grass	*Elymus scaber*
Poaceae	Plump Windmill Grass	*Chloris ventricosa*
Poaceae	Spear Grass	*Austrostipa scabra*
Poaceae	Queensland Bluegrass	*Dichanthium sericeum*
Poaceae	Western Rat Tail Grass	*Sporobolus creber*
Poaceae	Purple wire grass	*Aristida ramosa*
Pteridaceae	Rock Fern	*Cheilanthes sieberi*
Rubiaceae	Common Woodruff	*Asperula conferta*
Myrtaceae	Yellow box	*Eucalyptus mellidora*
Poaceae	Wallaby Grass	*Rytidosperma racemosum*
Asteraceae	Flaxleaf Fleabane	*Erigeron bonariensis*
Asteraceae	Common Sowthistle	*Sonchus oleraceus*
Asteraceae	Yellow Burr Daisy	*Calotis lappulacea*
Boraginaceae	Blue Heliotrope	*Heliotropium amplexicaule*
Convolvulaceae	Kidney Weed	*Dichondra* sp.
Fabaceae	Hare's foot Clover	*Trifolium arvense*
Gentianaceae	Slender centaury	*Centaurium tenuiflorum*
Geraniaceae	Cut-leaved Crane's bill	*Geranium dissectum*
Plantaginaceae	Narrowleaf Plantain	*Plantago lanceolata*
Poaceae	Rat tail Grass	*Vulpia muralis*
Poaceae	Australian Finegrass	*Chloris truncata*
Poaceae	Common Wild Oat	*Avena fatua*
Poaceae	Panic Grass	*Panicum* Sp.
Poaceae	Soft Brome	*Bromus hordeaceus*
Solanaceae	African boxthorn	*Lycium ferocissimum*
Poaceae	Kikuyu	*Pennisetum clandestinum*
Florabase		*Rubus* sp.
Apocynaceae	Narrow Leaf Cotton bush	*Gomphocarpus fruticosus*
Scrophulariaceae	Great Mullein	*Verbascum virgatum*
Acanthaceae	Pink Tounge	*Rostellularia adscendens*

Recorded fauna

Class	Scientific Name	Common name
Arves	Noisy minar	*Manorina melanocephala*
Arves	Eastern rosella	*Platycercus elegans*
Arves	Australian magpie	*Gymnorhina tibicen*
Arves	Magpie lark	*Grallina cyanoleuca*
Arves	Crimson Rosella	*Rhipidura leucophrys*
Arves	Laughing Kookaburra	*Dacelo novaeguineae*
Arves	Created pigeon	*Ocyphaps lophotes*
Arves	Fan-tailed Cuckoo	*Cacomantis flabelliformis*
Arves	Galah	*Eolophus roseicapillus*
Mammal		Macropod sp.

Appendix B – EPBC Act Protected Matters Search Tool

Australian Government

Department of Agriculture, Water and the Environment

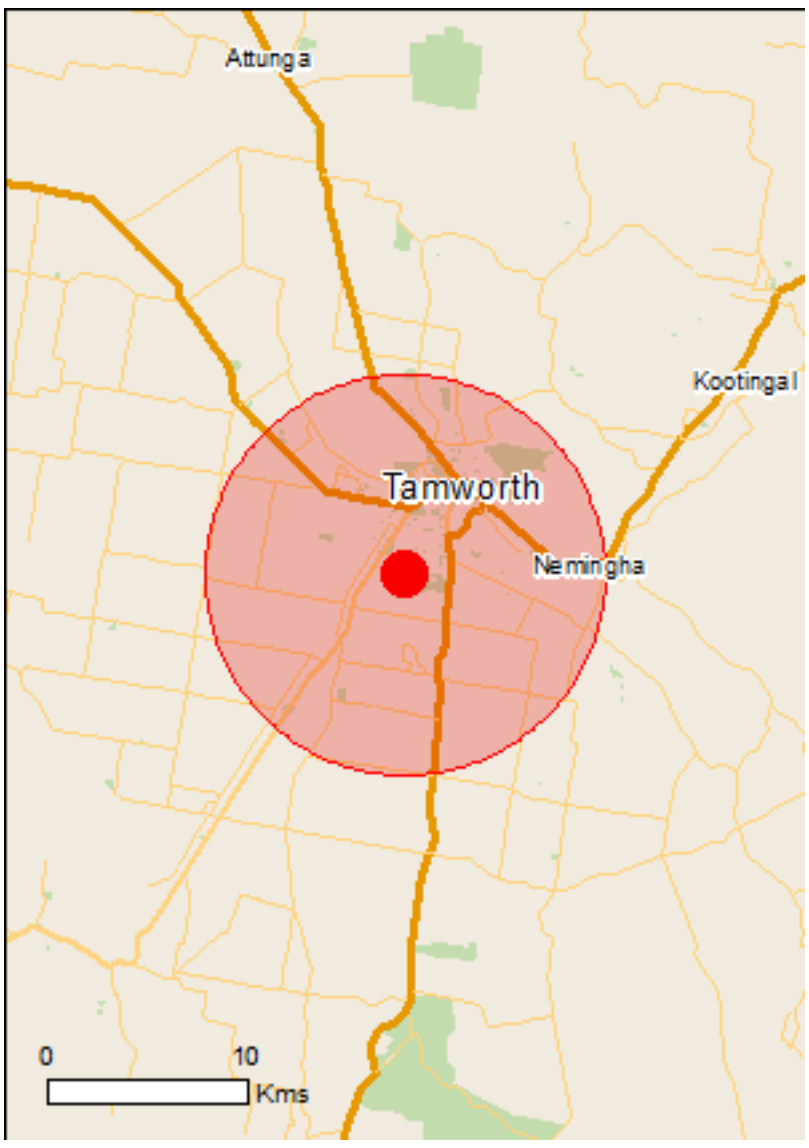
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

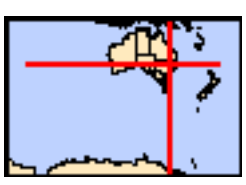
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 13/12/21 12:21:50



Coordinates

Buffer: 10.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	30
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	11
Commonwealth Heritage Places:	1
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	33
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	1000 - 1100km
Riverland	900 - 1000km upstream
The coorong, and lakes alexandrina and albert wetland	1100 - 1200km

Listed Threatened Ecological Communities		[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community likely to occur within area
New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands	Critically Endangered	Community may occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur

Name	Status	Type of Presence
		within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
Frogs		
Litoria booroolongensis Booroolong Frog [1844]	Endangered	Species or species habitat known to occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Plants		
Cadellia pentastylis Ooline [9828]	Vulnerable	Species or species habitat likely to occur within area
Callistemon pungens [55581]	Vulnerable	Species or species habitat likely to occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat known to occur within area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat likely to occur within area
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Tylophora linearis [55231]	Endangered	Species or species habitat may occur within area
Reptiles		
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area
Uvidicolus sphyrurus Border Thick-tailed Gecko, Granite Belt Thick-tailed Gecko [84578]	Vulnerable	Species or species habitat known to occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Australian & Overseas Telecommunications Corporation
Commonwealth Land - Australian Postal Commission
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Commonwealth Bank of Australia
Commonwealth Land - Commonwealth Trading Bank of Australia
Commonwealth Land - Defence Housing Authority
Commonwealth Land - Defence Service Homes Corporation
Commonwealth Land - Director of Defence Service Homes
Commonwealth Land - Director of War Service Homes
Commonwealth Land - Telstra Corporation Limited
Defence - TAMWORTH GRES DEPOT ; BEERSHEBA BARRACKS-TAMWORTH

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Tamworth Post Office	NSW	Listed place

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans		
Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor		
Swift Parrot [744]	Critically Endangered	Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat may occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-31.126384 150.904273

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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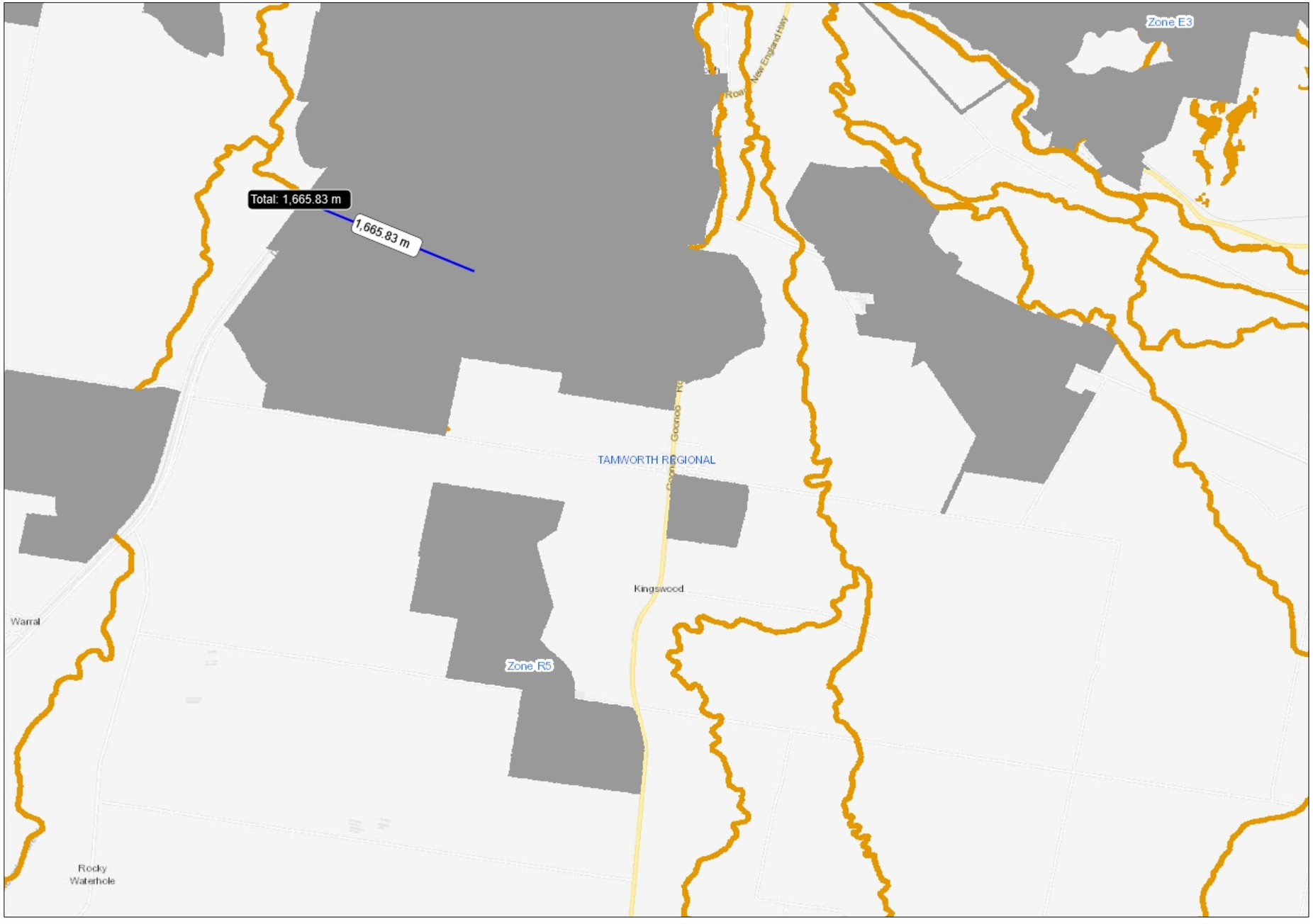
Appendix C- Native Vegetation Regulatory Map



NSW GOVERNMENT

Transitional native vegetation regulatory map

Legend

- Cadastre
- Local Land Services Regions
- Local Government Area

Transitional native vegetation regulatory map

- steep or highly erodible land, protected riparian land or special category land (category 2-vulnerable regulated land)
- category 2-sensitive regulated land
- category 2-sensitive regulated land and steep or highly erodible land, protected riparian land or special category land (category 2-vulnerable regulated land)
- Land excluded from LLS Act
- Werriwa & Monaro CEEC Advisory Layer

N

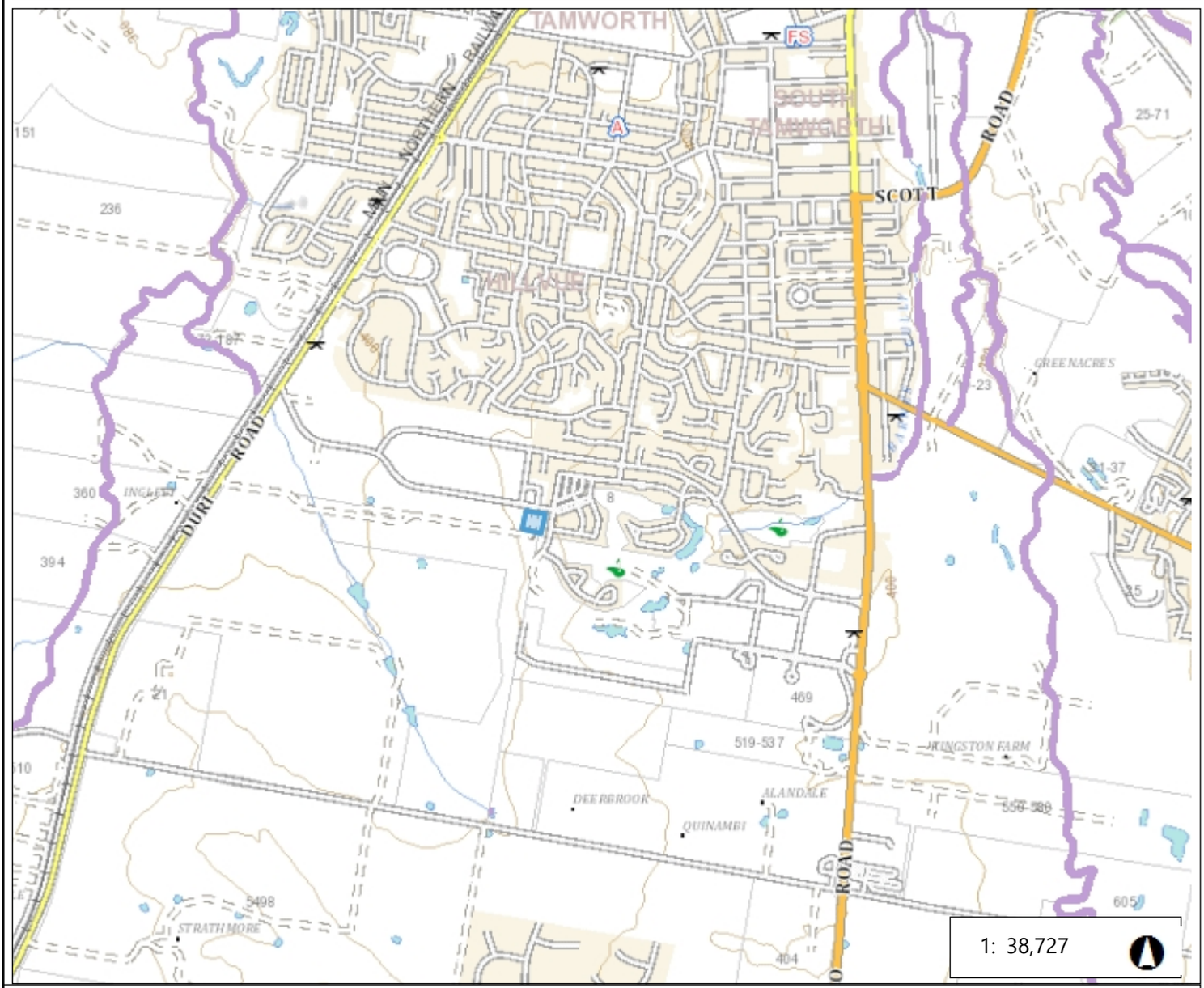
0 0.56 1.1 2.24 kilometres

If you consider there could be an error on the transitional NVR map please contact us at: map.review@environment.nsw.gov.au

Map extract date: 17-Jan-2022

Appendix D- Biodiversity Values Map and Threshold Tool

Biodiversity Offset Scheme (BOS) Entry Threshold Map



1,967.3 0 983.65 1,967.3 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	17/01/2022 9:38 AM		**BDAR Required***
Total Digitised Area	1.11	ha	
Minimum Lot Size Method	LEP		
Minimum Lot Size	0.06	ha	
Area Clearing Threshold	0.25	ha	
Area clearing trigger Area of native vegetation cleared	Unknown #		Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no		no
Date of the 90 day Expiry	N/A		

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is '"likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BOSET user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Office of Environment and Heritage and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016.*

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature_____ Date:17/01/2022 09:38 AM

Appendix E- Bionet Species List

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Entities in selected area [North: -31.08 West: 150.85 East: 150.95 South: -31.18] returned a total of 2,729 records of 607 species.
Report generated on 14/12/2021 10:31 AM

Kingdom	Class	Family	Species Code	Scientific Name	Common Name	NSW status	Comm. status	Records	Info
Animalia	Amphibia	Myobatrachidae	3134	*Crinia signifera*	Common Eastern Froglet	P		20	
Animalia	Amphibia	Hylidae	3171	*Litoria caerulea*	Green Tree Frog	P		4	
Animalia	Amphibia	Hylidae	3180	*Litoria dentata*	Bleating Tree Frog	P		1	
Animalia	Amphibia	Hylidae	3191	*Litoria latopalmata*	Broad-palmed Frog	P		3	
Animalia	Amphibia	Hylidae	3204	*Litoria peronii*	Peron's Tree Frog	P		8	
Animalia	Amphibia	Hylidae	3210	*Litoria rubella*	Desert Tree Frog	P		3	
Animalia	Amphibia	Limnodynastidae	3062	*Limnodynastes salmini*	Salmon Striped Frog	P		2	
Animalia	Amphibia	Limnodynastidae	3063	*Limnodynastes tasmaniensis*	Spotted Grass Frog	P		4	
Animalia	Amphibia	Limnodynastidae	3112	*Platyplectrum ornatum*	Ornate Burrowing Frog	P		1	
Animalia	Amphibia	Bufonidae	3269	*Rhinella marina*	Cane Toad			1	
Animalia	Reptilia	Chelidae	2017	*Chelodina longicollis*	Eastern Snake-necked Turtle	P		6	
Animalia	Reptilia	Chelidae	2951	*Emydura macquarii macquarii*	Macquarie River Turtle	P		2	
Animalia	Reptilia	Carphodactylidae	2138	*Underwoodisaurus milii*	Thick-tailed Gecko	P		2	
Animalia	Reptilia	Diplodactylidae	2123	*Nebulifera robusta*	Robust Velvet Gecko	P		1	
Animalia	Reptilia	Diplodactylidae	2059	*Strophurus intermedius*	Southern Spiny-tailed Gecko	P		1	
Animalia	Reptilia	Diplodactylidae	2078	*Strophurus williamsi*	Eastern Spiny-tailed Gecko	P		1	
Animalia	Reptilia	Gekkonidae	2082	*Gehyra dubia*	Dubious Dtella	P		1	
Animalia	Reptilia	Pygopodidae	2165	*Delma tincta*	Excitable Delma	P		1	

Animalia	Reptilia	Pygopodidae	2170	*Lialis burtonis*	Burton's Snake-lizard	P	2
Animalia	Reptilia	Scincidae	2331	*Cryptoblepharus virgatus*	Cream-striped Shinning-skink	P	1
Animalia	Reptilia	Scincidae	2375	*Ctenotus robustus*	Robust Ctenotus	P	1
Animalia	Reptilia	Scincidae	2429	*Egernia striolata*	Tree Skink	P	3
Animalia	Reptilia	Scincidae	2580	*Tiliqua scincoides*	Eastern Blue-tongue	P	62
Animalia	Reptilia	Agamidae	2177	*Pogona barbata*	Bearded Dragon	P	6
Animalia	Reptilia	Varanidae	2271	*Varanus gouldii*	Gould's Goanna	P	1
Animalia	Reptilia	Varanidae	2283	*Varanus varius*	Lace Monitor	P	1
Animalia	Reptilia	Typhlopidae	2603	*Anilios proximus*	Proximus Blind Snake	P	1
Animalia	Reptilia	Typhlopidae	2606	*Anilios wiedii*	Brown-snouted Blind Snake	P	2
Animalia	Reptilia	Elapidae	2711	*Brachyurophis australis*	Coral Snake	P	1
Animalia	Reptilia	Elapidae	2655	*Demansia psammophis*	Yellow-faced Whip Snake	P	2
Animalia	Reptilia	Elapidae	2669	*Furina diadema*	Red-naped Snake	P	2
Animalia	Reptilia	Elapidae	2681	*Notechis scutatus*	Tiger Snake	P	1
Animalia	Reptilia	Elapidae	2693	*Pseudechis porphyriacus*	Red-bellied Black Snake	P	8
Animalia	Reptilia	Elapidae	2699	*Pseudonaja textilis*	Eastern Brown Snake	P	61
Animalia	Reptilia	Elapidae	2726	*Suta dwyeri*	Dwyer's Snake	P	1
Animalia	Reptilia	Elapidae	2734	*Vermicella annulata*	Bandy-bandy	P	2
Animalia	Aves	Megapodiidae	0008	*Alectura lathami*	Australian Brush-turkey	P	2
Animalia	Aves	Megapodiidae	0008	*Alectura lathami*	Australian Brush-turkey population in the Nandewar and Brigalow Belt South Bioregions	E2,P	2
Animalia	Aves	Phasianidae	9046	*Coturnix sp.*	Unidentified Quail	P	3
Animalia	Aves	Anatidae	0211	*Anas gracilis*	Grey Teal	P	3
Animalia	Aves	Anatidae	0208	*Anas superciliosa*	Pacific Black Duck	P	8
Animalia	Aves	Anatidae	0202	*Chenonetta jubata*	Australian Wood Duck	P	23
Animalia	Aves	Anatidae	0205	*Dendrocygna eytoni*	Plumed Whistling-Duck	P	1
Animalia	Aves	Columbidae	0957	*Columba livia*	Rock Dove		8
Animalia	Aves	Columbidae	0031	*Geopelia cuneata*	Diamond Dove	P	3
Animalia	Aves	Columbidae	0043	*Ocyphaps lophotes*	Crested Pigeon	P	59
Animalia	Aves	Columbidae	0989	*Spilopelia chinensis*	Spotted Turtle-Dove		18

Animalia	Aves	Podargidae	0313	*Podargus strigoides*	Tawny Frogmouth	P	49
Animalia	Aves	Phalacrocoracidae	0100	*Microcarbo melanoleucos*	Little Pied Cormorant	P	1
Animalia	Aves	Phalacrocoracidae	0096	*Phalacrocorax carbo*	Great Cormorant	P	1
Animalia	Aves	Ardeidae	0189	*Ardea pacifica*	White-necked Heron	P	1
Animalia	Aves	Ardeidae	0977	*Bubulcus ibis*	Cattle Egret	P	1
Animalia	Aves	Ardeidae	0188	*Egretta novaehollandiae*	White-faced Heron	P	1
Animalia	Aves	Threskiornithidae	0179	*Threskiornis moluccus*	Australian White Ibis	P	1
Animalia	Aves	Threskiornithidae	0180	*Threskiornis spinicollis*	Straw-necked Ibis	P	3
Animalia	Aves	Accipitridae	0222	*Accipiter cirrocephalus*	Collared Sparrowhawk	P	2
Animalia	Aves	Accipitridae	0221	*Accipiter fasciatus*	Brown Goshawk	P	3
Animalia	Aves	Accipitridae	0224	*Aquila audax*	Wedge-tailed Eagle	P	6
Animalia	Aves	Accipitridae	0228	*Haliastur sphenurus*	Whistling Kite	P	1
Animalia	Aves	Accipitridae	0225	*Hieraaetus morphnoides*	Little Eagle	V,P	2
Animalia	Aves	Accipitridae	0230	*^^Lophoictinia isura*	Square-tailed Kite	V,P,3	1
Animalia	Aves	Accipitridae	0229	*Milvus migrans*	Black Kite	P	7
Animalia	Aves	Falconidae	0240	*Falco cenchroides cenchroides*	Nankeen Kestrel	P	9
Animalia	Aves	Falconidae	0237	*Falco peregrinus*	Peregrine Falcon	P	1
Animalia	Aves	Falconidae	9043	*Falco sp.*	Unidentified Falcon	P	1
Animalia	Aves	Falconidae	0238	*Falco subniger*	Black Falcon	V,P	3
Animalia	Aves	Rallidae	0056	*Gallinula tenebrosa*	Dusky Moorhen	P	1
Animalia	Aves	Rallidae	0049	*Porzana fluminea*	Australian Spotted Crake	P	1
Animalia	Aves	Charadriidae	0144	*Elseyornis melanops*	Black-fronted Dotterel	P	1
Animalia	Aves	Charadriidae	0133	*Vanellus miles*	Masked Lapwing	P	4
Animalia	Aves	Cacatuidae	0269	*Cacatua galerita*	Sulphur-crested Cockatoo	P	21
Animalia	Aves	Cacatuidae	0271	*Cacatua sanguinea*	Little Corella	P	3
Animalia	Aves	Cacatuidae	0273	*Eolophus roseicapilla*	Galah	P	111
Animalia	Aves	Cacatuidae	0274	*Nymphicus hollandicus*	Cockatiel	P	4
Animalia	Aves	Cacatuidae	0267	*Zanda funereus*	Yellow-tailed Black-Cockatoo	P	2

Animalia	Aves	Psittacidae	0281	*Alisterus scapularis*	Australian King-Parrot	P	16
Animalia	Aves	Psittacidae	0258	*Glossopsitta concinna*	Musk Lorikeet	P	6
Animalia	Aves	Psittacidae	0260	*Glossopsitta pusilla*	Little Lorikeet	V,P	1
Animalia	Aves	Psittacidae	0310	*Melopsittacus undulatus*	Budgerigar	P	2
Animalia	Aves	Psittacidae	0282	*Platycercus elegans*	Crimson Rosella	P	6
Animalia	Aves	Psittacidae	0288	*Platycercus eximius*	Eastern Rosella	P	34
Animalia	Aves	Psittacidae	T039	*Platycercus sp.*	Unidentified Rosella	P	32
Animalia	Aves	Psittacidae	0295	*Psephotus haematonotus*	Red-rumped Parrot	P	21
Animalia	Aves	Psittacidae	0256	*Trichoglossus chlorolepidotus*	Scaly-breasted Lorikeet	P	2
Animalia	Aves	Psittacidae	9947	*Trichoglossus haematodus*	Rainbow Lorikeet	P	70
Animalia	Aves	Cuculidae	0343	*Chalcites lucidus*	Shining Bronze-Cuckoo	P	1
Animalia	Aves	Cuculidae	0347	*Eudynamys orientalis*	Eastern Koel	P	2
Animalia	Aves	Strigidae	9922	*Ninox novaeseelandiae*	Southern Boobook	P	10
Animalia	Aves	Strigidae	0248	*^^Ninox strenua*	Powerful Owl	V,P,3	1
Animalia	Aves	Tytonidae	9923	*Tyto javanica*	Eastern Barn Owl	P	9
Animalia	Aves	Alcedinidae	0319	*Ceyx azureus*	Azure Kingfisher	P	2
Animalia	Aves	Alcedinidae	0322	*Dacelo novaeguineae*	Laughing Kookaburra	P	32
Animalia	Aves	Alcedinidae	0326	*Todiramphus sanctus*	Sacred Kingfisher	P	5
Animalia	Aves	Coraciidae	0318	*Eurystomus orientalis*	Dollarbird	P	1
Animalia	Aves	Ptilonorhynchidae	0679	*Ptilonorhynchus violaceus*	Satin Bowerbird	P	1
Animalia	Aves	Maluridae	0529	*Malurus cyaneus*	Superb Fairy-wren	P	1
Animalia	Aves	Acanthizidae	0486	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill	P	1
Animalia	Aves	Pardalotidae	0565	*Pardalotus punctatus*	Spotted Pardalote	P	1
Animalia	Aves	Pardalotidae	0976	*Pardalotus striatus*	Striated Pardalote	P	2
Animalia	Aves	Meliphagidae	0640	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater	P	3
Animalia	Aves	Meliphagidae	0638	*Anthochaera carunculata*	Red Wattlebird	P	2
Animalia	Aves	Meliphagidae	0710	*Anthochaera chrysoptera*	Little Wattlebird	P	2
Animalia	Aves	Meliphagidae	T210	*Anthochaera sp.*	Unidentified Wattlebird	P	6
Animalia	Aves	Meliphagidae	0614	*Caligavis chrysops*	Yellow-faced Honeyeater	P	1
Animalia	Aves	Meliphagidae	0641	*Entomyzon cyanotis*	Blue-faced Honeyeater	P	1

Animalia	Aves	Meliphagidae	0597	*Lichmera indistincta*	Brown Honeyeater	P	1
Animalia	Aves	Meliphagidae	0634	*Manorina melanocephala*	Noisy Miner	P	26
Animalia	Aves	Meliphagidae	0586	*Myzomela sanguinolenta*	Scarlet Honeyeater	P	1
Animalia	Aves	Meliphagidae	0646	*Philemon citreogularis*	Little Friarbird	P	1
Animalia	Aves	Meliphagidae	0645	*Philemon corniculatus*	Noisy Friarbird	P	6
Animalia	Aves	Meliphagidae	0625	*Ptilotula penicillata*	White-plumed Honeyeater	P	1
Animalia	Aves	Campephagidae	0424	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	P	5
Animalia	Aves	Campephagidae	0425	*Coracina papuensis*	White-bellied Cuckoo-shrike	P	1
Animalia	Aves	Pachycephalidae	0401	*Pachycephala rufiventris*	Rufous Whistler	P	1
Animalia	Aves	Oriolidae	0671	*Oriolus sagittatus*	Olive-backed Oriole	P	1
Animalia	Aves	Oriolidae	0432	*Sphecotheres vieilloti*	Australasian Figbird	P	3
Animalia	Aves	Artamidae	0700	*Cracticus nigrogularis*	Pied Butcherbird	P	2
Animalia	Aves	Artamidae	T022	*Cracticus sp.*	Unidentified Butcherbird	P	10
Animalia	Aves	Artamidae	0702	*Cracticus torquatus*	Grey Butcherbird	P	1
Animalia	Aves	Artamidae	0705	*Gymnorhina tibicen*	Australian Magpie	P	170
Animalia	Aves	Artamidae	0694	*Strepera graculina*	Pied Currawong	P	13
Animalia	Aves	Rhipiduridae	0364	*Rhipidura leucophrys*	Willie Wagtail	P	11
Animalia	Aves	Corvidae	0930	*Corvus coronoides*	Australian Raven	P	3
Animalia	Aves	Corvidae	9067	*Corvus sp.*	Unidentified Corvid	P	1
Animalia	Aves	Monarchidae	0415	*Grallina cyanoleuca*	Magpie-lark	P	58
Animalia	Aves	Alaudidae	0993	*Alauda arvensis*	Eurasian Skylark		1
Animalia	Aves	Locustellidae	0509	*Cincloramphus mathewsi*	Rufous Songlark	P	1
Animalia	Aves	Locustellidae	0522	*Poodytes gramineus*	Little Grassbird	P	1
Animalia	Aves	Hirundinidae	0357	*Hirundo neoxena*	Welcome Swallow	P	4
Animalia	Aves	Hirundinidae	0360	*Petrochelidon ariel*	Fairy Martin	P	6
Animalia	Aves	Turdidae	0991	*Turdus merula*	Eurasian Blackbird		3
Animalia	Aves	Sturnidae	0998	*Acridotheres tristis*	Common Myna		8
Animalia	Aves	Sturnidae	0999	*Sturnus vulgaris*	Common Starling		9
Animalia	Aves	Zosteropidae	0574	*Zosterops lateralis*	Silvereye	P	3
Animalia	Aves	Estrildidae	0662	*Neochmia temporalis*	Red-browed Finch	P	1

Animalia	Aves	Estrildidae	0653	*Taeniopygia guttata*	Zebra Finch	P		1	
Animalia	Aves	Passeridae	0995	*Passer domesticus*	House Sparrow			8	
Animalia	Aves	Motacillidae	0647	*Anthus novaeseelandiae*	Australian Pipit	P		2	
Animalia	Mammalia	Ornithorhynchidae	1001	*Ornithorhynchus anatinus*	Platypus	P		1	
Animalia	Mammalia	Tachyglossidae	1003	*Tachyglossus aculeatus*	Short-beaked Echidna	P		37	
Animalia	Mammalia	Dasyuridae	1008	*Dasyurus maculatus*	Spotted-tailed Quoll	V,P	E	6	
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*	Koala	V,P	V	12	
Animalia	Mammalia	Vombatidae	1165	*Vombatus ursinus*	Bare-nosed Wombat	P		1	
Animalia	Mammalia	Petauridae	1138	*Petaurus breviceps*	Sugar Glider	P		4	
Animalia	Mammalia	Petauridae	1137	*Petaurus norfolcensis*	Squirrel Glider	V,P		1	
Animalia	Mammalia	Pseudocheiridae	1129	*Pseudocheirus peregrinus*	Common Ringtail Possum	P		7	
Animalia	Mammalia	Phalangeridae	T082	*Trichosurus sp.*	brushtail possum	P		6	
Animalia	Mammalia	Phalangeridae	1113	*Trichosurus vulpecula*	Common Brushtail Possum	P		29	
Animalia	Mammalia	Macropodidae	1265	*Macropus giganteus*	Eastern Grey Kangaroo	P		58	
Animalia	Mammalia	Macropodidae	T085	*Macropus sp.*	kangaroo / wallaby	P		185	
Animalia	Mammalia	Macropodidae	1261	*Notamacropus rufogriseus*	Red-necked Wallaby	P		2	
Animalia	Mammalia	Macropodidae	1266	*Osphranter robustus*	Common Wallaroo	P		15	
Animalia	Mammalia	Macropodidae	1242	*Wallabia bicolor*	Swamp Wallaby	P		7	
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	24	
Animalia	Mammalia	Pteropodidae	1281	*Pteropus scapulatus*	Little Red Flying-fox	P		7	
Animalia	Mammalia	Pteropodidae	T087	*Pteropus sp.*	Flying-fox	P		19	
Animalia	Mammalia	Molossidae	1324	*Austronomus australis*	White-striped Freetail-bat	P		1	
Animalia	Mammalia	Molossidae	1946	*Ozimops petersi*		P		1	
Animalia	Mammalia	Molossidae	1938	*Ozimops ridei*	Eastern Free-tailed Bat	P		1	
Animalia	Mammalia	Vespertilionidae	1349	*Chalinolobus gouldii*	Gould's Wattled Bat	P		1	
Animalia	Mammalia	Vespertilionidae	1334	*Nyctophilus gouldi*	Gould's Long-eared Bat	P		2	
Animalia	Mammalia	Vespertilionidae	1379	*Vespadelus vulturnus*	Little Forest Bat	P		1	

Animalia	Mammalia	Muridae	1412	*Mus musculus*	House Mouse		1
Animalia	Mammalia	Canidae	1532	*Vulpes vulpes*	Fox		23
Animalia	Mammalia	Felidae	1536	*Felis catus*	Cat		8
Animalia	Mammalia	Leporidae	1929	*Lepus capensis occidentalis*		P	3
Animalia	Mammalia	Leporidae	1510	*Oryctolagus cuniculus*	Rabbit		4
Animalia	Mammalia	Suidae	1514	*Sus scrofa*	Pig		1
Animalia	Mammalia	Bovidae	1518	*Bos taurus*	European cattle		1
Plantae	Flora	Acanthaceae	1003	*Brunoniella australis*	Blue Trumpet		5
Plantae	Flora	Acanthaceae	9256	*Rostellularia adscendens*	Pink Tongues		3
Plantae	Flora	Acanthaceae	12393	*Rostellularia adscendens var. adscendens*			5
Plantae	Flora	Aizoaceae	7476	*Galenia pubescens*	Galenia		1
Plantae	Flora	Amaranthaceae	7191	*Alternanthera pungens*	Khaki Weed		3
Plantae	Flora	Amaranthaceae	1060	*Amaranthus powellii*	Powell's Amaranth		1
Plantae	Flora	Amaranthaceae	1062	*Amaranthus retroflexus*	Redroot Amaranth		1
Plantae	Flora	Amaranthaceae	AMAR	*Amaranthus spp.*	Amaranth		1
Plantae	Flora	Amaranthaceae	1064	*Amaranthus viridis*	Green Amaranth		1
Plantae	Flora	Amaranthaceae	7056	*Gomphrena celosioides*	Gomphrena Weed		1
Plantae	Flora	Amaranthaceae	6575	*Guilleminea densa*	Small Matweed		1
Plantae	Flora	Anacardiaceae	1086	*Schinus areira*	Pepper Tree		2
Plantae	Flora	Anthericaceae	3517	*Arthropodium milleflorum*	Pale Vanilla-lily		2
Plantae	Flora	Anthericaceae	3518	*Arthropodium minus*	Small Vanilla Lily		4
Plantae	Flora	Anthericaceae	9097	*Arthropodium sp. B*			1
Plantae	Flora	Anthericaceae	ARTR	*Arthropodium spp.*			1
Plantae	Flora	Anthericaceae	3544	*Dichopogon fimbriatus*	Nodding Chocolate Lily		1
Plantae	Flora	Apiaceae	1098	*Ammi majus*	Bishop's Weed		1
Plantae	Flora	Apiaceae	11195	*Cyclospermum leptophyllum*	Slender Celery		2
Plantae	Flora	Apiaceae	1109	*Daucus glochidiatus*	Native Carrot		5
Plantae	Flora	Apiaceae	1118	*Foeniculum vulgare*	Fennel		4
Plantae	Flora	Apiaceae	1128	*Hydrocotyle laxiflora*	Stinking Pennywort		3
Plantae	Flora	Apocynaceae	1227	*Gomphocarpus fruticosus*	Narrow-leaved Cotton Bush		3

Plantae	Flora	Apocynaceae	1178	*Parsonsia eucalyptophylla*	Gargaloo	1
Plantae	Flora	Asparagaceae	11784	*Asparagus aethiopicus*	Asparagus Fern	1
Plantae	Flora	Asphodelaceae	3531	*Bulbine bulbosa*	Bulbine Lily	1
Plantae	Flora	Aspleniaceae	8033	*Asplenium flabellifolium*	Necklace Fern	2
Plantae	Flora	Asteraceae	1273	*Arctotheca calendula*	Capeweed	1
Plantae	Flora	Asteraceae	1283	*Bidens pilosa*	Cobbler's Pegs	6
Plantae	Flora	Asteraceae	7902	*Brachyscome ciliaris*	Variable Daisy	1
Plantae	Flora	Asteraceae	7317	*Brachyscome multifida*	Cut-leaved Daisy	1
Plantae	Flora	Asteraceae	1344	*Calotis lappulacea*	Yellow Burr-daisy	9
Plantae	Flora	Asteraceae	1358	*Carthamus lanatus*	Saffron Thistle	2
Plantae	Flora	Asteraceae	1370	*Cassinia quinquefaria*		6
Plantae	Flora	Asteraceae	1382	*Centaurea melitensis*	Maltese Cockspur	3
Plantae	Flora	Asteraceae	1383	*Centaurea solstitialis*	St Barnabys Thistle	11
Plantae	Flora	Asteraceae	1391	*Chondrilla juncea*	Skeleton Weed	1
Plantae	Flora	Asteraceae	8559	*Chrysocephalum apiculatum*	Common Everlasting	3
Plantae	Flora	Asteraceae	8562	*Chrysocephalum semipapposum*	Clustered Everlasting	1
Plantae	Flora	Asteraceae	1397	*Cichorium intybus*	Chicory	3
Plantae	Flora	Asteraceae	1400	*Cirsium vulgare*	Spear Thistle	7
Plantae	Flora	Asteraceae	1404	*Conyza bonariensis*	Flaxleaf Fleabane	10
Plantae	Flora	Asteraceae	CONY	*Conyza spp.*		1
Plantae	Flora	Asteraceae	10442	*Conyza sumatrensis*	Tall fleabane	4
Plantae	Flora	Asteraceae	1426	*Cymbonotus lawsonianus*	Bear's Ear	4
Plantae	Flora	Asteraceae	14577	*Dimorphotheca ecklonis*	Cape Daisy	1
Plantae	Flora	Asteraceae	9904	*Euchiton involucratus*	Star Cudweed	2
Plantae	Flora	Asteraceae	9690	*Euchiton sphaericus*	Star Cudweed	2
Plantae	Flora	Asteraceae	12748	*Gamochaeta purpurea*	Purple Cudweed	1
Plantae	Flora	Asteraceae	13989	*Glossocardia bidens*	Cobbler's Tack	2
Plantae	Flora	Asteraceae	1540	*Hypochaeris glabra*	Smooth Catsear	3
Plantae	Flora	Asteraceae	8788	*Hypochaeris radicata*	Catsear	4
Plantae	Flora	Asteraceae	1550	*Lactuca serriola*	Prickly Lettuce	3

Plantae	Flora	Asteraceae	1551	*Lagenifera stipitata*	Blue Bottle-daisy		1
Plantae	Flora	Asteraceae	LEIO	*Leiocarpa spp.*			1
Plantae	Flora	Asteraceae	15129	*Leontodon rhagadioloides*	Cretan Weed		1
Plantae	Flora	Asteraceae	1590	*Olearia elliptica*	Sticky Daisy-bush		2
Plantae	Flora	Asteraceae	10480	*Olearia elliptica subsp. elliptica*			2
Plantae	Flora	Asteraceae	8911	*Pycnosorus globosus*	Drumsticks	P	1
Plantae	Flora	Asteraceae	10166	*Schkuhria pinnata var. abrotanoides*	Dwarf Marigold		2
Plantae	Flora	Asteraceae	1664	*Senecio hispidulus*	Hill Fireweed		1
Plantae	Flora	Asteraceae	1666	*Senecio lautus*	Variable Groundsel		1
Plantae	Flora	Asteraceae	6465	*Senecio madagascariensis*	Fireweed		1
Plantae	Flora	Asteraceae	1675	*Senecio quadridentatus*	Cotton Fireweed		4
Plantae	Flora	Asteraceae	8781	*Sigesbeckia australiensis*			3
Plantae	Flora	Asteraceae	1684	*Silybum marianum*	Variegated Thistle		2
Plantae	Flora	Asteraceae	8253	*Solenogyne bellioides*	Solengyne		1
Plantae	Flora	Asteraceae	1689	*Sonchus asper*	Prickly Sowthistle		2
Plantae	Flora	Asteraceae	1690	*Sonchus oleraceus*	Common Sowthistle		5
Plantae	Flora	Asteraceae	1698	*Taraxacum officinale*	Dandelion		2
Plantae	Flora	Asteraceae	TARA	*Taraxacum spp.*	Dandelion		1
Plantae	Flora	Asteraceae	14051	*Tragopogon porrifolius subsp. porrifolius*	Salsify		2
Plantae	Flora	Asteraceae	8925	*Triptilodiscus pygmaeus*	Common Sunray		1
Plantae	Flora	Asteraceae	1711	*Vittadinia cuneata*			4
Plantae	Flora	Asteraceae	6737	*Vittadinia cuneata var. cuneata*			1
Plantae	Flora	Asteraceae	7069	*Vittadinia dissecta var. hirta*			1
Plantae	Flora	Asteraceae	1716	*Vittadinia muelleri*			5
Plantae	Flora	Asteraceae	1719	*Vittadinia sulcata*			3
Plantae	Flora	Asteraceae	7130	*Xanthium occidentale*	Noogoora Burr		1
Plantae	Flora	Asteraceae	1729	*Xanthium spinosum*	Bathurst Burr		3
Plantae	Flora	Asteraceae	1731	*Zinnia peruviana*			1

Plantae	Flora	Bignoniaceae	8688	*Jacaranda mimosifolia*	Jacaranda	1
Plantae	Flora	Bignoniaceae	1740	*Pandorea pandorana*	Wonga Wonga Vine	4
Plantae	Flora	Blechnaceae	14900	*Blechnum neohollandicum*		1
Plantae	Flora	Boraginaceae	1751	*Echium plantagineum*	Patterson's Curse	4
Plantae	Flora	Boraginaceae	1752	*Echium vulgare*	Viper's Bugloss	1
Plantae	Flora	Brassicaceae	10772	*Brassica napus*	Canola	1
Plantae	Flora	Brassicaceae	1794	*Capsella bursa-pastoris*	Shepherd's Purse	3
Plantae	Flora	Brassicaceae	1814	*Hirschfeldia incana*	Buchan Weed	1
Plantae	Flora	Brassicaceae	1815	*Lepidium africanum*	Common Peppercress	5
Plantae	Flora	Brassicaceae	1817	*Lepidium bonariense*	Argentine Peppercress	1
Plantae	Flora	Brassicaceae	1818	*Lepidium campestre*	Field Cress	1
Plantae	Flora	Brassicaceae	6643	*Lepidium pseudohyssopifolium*	Peppercress	4
Plantae	Flora	Brassicaceae	1839	*Raphanus raphanistrum*	Wild Radish	1
Plantae	Flora	Brassicaceae	1841	*Rapistrum rugosum*	Turnip Weed	3
Plantae	Flora	Brassicaceae	7382	*Rorippa palustris*	Yellow Cress	1
Plantae	Flora	Brassicaceae	1853	*Sisymbrium irio*	London Rocket	1
Plantae	Flora	Brassicaceae	1854	*Sisymbrium officinale*	Hedge Mustard	1
Plantae	Flora	Brassicaceae	1855	*Sisymbrium orientale*	Indian Hedge Mustard	1
Plantae	Flora	Cactaceae	1872	*Opuntia aurantiaca*	Tiger Pear	3
Plantae	Flora	Cactaceae	OPUN	*Opuntia spp.*		1
Plantae	Flora	Cactaceae	1875	*Opuntia stricta*	Common Prickly Pear	1
Plantae	Flora	Cactaceae	7659	*Opuntia stricta var. stricta*	Common Prickly Pear	2
Plantae	Flora	Campanulaceae	1929	*Wahlenbergia communis*	Tufted Bluebell	8
Plantae	Flora	Campanulaceae	1934	*Wahlenbergia gracilis*	Sprawling Bluebell	1
Plantae	Flora	Campanulaceae	7314	*Wahlenbergia luteola*	Bluebell	4
Plantae	Flora	Campanulaceae	1938	*Wahlenbergia stricta*	Tall Bluebell	3
Plantae	Flora	Capparaceae	1945	*Capparis mitchellii*	Native Orange	1
Plantae	Flora	Caprifoliaceae	1952	*Lonicera japonica*	Japanese Honeysuckle	1

Plantae	Flora	Caryophyllaceae	1958	*Arenaria serpyllifolia*	Thyme-leaved Sandwort	2
Plantae	Flora	Caryophyllaceae	1960	*Cerastium glomeratum*	Mouse-ear Chickweed	1
Plantae	Flora	Caryophyllaceae	1973	*Moenchia erecta*	Erect Chickweed	1
Plantae	Flora	Caryophyllaceae	13845	*Petrorhagia dubia*		1
Plantae	Flora	Caryophyllaceae	7584	*Petrorhagia nanteuilii*	Proliferous Pink	7
Plantae	Flora	Caryophyllaceae	1991	*Silene gallica*	French Catchfly	1
Plantae	Flora	Caryophyllaceae	2000	*Spergularia marina*	Lesser Sea-spurrey	1
Plantae	Flora	Casuarinaceae	9006	*Casuarina cunninghamiana subsp. cunninghamiana*	River Oak	3
Plantae	Flora	Chenopodiaceae	2111	*Einadia nutans*	Climbing Saltbush	5
Plantae	Flora	Chenopodiaceae	2112	*Einadia polygonoides*	Knotweed Goosefoot	4
Plantae	Flora	Chenopodiaceae	EINA	*Einadia spp.*		1
Plantae	Flora	Chenopodiaceae	2113	*Einadia trigonos*	Fishweed	1
Plantae	Flora	Chenopodiaceae	2138	*Maireana microphylla*	Small-leaf Bluebush	4
Plantae	Flora	Chenopodiaceae	7923	*Salsola kali var. kali*	Buckbush	3
Plantae	Flora	Chenopodiaceae	2185	*Sclerolaena muricata*	Black Rolypoly	2
Plantae	Flora	Clusiaceae	7240	*Hypericum gramineum*	Small St John's Wort	4
Plantae	Flora	Clusiaceae	2204	*Hypericum perforatum*	St. Johns Wort	2
Plantae	Flora	Colchicaceae	3578	*Wurmbea biglandulosa*		1
Plantae	Flora	Commelinaceae	2209	*Commelina cyanea*	Native Wandering Jew	1
Plantae	Flora	Commelinaceae	10508	*Tradescantia fluminensis*	Wandering Jew	1

Plantae	Flora	Convolvulaceae	2220	*Convolvulus erubescens*	Pink Bindweed	4
Plantae	Flora	Convolvulaceae	2222	*Dichondra repens*	Kidney Weed	7
Plantae	Flora	Convolvulaceae	15127	*Dichondra sp. Inglewood*		4
Plantae	Flora	Convolvulaceae	2232	*Polymeria longifolia*		1
Plantae	Flora	Crassulaceae	2242	*Crassula sieberiana*	Australian Stonecrop	2
Plantae	Flora	Cupressaceae	6379	*Callitris glaucophylla*	White Cypress Pine	4
Plantae	Flora	Cyperaceae	2307	*Bolboschoenus medianus*		1
Plantae	Flora	Cyperaceae	2310	*Carex appressa*	Tall Sedge	1
Plantae	Flora	Cyperaceae	2327	*Carex inversa*	Knob Sedge	4
Plantae	Flora	Cyperaceae	2364	*Cyperus eragrostis*	Umbrella Sedge	2
Plantae	Flora	Cyperaceae	2366	*Cyperus exaltatus*		1
Plantae	Flora	Cyperaceae	2374	*Cyperus gracilis*	Slender Flat-sedge	4
Plantae	Flora	Cyperaceae	8483	*Cyperus polystachyos*		1
Plantae	Flora	Cyperaceae	2393	*Cyperus rotundus*	Nutgrass	1
Plantae	Flora	Cyperaceae	2421	*Eleocharis plana*	Flat Spike-sedge	1
Plantae	Flora	Euphorbiaceae	10564	*Adriana tomentosa var. tomentosa*		2
Plantae	Flora	Euphorbiaceae	2694	*Beyeria viscosa*	Sticky Wallaby Bush	1
Plantae	Flora	Euphorbiaceae	9193	*Chamaesyce dallachyana*		2
Plantae	Flora	Euphorbiaceae	8560	*Chamaesyce drummondii*	Caustic Weed	4
Plantae	Flora	Euphorbiaceae	9752	*Euphorbia davidii*		1
Plantae	Flora	Euphorbiaceae	14912	*Euphorbia hyssopifolia*	Hyssopleaf Sandmat, Hyssop Leaf Sandmat	1
Plantae	Flora	Fabaceae (Caesalpinioideae)	1900	*Ceratonia siliqua*	Carob	1
Plantae	Flora	Fabaceae (Caesalpinioideae)	8494	*Senna artemisioides subsp. zygophylla*		1
Plantae	Flora	Fabaceae (Faboideae)	2840	*Desmodium varians*	Slender Tick-trefoil	4
Plantae	Flora	Fabaceae (Faboideae)	2860	*Glycine clandestina*	Twining glycine	6

Plantae	Flora	Fabaceae (Faboideae)	2861	*Glycine tabacina*	Variable Glycine	5
Plantae	Flora	Fabaceae (Faboideae)	2875	*Hovea lanceolata*		1
Plantae	Flora	Fabaceae (Faboideae)	7544	*Indigofera adesmiifolia*	Tick Indigo	2
Plantae	Flora	Fabaceae (Faboideae)	2906	*Lotus australis*	Australian Trefoil	3
Plantae	Flora	Fabaceae (Faboideae)	2920	*Medicago minima*	Woolly Burr Medic	5
Plantae	Flora	Fabaceae (Faboideae)	2922	*Medicago polymorpha*	Burr Medic	1
Plantae	Flora	Fabaceae (Faboideae)	2924	*Medicago sativa*	Lucerne	5
Plantae	Flora	Fabaceae (Faboideae)	15128	*Oxytes brachypoda*	Large Tick-trefoil	6
Plantae	Flora	Fabaceae (Faboideae)	7304	*Rhynchosia minima*		2
Plantae	Flora	Fabaceae (Faboideae)	3041	*Swainsona galegifolia*	Smooth Darling Pea	5
Plantae	Flora	Fabaceae (Faboideae)	8537	*Swainsona reticulata*	Kneed Swainson-pea	1
Plantae	Flora	Fabaceae (Faboideae)	SWAI	*Swainsona spp.*		1
Plantae	Flora	Fabaceae (Faboideae)	3072	*Trifolium angustifolium*	Narrow-leaved Clover	1
Plantae	Flora	Fabaceae (Faboideae)	3073	*Trifolium arvense*	Haresfoot Clover	6
Plantae	Flora	Fabaceae (Faboideae)	3074	*Trifolium campestre*	Hop Clover	3
Plantae	Flora	Fabaceae (Faboideae)	3076	*Trifolium dubium*	Yellow Suckling Clover	2
Plantae	Flora	Fabaceae (Faboideae)	3077	*Trifolium fragiferum*	Strawberry Clover	2
Plantae	Flora	Fabaceae (Faboideae)	3079	*Trifolium glomeratum*	Clustered Clover	2

Plantae	Flora	Fabaceae (Faboideae)	3085	*Trifolium repens*	White Clover	4
Plantae	Flora	Fabaceae (Faboideae)	3089	*Trifolium subterraneum*	Subterranean Clover	1
Plantae	Flora	Fabaceae (Faboideae)	3091	*Trifolium tomentosum*	Woolly Clover	1
Plantae	Flora	Fabaceae (Faboideae)	8904	*Vigna lanceolata var. lanceolata*		2
Plantae	Flora	Fabaceae (Mimosoideae)	8269	*Acacia deanei subsp. deanei*	Deane's Wattle	2
Plantae	Flora	Fabaceae (Mimosoideae)	3761	*Acacia decora*	Western Silver Wattle	3
Plantae	Flora	Fabaceae (Mimosoideae)	3772	*Acacia falciformis*	Broad-leaved Hickory	1
Plantae	Flora	Fabaceae (Mimosoideae)	12032	*Acacia homalophylla <--> melvillei*		2
Plantae	Flora	Fabaceae (Mimosoideae)	3792	*Acacia implexa*	Hickory Wattle	1
Plantae	Flora	Fabaceae (Mimosoideae)	3845	*Acacia paradoxa*	Kangaroo Thorn	1
Plantae	Flora	Fabaceae (Mimosoideae)	3853	*Acacia podalyriifolia*	Queensland Silver Wattle	1
Plantae	Flora	Fabaceae (Mimosoideae)	3872	*Acacia salicina*	Cooba	1
Plantae	Flora	Fabaceae (Mimosoideae)	3873	*Acacia saligna*	Golden Wreath Wattle	1
Plantae	Flora	Fabaceae (Mimosoideae)	12157	*Vachellia farnesiana*	Mimosa Bush	1
Plantae	Flora	Fumariaceae	7396	*Fumaria capreolata subsp. capreolata*	Climbing Fumitory	2
Plantae	Flora	Gentianaceae	3131	*Centaurium erythraea*	Common Centaury	3
Plantae	Flora	Gentianaceae	CENA	*Centaurium spp.*		1
Plantae	Flora	Gentianaceae	3133	*Centaurium tenuiflorum*	Branched Centaury, Slender centaury	1
Plantae	Flora	Geraniaceae	3141	*Erodium cicutarium*	Common Crowfoot	2
Plantae	Flora	Geraniaceae	3142	*Erodium crinitum*	Blue Crowfoot	2
Plantae	Flora	Geraniaceae	3148	*Geranium homeanum*		1

Plantae	Flora	Geraniaceae	10093	*Geranium molle subsp. molle*	Cranesbill Geranium	2
Plantae	Flora	Geraniaceae	3156	*Geranium solanderi*	Native Geranium	3
Plantae	Flora	Geraniaceae	8226	*Geranium solanderi var. solanderi*		2
Plantae	Flora	Geraniaceae	GERA	*Geranium spp.*		1
Plantae	Flora	Goodeniaceae	1863	*Brunonia australis*	Blue Pincushion	1
Plantae	Flora	Goodeniaceae	3175	*Goodenia bellidifolia*		1
Plantae	Flora	Goodeniaceae	3193	*Goodenia pinnatifida*	Scrambles Eggs	1
Plantae	Flora	Haloragaceae	3247	*Gonocarpus tetragynus*	Poverty Raspwort	1
Plantae	Flora	Juncaceae	JUNC	*Juncus spp.*		2
Plantae	Flora	Lamiaceae	3371	*Ajuga australis*	Austral Bugle	1
Plantae	Flora	Lamiaceae	3381	*Marrubium vulgare*	White Horehound	4
Plantae	Flora	Lamiaceae	3384	*Mentha diemenica*	Slender Mint	1
Plantae	Flora	Lamiaceae	3386	*Mentha pulegium*	Pennyroyal	1
Plantae	Flora	Lamiaceae	3396	*Plectranthus graveolens*		1
Plantae	Flora	Lamiaceae	3423	*Prostanthera ovalifolia*		1
Plantae	Flora	Lamiaceae	3447	*Scutellaria humilis*	Dwarf Skullcap	4
Plantae	Flora	Lamiaceae	3450	*Stachys arvensis*	Stagger Weed	1
Plantae	Flora	Lamiaceae	15130	*Teucrium betchei*		2
Plantae	Flora	Linaceae	3583	*Linum marginale*	Native Flax	1
Plantae	Flora	Lomandraceae	6302	*Lomandra filiformis*	Wattle Matt-rush	3
Plantae	Flora	Lomandraceae	6511	*Lomandra filiformis subsp. coriacea*	Wattle Matt-rush	1
Plantae	Flora	Lomandraceae	6307	*Lomandra leucocephala*	Woolly Mat-rush	2
Plantae	Flora	Lomandraceae	6308	*Lomandra longifolia*	Spiny-headed Mat-rush	4
Plantae	Flora	Lomandraceae	8802	*Lomandra multiflora subsp. multiflora*	Many-flowered Mat-rush	4
Plantae	Flora	Loranthaceae	3599	*Amyema cambagei*	Needle-leaf Mistletoe	1
Plantae	Flora	Loranthaceae	6394	*Amyema miquelii*	Box Mistletoe	3
Plantae	Flora	Loranthaceae	3607	*Amyema pendula*		2
Plantae	Flora	Loranthaceae	AMYE	*Amyema spp.*	Mistletoe	1
Plantae	Flora	Loranthaceae	3613	*Dendrophthoe vitellina*		1

Plantae	Flora	Loranthaceae	3620	*Muellerina eucalyptoides*		1
Plantae	Flora	Luzuriagaceae	6015	*Eustrephus latifolius*	Wombat Berry	5
Plantae	Flora	Malaceae	13195	*Cotoneaster coriaceus*		2
Plantae	Flora	Malaceae	5612	*Cotoneaster glaucophyllus*		2
Plantae	Flora	Malaceae	5616	*Crataegus monogyna*	Hawthorn	1
Plantae	Flora	Malaceae	9939	*Photinia serratifolia*	Chinese Photinia	2
Plantae	Flora	Malaceae	5627	*Pyracantha angustifolia*	Orange Firethorn	1
Plantae	Flora	Malaceae	12465	*Pyracantha crenatoserrata*		1
Plantae	Flora	Malaceae	5628	*Pyracantha crenulata*		1
Plantae	Flora	Malvaceae	3632	*Abutilon oxycarpum*	Straggly Lantern-bush	1
Plantae	Flora	Malvaceae	3634	*Abutilon tubulosum*		1
Plantae	Flora	Malvaceae	6128	*Brachychiton populneus*	Kurrajong	2
Plantae	Flora	Malvaceae	3657	*Malva parviflora*	Small-flowered Mallow	3
Plantae	Flora	Malvaceae	3660	*Modiola caroliniana*	Red-flowered Mallow	1
Plantae	Flora	Malvaceae	3664	*Sida corrugata*	Corrugated Sida	6
Plantae	Flora	Malvaceae	3666	*Sida cunninghamii*	Ridge Sida	2
Plantae	Flora	Malvaceae	3673	*Sida rhombifolia*	Paddy's Lucerne	3
Plantae	Flora	Myoporaceae	8602	*Eremophila debilis*	Amulla	3
Plantae	Flora	Myoporaceae	7906	*Myoporum acuminatum*	Boobialla	1
Plantae	Flora	Myoporaceae	3955	*Myoporum montanum*	Western Boobialla	1
Plantae	Flora	Myrtaceae	3971	*Angophora floribunda*	Rough-barked Apple	3
Plantae	Flora	Myrtaceae	4039	*Eucalyptus albens*	White Box	21
Plantae	Flora	Myrtaceae	4057	*Eucalyptus blakelyi*	Blakely's Red Gum	8
Plantae	Flora	Myrtaceae	6360	*Eucalyptus camaldulensis*	River Red Gum	3
Plantae	Flora	Myrtaceae	4074	*Eucalyptus crebra*	Narrow-leaved Ironbark	1
Plantae	Flora	Myrtaceae	4078	*Eucalyptus dealbata*	Tumbledown Red Gum	1
Plantae	Flora	Myrtaceae	4087	*Eucalyptus eugenioides*	Thin-leaved Stringybark	1
Plantae	Flora	Myrtaceae	4120	*Eucalyptus macrorhyncha*	Red Stringybark	1
Plantae	Flora	Myrtaceae	7230	*Eucalyptus malacoxylon*	Moonbi Apple Box	1
Plantae	Flora	Myrtaceae	4125	*Eucalyptus melliodora*	Yellow Box	10

Plantae	Flora	Myrtaceae	4129	*Eucalyptus moluccana*	Grey Box			3
Plantae	Flora	Myrtaceae	10023	*Eucalyptus populnea subsp. bimbil*	Bimble Box			1
Plantae	Flora	Myrtaceae	4181	*Eucalyptus sideroxylon*	Mugga Ironbark			2
Plantae	Flora	Myrtaceae	4191	*Eucalyptus tereticornis*	Forest Red Gum			1
Plantae	Flora	Myrtaceae	4293	*Syzygium paniculatum*	Magenta Lilly Pilly	E1	V	1
Plantae	Flora	Nyctaginaceae	6841	*Boerhavia dominii*	Tarvine			2
Plantae	Flora	Ochnaceae	4306	*Ochna serrulata*	Mickey Mouse Plant			1
Plantae	Flora	Oleaceae	12177	*Fraxinus angustifolia subsp. angustifolia*	Desert Ash			2
Plantae	Flora	Oleaceae	6398	*Jasminum lineare*	Desert Jasmine			3
Plantae	Flora	Oleaceae	4310	*Jasminum suavissimum*				2
Plantae	Flora	Oleaceae	4312	*Ligustrum lucidum*	Large-leaved Privet			4
Plantae	Flora	Oleaceae	4319	*Notelaea microcarpa*	Native Olive			2
Plantae	Flora	Oleaceae	6695	*Notelaea microcarpa var. microcarpa*				7
Plantae	Flora	Oleaceae	11220	*Olea europaea subsp. cuspidata*	African Olive			1
Plantae	Flora	Oleaceae	7688	*Olea europaea subsp. europaea*	Olive			1
Plantae	Flora	Onagraceae	7952	*Epilobium billardierianum subsp. cinereum*				2
Plantae	Flora	Oxalidaceae	4612	*Oxalis chnoodes*				2
Plantae	Flora	Oxalidaceae	4621	*Oxalis perennans*				2
Plantae	Flora	Papaveraceae	4638	*Papaver hybridum*	Rough Poppy			1
Plantae	Flora	Papaveraceae	4640	*Papaver somniferum*	Opium Poppy			1
Plantae	Flora	Phormiaceae	6789	*Dianella caerulea var. cinerascens*				1
Plantae	Flora	Phormiaceae	7783	*Dianella longifolia*	Blueberry Lily			2
Plantae	Flora	Phormiaceae	3542	*Dianella revoluta*	Blueberry Lily			3
Plantae	Flora	Phyllanthaceae	2750	*Phyllanthus subcrenulatus*				2
Plantae	Flora	Pinaceae	4661	*Pinus radiata*	Radiata Pine			1
Plantae	Flora	Pittosporaceae	4674	*Bursaria spinosa*	Native Blackthorn			9

Plantae	Flora	Pittosporaceae	11018	*Bursaria spinosa subsp. spinosa*	Native Blackthorn	3
Plantae	Flora	Pittosporaceae	RHYT	*Rhytidosporum spp.*		1
Plantae	Flora	Plantaginaceae	5974	*Linaria arvensis*		3
Plantae	Flora	Plantaginaceae	4691	*Plantago debilis*	Shade Plantain	5
Plantae	Flora	Plantaginaceae	4699	*Plantago lanceolata*	Lamb's Tongues	7
Plantae	Flora	Plantaginaceae	6000	*Veronica anagallis-aquatica*	Blue Water-speedwell	1
Plantae	Flora	Plantaginaceae	6003	*Veronica calycina*	Hairy Speedwell	2
Plantae	Flora	Plantaginaceae	6008	*Veronica persica*	Creeping Speedwell	1
Plantae	Flora	Poaceae	13924	*Amelichloa brachychaeta*	Espartillo	1
Plantae	Flora	Poaceae	14896	*Anthosachne scabra*	Wheatgrass, Common Wheatgrass	7
Plantae	Flora	Poaceae	9334	*Aristida calycina var. calycina*		2
Plantae	Flora	Poaceae	6713	*Aristida latifolia*	Featherop Wiregrass	2
Plantae	Flora	Poaceae	4767	*Aristida personata*		2
Plantae	Flora	Poaceae	4770	*Aristida ramosa*	Purple Wiregrass	13
Plantae	Flora	Poaceae	10384	*Austrostipa aristiglumis*	Plains Grass	6
Plantae	Flora	Poaceae	10395	*Austrostipa densiflora*	Foxtail Speargrass	1
Plantae	Flora	Poaceae	10375	*Austrostipa nitida*		1
Plantae	Flora	Poaceae	10377	*Austrostipa scabra*	Speargrass	4
Plantae	Flora	Poaceae	10378	*Austrostipa scabra subsp. scabra*	Rough Speargrass	3
Plantae	Flora	Poaceae	10382	*Austrostipa setacea*	Corkscrew Grass	1
Plantae	Flora	Poaceae	10371	*Austrostipa verticillata*	Slender Bamboo Grass	5
Plantae	Flora	Poaceae	4779	*Avena barbata*	Bearded Oats	2
Plantae	Flora	Poaceae	4782	*Avena sativa*	Oats	2
Plantae	Flora	Poaceae	AVEN	*Avena spp.*	Oats	1
Plantae	Flora	Poaceae	4787	*Bothriochloa biloba*	Lobed Bluegrass	1
Plantae	Flora	Poaceae	7559	*Bothriochloa decipiens var. decipiens*	Pitted Bluegrass	4
Plantae	Flora	Poaceae	4790	*Bothriochloa macra*	Red Grass	2
Plantae	Flora	Poaceae	7813	*Bromus catharticus*	Praire Grass	5

Plantae	Flora	Poaceae	4811	*Bromus molliformis*	Soft Brome			4
Plantae	Flora	Poaceae	4822	*Catapodium rigidum*	Rigid Fescue			2
Plantae	Flora	Poaceae	14903	*Cenchrus clandestinus*	Kikuyu Grass			1
Plantae	Flora	Poaceae	4831	*Chloris gayana*	Rhodes Grass			2
Plantae	Flora	Poaceae	4833	*Chloris truncata*	Windmill Grass			8
Plantae	Flora	Poaceae	4834	*Chloris ventricosa*	Tall Chloris			7
Plantae	Flora	Poaceae	6655	*Chloris virgata*	Feathertop Rhodes Grass			4
Plantae	Flora	Poaceae	4841	*Cymbopogon refractus*	Barbed Wire Grass			5
Plantae	Flora	Poaceae	6540	*Cynodon dactylon*	Common Couch			7
Plantae	Flora	Poaceae	7485	*Dichanthium sericeum*	Queensland Bluegrass			7
Plantae	Flora	Poaceae	7645	*Dichanthium sericeum subsp. sericeum*	Queensland Bluegrass			2
Plantae	Flora	Poaceae	4895	*Dichanthium setosum*	Bluegrass	V	V	1
Plantae	Flora	Poaceae	4897	*Dichelachne crinita*	Longhair Plumegrass			1
Plantae	Flora	Poaceae	4898	*Dichelachne micrantha*	Shorthair Plumegrass			5
Plantae	Flora	Poaceae	6857	*Digitaria brownii*	Cotton Panic Grass			2
Plantae	Flora	Poaceae	6554	*Digitaria ciliaris*	Summer Grass			1
Plantae	Flora	Poaceae	4907	*Digitaria divaricatissima*	Umbrella Grass			1
Plantae	Flora	Poaceae	4909	*Digitaria hystrichoides*	Curly Umbrella Grass			1
Plantae	Flora	Poaceae	DIGI	*Digitaria spp.*				1
Plantae	Flora	Poaceae	7607	*Echinochloa colona*	Awnless Barnyard Grass			1
Plantae	Flora	Poaceae	4923	*Echinochloa crus-galli*	Barnyard Grass			1
Plantae	Flora	Poaceae	4937	*Ehrharta erecta*	Panic Veldtgrass			1
Plantae	Flora	Poaceae	7196	*Eleusine indica*	Crowsfoot Grass			1
Plantae	Flora	Poaceae	4940	*Eleusine tristachya*	Goose Grass			2
Plantae	Flora	Poaceae	4943	*Enneapogon gracilis*	Slender Nineawn			1
Plantae	Flora	Poaceae	4945	*Enneapogon nigricans*	Niggerheads			2
Plantae	Flora	Poaceae	11647	*Eragrostis alveiformis*				2
Plantae	Flora	Poaceae	6387	*Eragrostis cilianensis*	Stinkgrass			1
Plantae	Flora	Poaceae	4960	*Eragrostis leptostachya*	Paddock Lovegrass			1
Plantae	Flora	Poaceae	4967	*Eragrostis parviflora*	Weeping Lovegrass			1
Plantae	Flora	Poaceae	ERAG	*Eragrostis spp.*				1

Plantae	Flora	Poaceae	7335	*Eriochloa pseudoacrotricha*	Early Spring Grass	1
Plantae	Flora	Poaceae	4993	*Festuca pratensis*	Meadow Fescue	2
Plantae	Flora	Poaceae	5012	*Hordeum leporinum*	Barley Grass	5
Plantae	Flora	Poaceae	5016	*Hyparrhenia hirta*	Coolatai Grass	2
Plantae	Flora	Poaceae	5033	*Lolium rigidum*	Wimmera Ryegrass	2
Plantae	Flora	Poaceae	5037	*Microlaena stipoides*	Weeping Grass	2
Plantae	Flora	Poaceae	7707	*Microlaena stipoides var. stipoides*	Weeping Grass	1
Plantae	Flora	Poaceae	13451	*Nassella tenuissima*		2
Plantae	Flora	Poaceae	5066	*Panicum simile*	Two-colour Panic	1
Plantae	Flora	Poaceae	5073	*Paspalidium aversum*	Bent Summer Grass	1
Plantae	Flora	Poaceae	7172	*Paspalidium distans*		1
Plantae	Flora	Poaceae	5086	*Paspalum dilatatum*	Paspalum	6
Plantae	Flora	Poaceae	5087	*Paspalum distichum*	Water Couch	1
Plantae	Flora	Poaceae	5113	*Phragmites australis*	Common Reed	1
Plantae	Flora	Poaceae	5121	*Poa annua*	Winter Grass	1
Plantae	Flora	Poaceae	11196	*Poa labillardierei var. labillardierei*	Tussock	2
Plantae	Flora	Poaceae	5141	*Poa sieberiana*	Snowgrass	5
Plantae	Flora	Poaceae	POA	*Poa spp.*		2
Plantae	Flora	Poaceae	7878	*Rostraria cristata*	Annual Cat's Tail	1
Plantae	Flora	Poaceae	7857	*Rostraria pumila*	Roughtail	1
Plantae	Flora	Poaceae	14304	*Rytidosperma bipartitum*	Wallaby Grass	6
Plantae	Flora	Poaceae	14305	*Rytidosperma caespitosum*	Ringed Wallaby Grass	1
Plantae	Flora	Poaceae	14312	*Rytidosperma longifolium*	Long-leaved Wallaby Grass	4
Plantae	Flora	Poaceae	14313	*Rytidosperma monticola*	Mountain Wallaby Grass	1
Plantae	Flora	Poaceae	14317	*Rytidosperma racemosum*	Wallaby Grass	1
Plantae	Flora	Poaceae	14319	*Rytidosperma racemosum var. obtusatum*	Wallaby Grass	3
Plantae	Flora	Poaceae	14318	*Rytidosperma racemosum var. racemosum*	Wallaby Grass	2
Plantae	Flora	Poaceae	14320	*Rytidosperma richardsonii*	Straw Wallaby-grass	1

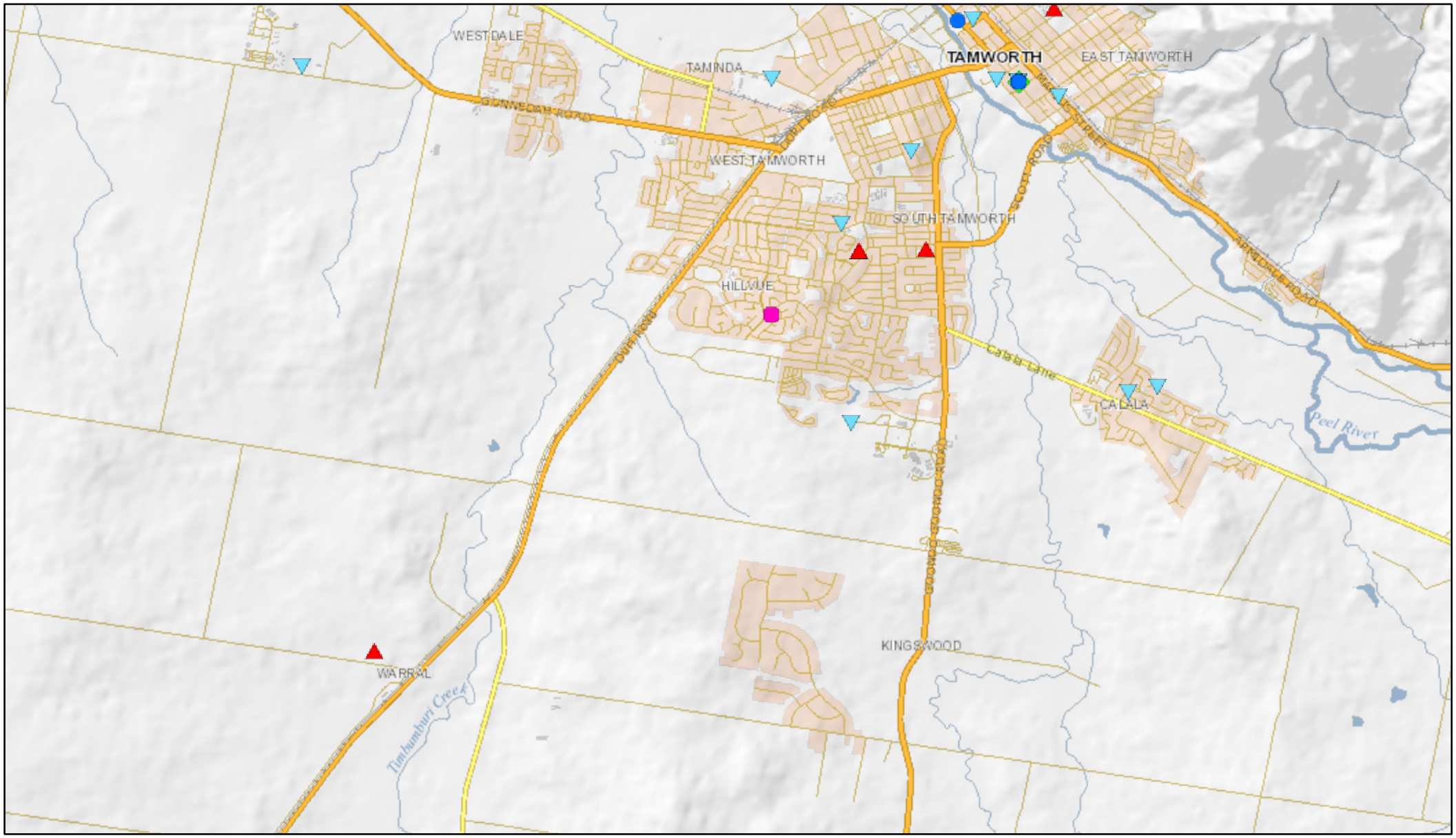
Plantae	Flora	Poaceae	RYTI	*Rytidosperma spp.*			3
Plantae	Flora	Poaceae	14323	*Rytidosperma tenuius*			2
Plantae	Flora	Poaceae	13468	*Setaria parviflora*			1
Plantae	Flora	Poaceae	12511	*Sorghum almum*	Columbus Grass		1
Plantae	Flora	Poaceae	5171	*Sorghum bicolor*	Sorghum		3
Plantae	Flora	Poaceae	5172	*Sorghum halepense*	Johnson Grass		2
Plantae	Flora	Poaceae	SORG	*Sorghum spp.*			2
Plantae	Flora	Poaceae	5176	*Sporobolus africanus*	Parramatta Grass		1
Plantae	Flora	Poaceae	5181	*Sporobolus elongatus*	Slender Rat's Tail Grass		5
Plantae	Flora	Poaceae	7770	*Themeda triandra*			3
Plantae	Flora	Poaceae	5229	*Tripogon loliiformis*	Fiveminute Grass		1
Plantae	Flora	Poaceae	5237	*Urochloa panicoides*	Urochloa Grass		5
Plantae	Flora	Poaceae	5242	*Vulpia myuros*	Rat's Tail Fescue		3
Plantae	Flora	Poaceae	VULP	*Vulpia spp.*	Rat's-tail Fescue		1
Plantae	Flora	Polygonaceae	5265	*Acetosella vulgaris*	Sheep Sorrel		2
Plantae	Flora	Polygonaceae	5268	*Fallopia convolvulus*	Black Bindweed		1
Plantae	Flora	Polygonaceae	5282	*Persicaria lapathifolia*	Pale Knotweed		1
Plantae	Flora	Polygonaceae	5288	*Polygonum aviculare*	Wireweed		3
Plantae	Flora	Polygonaceae	5296	*Rumex brownii*	Swamp Dock		6
Plantae	Flora	Polygonaceae	5297	*Rumex conglomeratus*	Clustered Dock		1
Plantae	Flora	Polygonaceae	5298	*Rumex crispus*	Curled Dock		1
Plantae	Flora	Polygonaceae	RUME	*Rumex spp.*	Dock		1
Plantae	Flora	Portulacaceae	5324	*Portulaca oleracea*	Pigweed		1
Plantae	Flora	Primulaceae	14614	*Lysimachia arvensis*	Scarlet Pimpernel		4
Plantae	Flora	Proteaceae	9759	*Hakea leucoptera subsp. sericipes*			1
Plantae	Flora	Pteridaceae	7997	*Adiantum aethiopicum*	Common Maidenhair	P	1
Plantae	Flora	Pteridaceae	6382	*Cheilanthes distans*	Bristly Cloak Fern		4
Plantae	Flora	Pteridaceae	10439	*Cheilanthes sieberi*	Rock Fern		1
Plantae	Flora	Pteridaceae	8007	*Cheilanthes sieberi subsp. sieberi*	Rock Fern		4
Plantae	Flora	Pteridaceae	8444	*Pellaea falcata*	Sickle Fern		2

Plantae	Flora	Ranunculaceae	13519	*Clematis decipiens*		2
Plantae	Flora	Ranunculaceae	5495	*Clematis glycinoides*	Headache Vine	2
Plantae	Flora	Ranunculaceae	5496	*Clematis microphylla*	Small-leaved Clematis	3
Plantae	Flora	Resedaceae	5529	*Reseda lutea*	Cut-leaved Mignonette	1
Plantae	Flora	Rosaceae	5635	*Rosa rubiginosa*	Sweet Briar	1
Plantae	Flora	Rosaceae	11303	*Rubus fruticosus sp. agg.*	Blackberry complex	1
Plantae	Flora	Rubiaceae	5653	*Asperula conferta*	Common Woodruff	5
Plantae	Flora	Rubiaceae	5686	*Galium migrans*		6
Plantae	Flora	Rubiaceae	5699	*Opercularia hispida*	Hairy Stinkweed	1
Plantae	Flora	Rubiaceae	11942	*Psydrax odorata*	Shiny-leaved Canthium	3
Plantae	Flora	Rutaceae	5800	*Geijera parviflora*	Wilga	1
Plantae	Flora	Salicaceae	5848	*Populus alba*	White Poplar	1
Plantae	Flora	Salicaceae	10652	*Salix fragilis var. fragilis*	Crack Willow	2
Plantae	Flora	Salicaceae	10663	*Salix x sepulcralis var. sepulcralis*	Weeping Willow	1
Plantae	Flora	Sapindaceae	5873	*Alectryon forsythii*		1
Plantae	Flora	Sapindaceae	5913	*Dodonaea viscosa*	Sticky Hop-bush	2
Plantae	Flora	Sapindaceae	7690	*Dodonaea viscosa subsp. angustifolia*		1
Plantae	Flora	Sapindaceae	7830	*Dodonaea viscosa subsp. angustissima*	Narrow-leaf Hop-bush	1
Plantae	Flora	Scrophulariaceae	9736	*Cymbalaria muralis subsp. muralis*	Ivy-leaved Toadflax	1
Plantae	Flora	Scrophulariaceae	7625	*Verbascum thapsus subsp. thapsus*	Great Mullein	1
Plantae	Flora	Scrophulariaceae	5999	*Verbascum virgatum*	Twiggy Mullein	2
Plantae	Flora	Simaroubaceae	6012	*Ailanthus altissima*	Tree of Heaven	1
Plantae	Flora	Solanaceae	6027	*Cestrum parqui*	Green Cestrum	3
Plantae	Flora	Solanaceae	6033	*Datura stramonium*	Common Thornapple	3
Plantae	Flora	Solanaceae	6040	*Lycium ferocissimum*	African Boxthorn	1
Plantae	Flora	Solanaceae	6045	*Nicotiana glauca*	Tree Tobacco	1
Plantae	Flora	Solanaceae	12295	*Solanum parvifolium subsp. parvifolium*	Nightshade	4

Plantae	Flora	Stackhousiaceae	6125	*Stackhousia viminea*	Slender Stackhousia	1
Plantae	Flora	Thymelaeaceae	6182	*Pimelea linifolia*	Slender Rice Flower	1
Plantae	Flora	Typhaceae	7224	*Typha domingensis*	Narrow-leaved Cumbungi	1
Plantae	Flora	Ulmaceae	6220	*Celtis australis*		1
Plantae	Flora	Urticaceae	6232	*Parietaria judaica*	Pellitory	1
Plantae	Flora	Urticaceae	6237	*Urtica incisa*	Stinging Nettle	1
Plantae	Flora	Verbenaceae	6256	*Verbena bonariensis*	Purpletop	7
Plantae	Flora	Verbenaceae	10717	*Verbena gaudichaudii*	Verbena	1
Plantae	Flora	Verbenaceae	6259	*Verbena officinalis*	Common Verbena	3
Plantae	Flora	Verbenaceae	10720	*Verbena quadrangularis*		3
Plantae	Flora	Verbenaceae	11406	*Verbena rigida var. rigida*	Veined Verbena	1
Plantae	Flora	Violaceae	12061	*Melicytus dentatus*	Tree Violet	1
Plantae	Flora	Violaceae	6274	*Viola odorata*	Sweet Violet	1
Plantae	Flora	Vitaceae	14093	*Clematicissus opaca*	Pepper Vine	1
Plantae	Flora	Zygophyllaceae	9230	*Tribulus micrococcus*	Spineless Caltrop	2
Plantae	Flora	Zygophyllaceae	7655	*Tribulus terrestris*	Cat-head	1

Appendix F- Bionet Species Map

Atlas Map



December 14, 2021

drawGraphics_poly

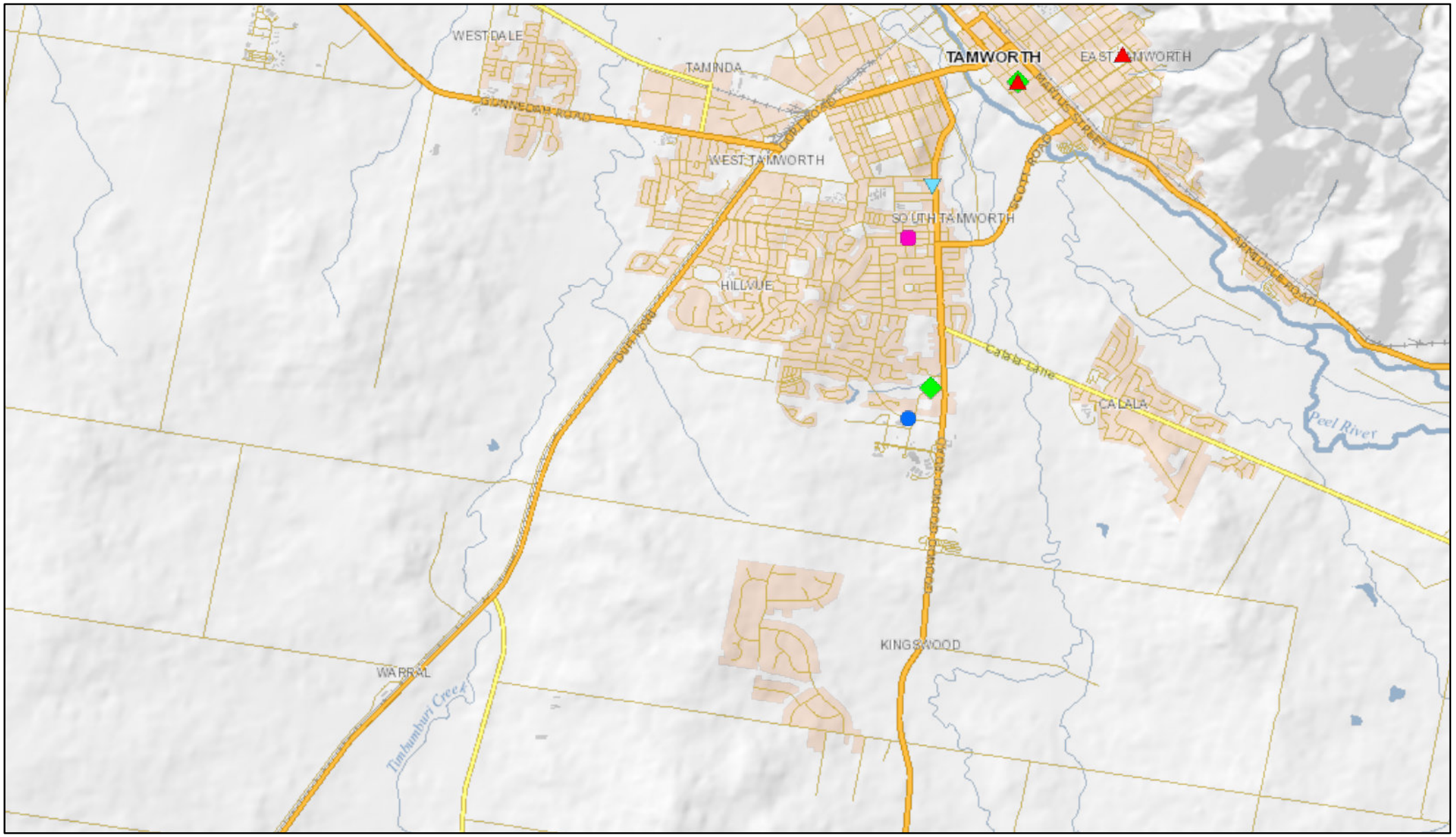
- Override 1
- Spotted-tailed Quoll (Dasyurus maculatus)
- Koala (Phascolarctos cinereus)
- Squirrel Glider (Petaurus norfolcensis)
- Grey-headed Flying-fox (Pteropus poliocephalus)
- Magenta Lilly Pilly (Syzygium paniculatum)

1:64,000

0 0.5 1 2 mi

0 0.75 1.5 3 km

Atlas Map



December 14, 2021

drawGraphics_poly

- Override 1
- Little Eagle (Hieraaetus morphnoides)
- ^^Square-tailed Kite (Lophoictinia isura)
- Black Falcon (Falco subniger)
- Little Lorikeet (Glossopsitta pusilla)
- ^^Powerful Owl (Ninox strenua)

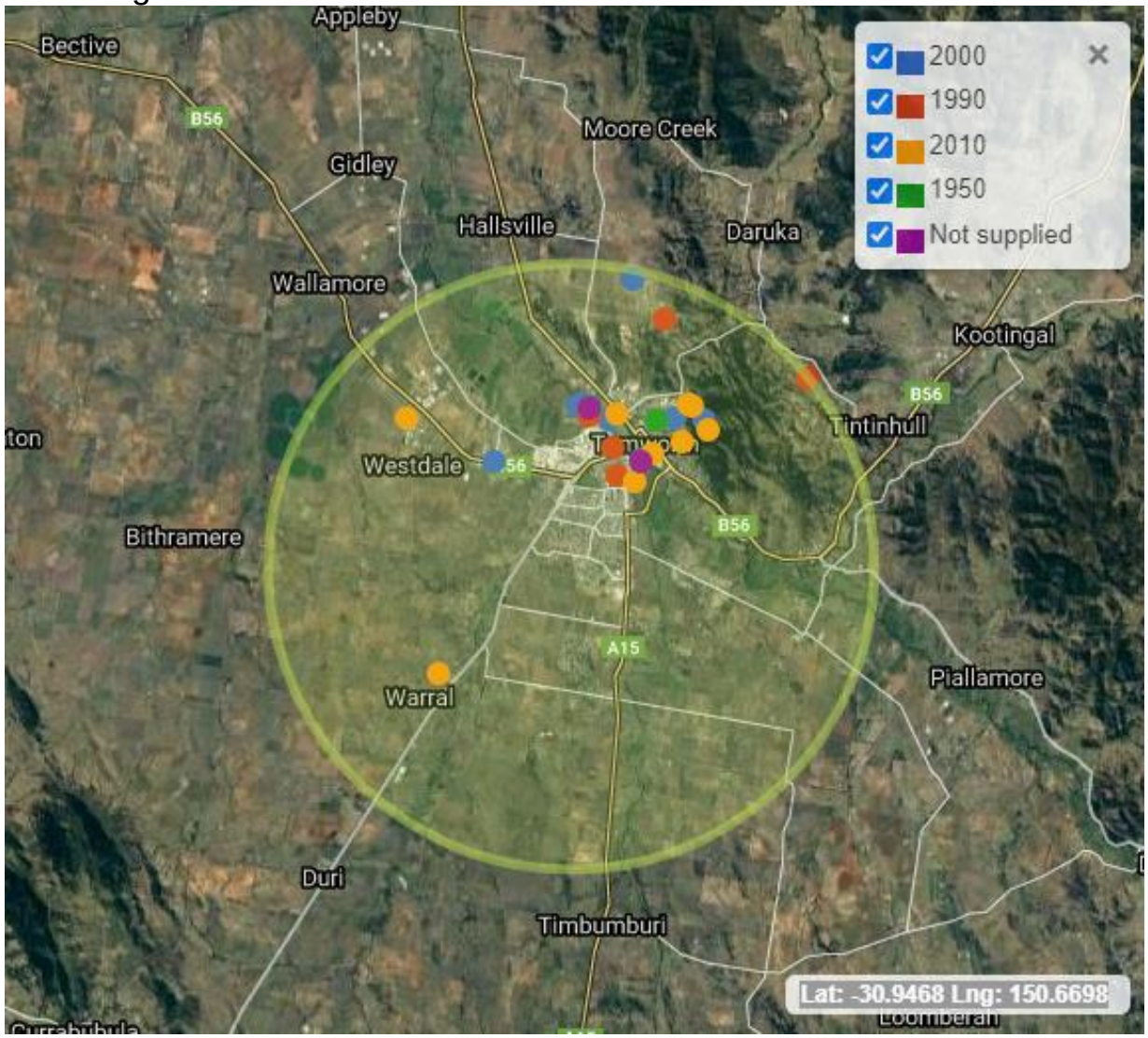
1:64,000

0 0.5 1 2 mi

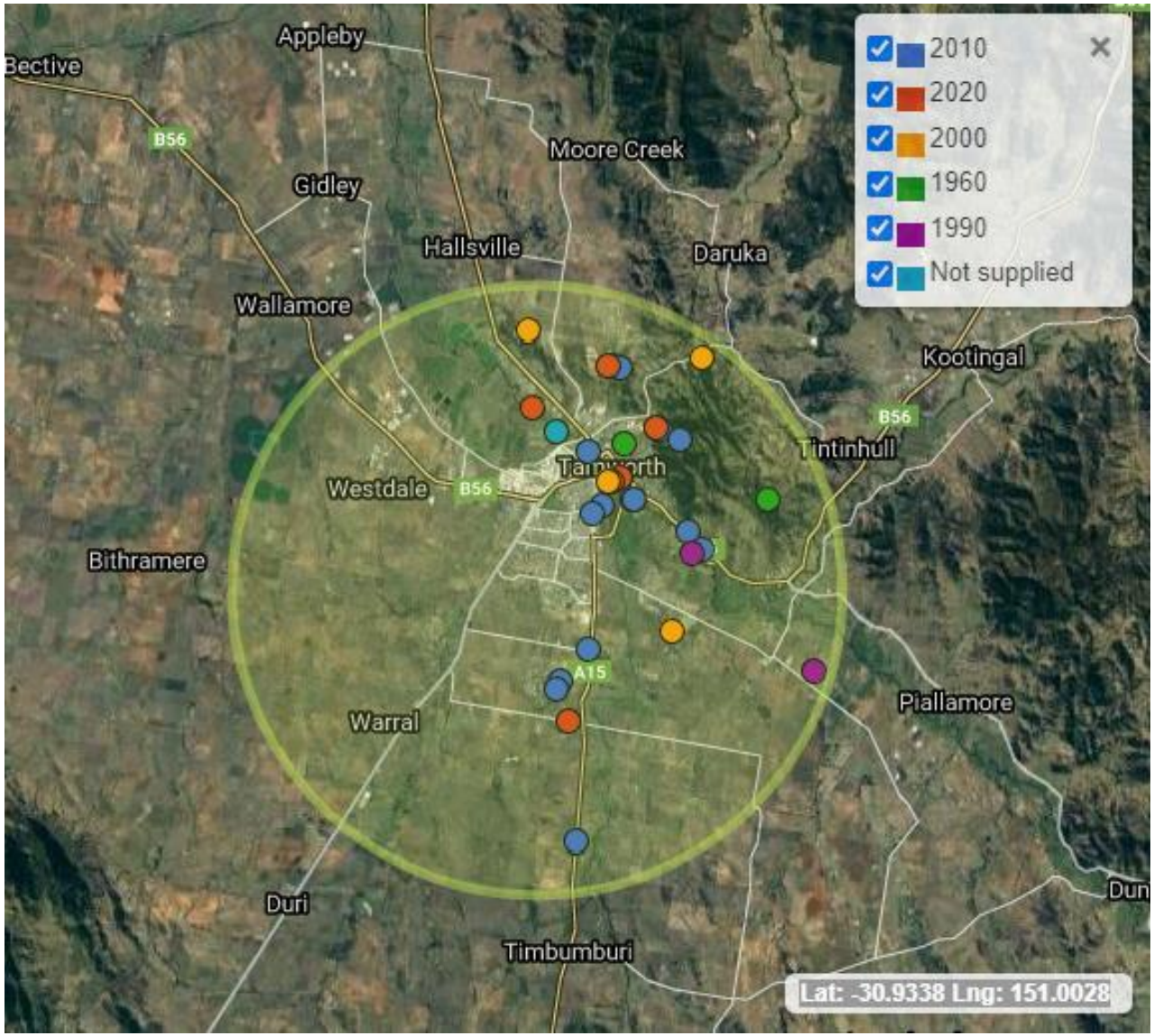
0 0.75 1.5 3 km

Appendix G- Atlas of Living Australia

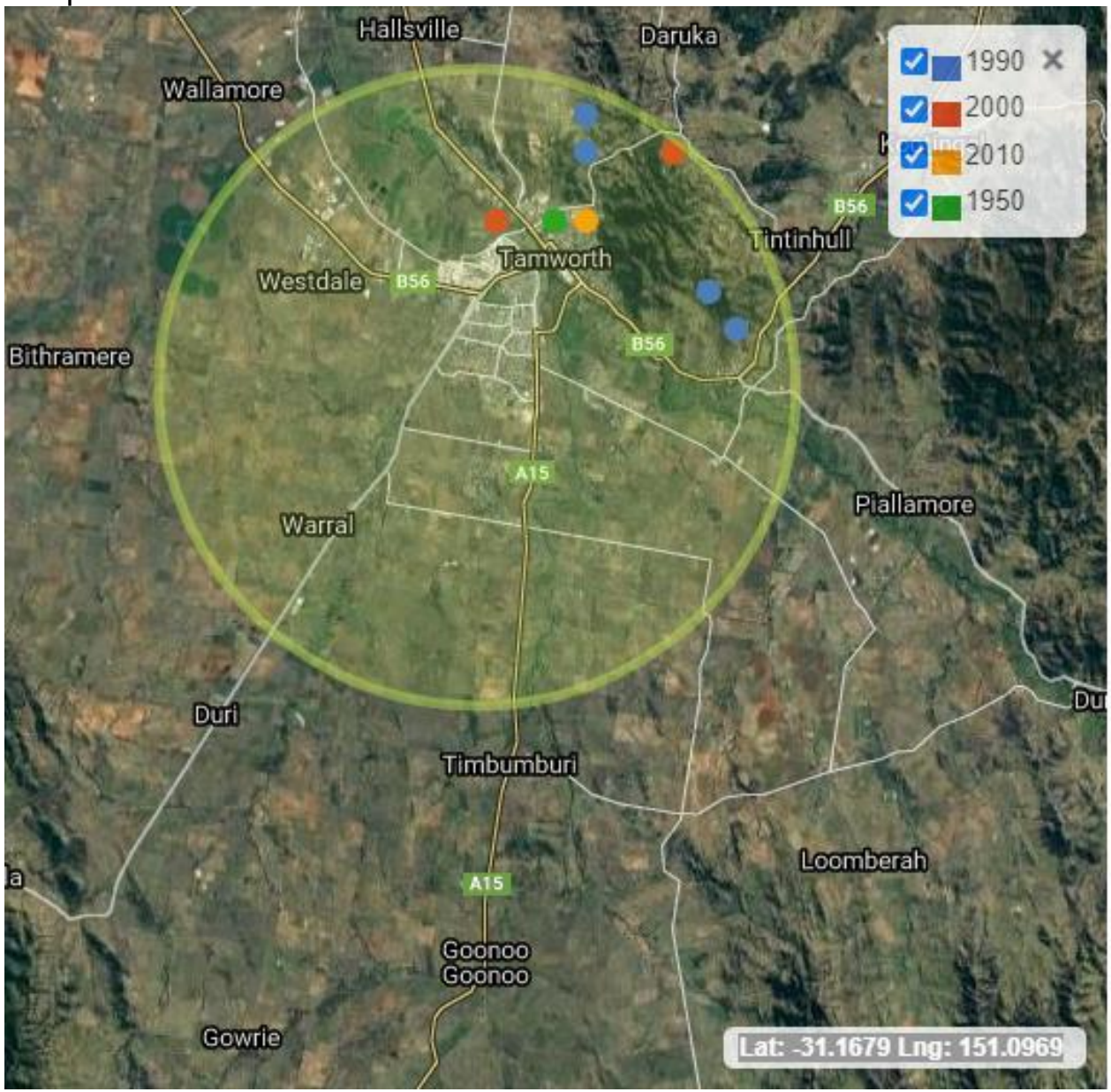
Little Eagle



Little Lorikeet



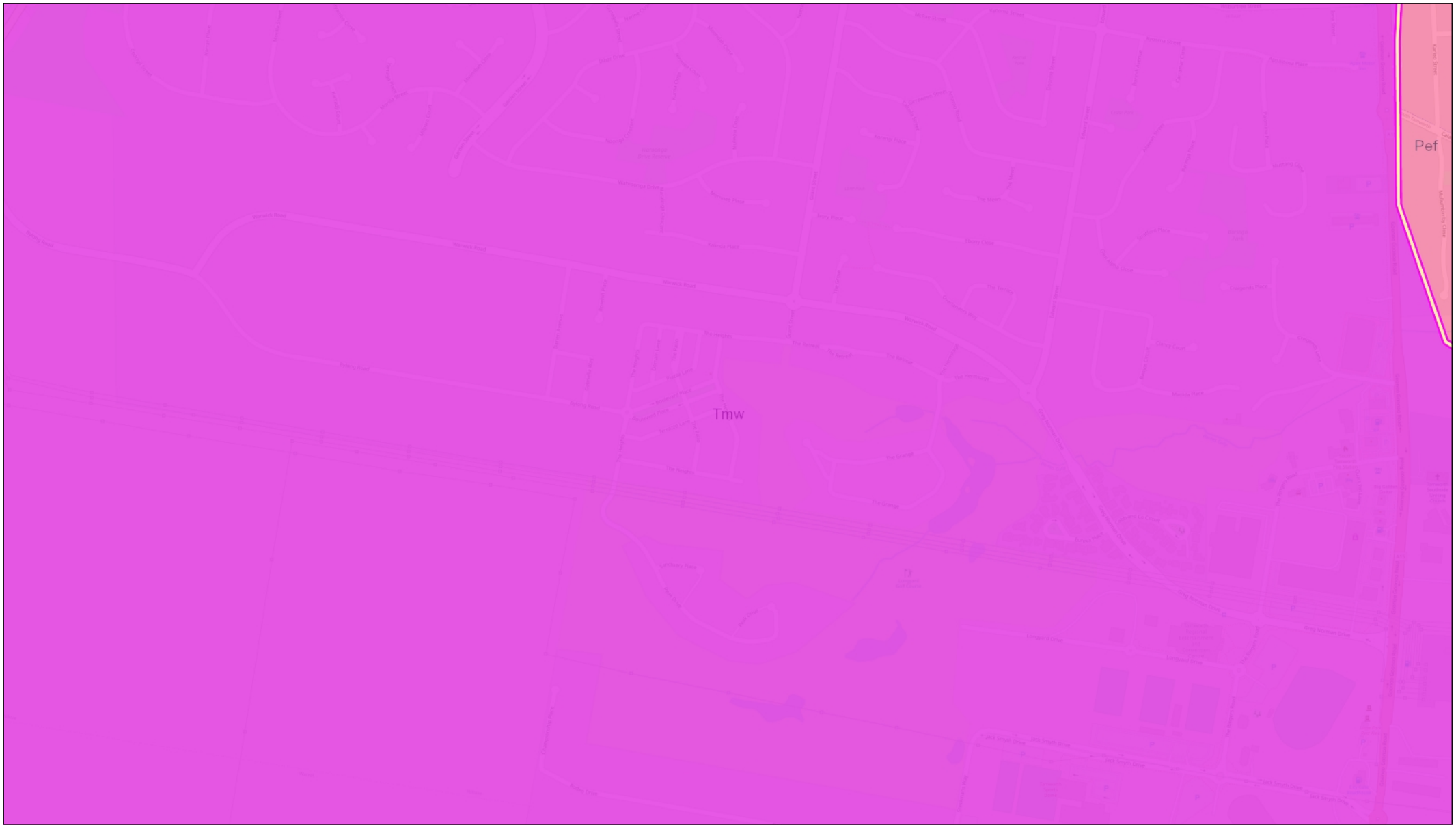
Turquoise Parrot



Appendix H- Mitchell Landscapes

SEED | Sharing and Enabling Environmental Data

Mitchell Landscape



0.7 0 0.33 0.7 Kilometers

Scale 1: 13,365.57

WGS_1984_Web_Mercator_Auxiliary_Sphere

Generated from SEED web map. Created 6:26 AM 16/1/2022


Legend
Mitchell Landscapes v3.1 - Ecosystem Meso Grouping
AA Alpine; Alpine Zone
AA Alpine; Bogong Sub-alpine
AA Alpine; Cabramurra - Kiandra Basalt Caps and Sands
AA Alpine; Chimneys Ridge Sub-alpine
AA Alpine; Jagungal Tops
AA Alpine; Kings Cross Sub-alpine
AA Alpine; Main Range Sub-alpine
AA Alpine; Namadgi Range Alpine
AA Alpine; Namadgi Range Sub-alpine
AA Alpine; Tantangara High Plains and Peaks
AA Montane; Bogong Montane
AA Montane; Chimneys Ridge Montane
AA Montane; Dargals Montane
AA Montane; Geehi Gorge
AA Montane; Kings Cross Montane
AA Montane; Main Range Montane
AA Montane; Namadgi Range Montane
AA Montane; Upper Murrumbidgee Valley
AA Montane; Yarrangobilly - Cooleman Karst
BBS Collarenebri Interfluve; Collarenebri Tablelands and Downs
BBS Gwydir - Croppa Creek Outwash; Croppa Clay Plains
BBS Gwydir - Croppa Creek; Croppa Creek Channels and Floodplains
BBS Lake Basins; Old Harbour Lagoon
BBS Liverpool Plains; Breeza Hills Basalt Caps
BBS Liverpool Plains; Breeza Hills Sandstone-Shale Slopes
BBS Liverpool Plains; Kerringle Outwash Sands
BBS Liverpool Plains; Liverpool Alluvial Plains
BBS Liverpool Plains; Mooki - Namoi Channels and Floodplains
BBS Liverpool Plains; Mooki Swamps and Lagoons
BBS Liverpool Plains; Nombi Plateau and Pinnacles
BBS Liverpool Plains; Upper Namoi Swamps and Lagoons
BBS Liverpool Range; Coolah Tops
BBS Liverpool Range; Liverpool Range Valleys and Footslopes
BBS Liverpool Range; Liverpool Tops
BBS Pilliga Outwash; Baradine - Coghill Channels and Floodplains
BBS Pilliga Outwash; Baradine Alluvial Plains
BBS Pilliga Outwash; Coghill Alluvial plains
BBS Pilliga; Bugaldie Uplands
BBS Pilliga; Cassilis Slopes
BBS Pilliga; Cubbo Uplands
BBS Pilliga; Goonoo Slopes
BBS Pilliga; Merrygoen Hills and Slopes
BBS Pilliga; Mollyan Hills
BBS Pilliga; Myall Glen Basalts
BBS Pilliga; Purlewaugh Plains
BBS Pilliga; Trinkey Plateau
BBS Pilliga; Upper Castlereagh Alluvial Plains
BBS Pilliga; Upper Castlereagh Channels and Floodplains
BBS Talbragar Basalts; Dubbo Basalts
BBS Warrumbungles; Marron Hills
BBS Warrumbungles; Warrumbungle Slopes
BBS Warrumbungles; Warrumbungle Tops
BBS Yallaroi; Strathmore Sandstones
BBS Yallaroi; Yallaroi Basalts
BHC Barrier; Barrier Alluvial Plains
BHC Barrier; Barrier Downs
BHC Barrier; Barrier Fresh Lakes and Swamps
BHC Barrier; Barrier Ranges
BHC Barrier; Barrier Salt Lakes and Playas
BHC Barrier; Barrier Sandplains
BHC Barrier; Barrier Tablelands
BHC Barrier; Corona - Teamsters Limestone
BHC Mootwingee; Mootwingee - Wonaminta Alluvial Plains
BHC Mootwingee; Mootwingee - Wonaminta Downs
BHC Mootwingee; Mootwingee - Wonaminta Dunes
BHC Mootwingee; Mootwingee - Wonaminta Footslopes
BHC Mootwingee; Mootwingee - Wonaminta Fresh Lakes
BHC Mootwingee; Mootwingee - Wonaminta Linear Dunes
BHC Mootwingee; Mootwingee - Wonaminta Ranges
BHC Mootwingee; Mootwingee - Wonaminta Salt Lakes and Playas
BHC Mootwingee; Mootwingee - Wonaminta Sandplains
BHC Mootwingee; Mootwingee - Wonaminta Tablelands
BHC Scropes; Scropes Alluvial Plains
BHC Scropes; Scropes Downs
BHC Scropes; Scropes Linear Dunes
BHC Scropes; Scropes Ranges
BHC Scropes; Scropes Salt Lakes and Playas
BHC Scropes; Scropes Sandplains
CHC Bulloo; Bulloo Channels and Floodouts
CHC Bulloo; Bulloo Linear Dunes
CHC Bulloo; Bulloo Littoral and Lunettes
CHC Bulloo; Bulloo Salt Lakes and Playas
CHC Bulloo; Bulloo Sandplains
CHC Tibooburra; Tibooburra Alluvial Plains
CHC Tibooburra; Tibooburra Downs
CHC Tibooburra; Tibooburra Fresh Lakes and Swamps
CHC Tibooburra; Tibooburra Ranges
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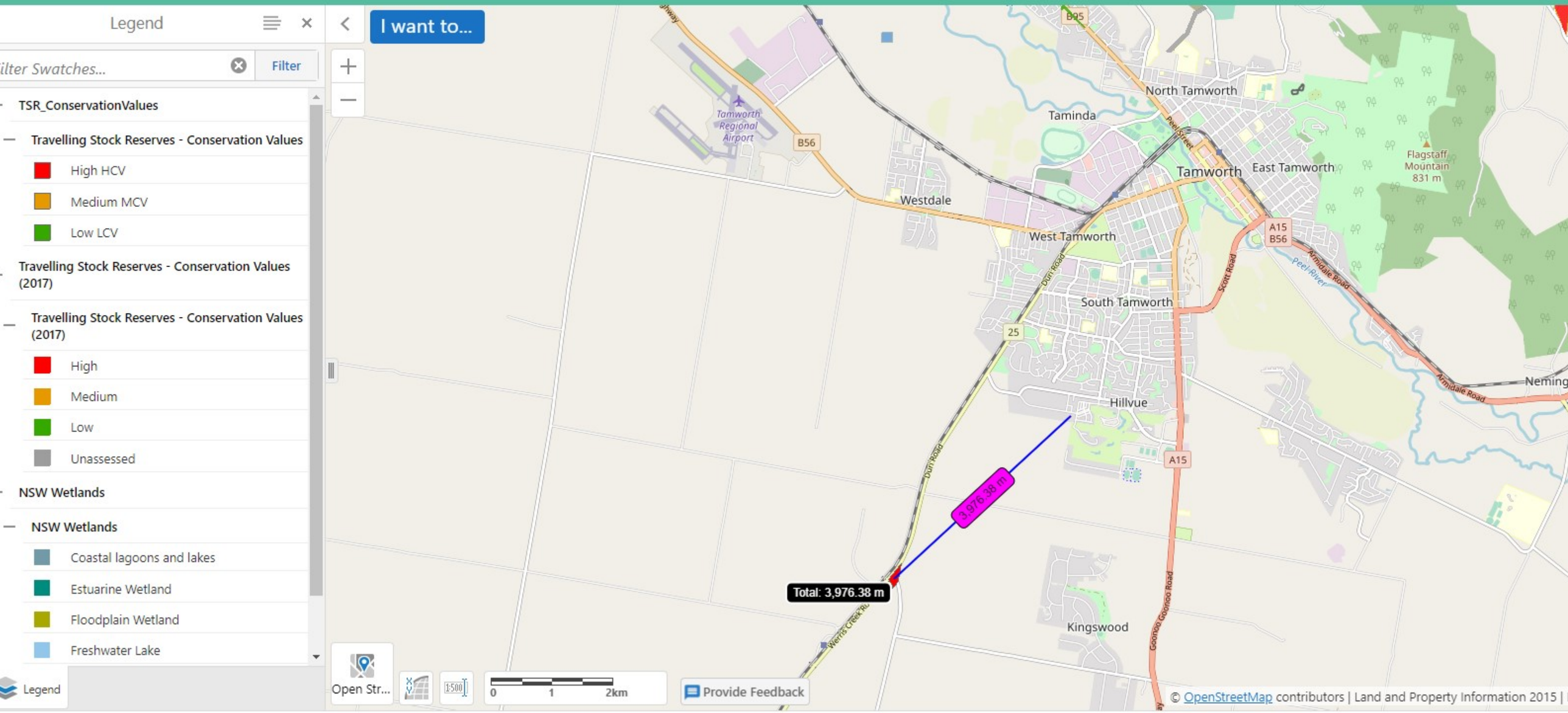
CHC Tibooburra; Tibooburra Sandplains
CHC Tibooburra; Tibooburra Tablelands
CP Barnato; Barnato Downs
CP Barnato; Barnato Incised Streams
CP Barnato; Barnato Isolated Hills
CP Barnato; Barnato Lakes
CP Barnato; Barnato Linear Dunes
CP Barnato; Barnato Plains
CP Barnato; Barnato Wide Valleys
CP Barnato; Belarabon Range
CP Barnato; Marma Hills
CP Barnato; Mt Grenfell Ridges
CP Barnato; Neckarbo Range
CP Cobar; Canbelego - Boppy Hills
CP Cobar; Cobar Basalt Hills
CP Cobar; Cobar Downs
CP Cobar; Cobar Granite Downs
CP Cobar; Cobar Incised Streams
CP Cobar; Cobar Isolated Hills
CP Cobar; Cobar Plains
CP Cobar; Cobar Tablelands
CP Cobar; Gunderbooka Range
CP Cobar; Oxley Range
CP Cobar; Shearlegs Hills
CP Cocoparra; Burgooney Plains
CP Cocoparra; Cocoparra Ranges and Footslopes
CP Cocoparra; Curriba Basalt Hills
CP Cocoparra; Scotts Craig Hills
CP Cocoparra; Shepherds Hill
CP Nymagee; Belmont Hills
CP Nymagee; Black Range
CP Nymagee; Boona Mountains
CP Nymagee; Buckambool - Jackermaroo Hills
CP Nymagee; Fifield Intrusives
CP Nymagee; Gilgunnia - Broken Ranges
CP Nymagee; Meryula Alluvial Plains
CP Nymagee; Nangerybone Hills
CP Nymagee; Nymagee Downs
CP Nymagee; Nymagee Granite Downs
CP Nymagee; Nymagee Incised Streams

Appendix I- Travelling Stock Reserve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Medium MCV
Low LCV
Travelling Stock Reserves - Conservation Values (2017)
Travelling Stock Reserves - Conservation Values (2017)
High
Medium
Low
Unassessed
NSW Wetlands
NSW Wetlands
Coastal lagoons and lakes
Estuarine Wetland
Floodplain Wetland
Freshwater Lake
Legend
I want to...
Tamworth Regional Airport
B56
Westdale
Taminda
North Tamworth
Peel Street
Tamworth
East Tamworth
Flagstaff Mountain 831 m
West Tamworth
A15
B56
Scott Road
Peel River
Armidale Road
Dunn Road
South Tamworth
25
Hillvue
A15
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Kingswood
Goonoo Goonoo Road
Open Str...
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2km
Provide Feedback
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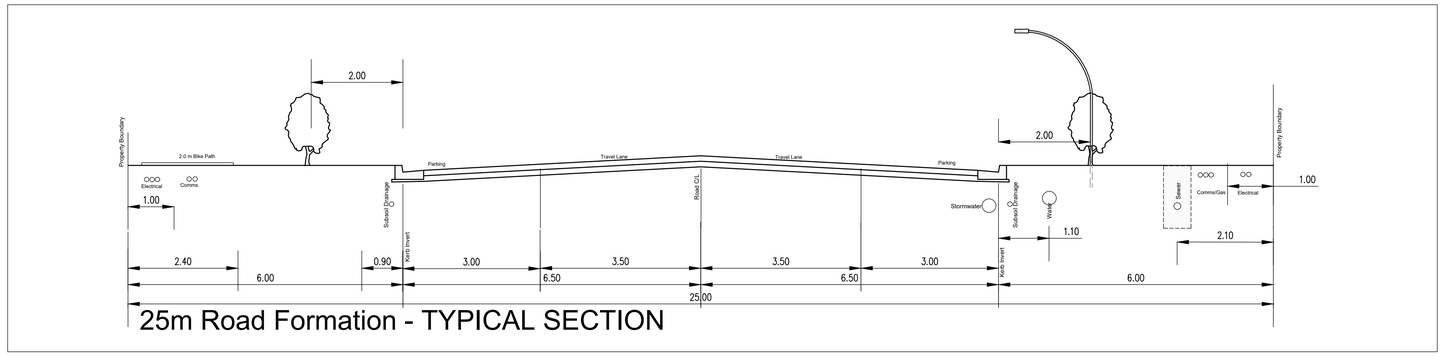
Appendix J- Project Plan

ARCADIA ESTATE - PROPOSED BYLONG ROAD INTERSECTION ALIGNMENT



25m Road Formation - TYPICAL SECTION

Issue	Date	Description	By
A	27/01/2022	PRELIMINARY	CT

CSO ENGINEERS
Civil-Structural-Environmental
CSO ENGINEERS
Taminda Business & Lifestyle Park
Level 2, 10/1a Wirraway Street
Tamworth NSW 2340
mail@csoengineers.com t 0418 385 515
www.csoengineers.com

PROJECT **ARCADIA ESTATE**
LOCATION **BURGMANNS LANE TAMWORTH**
DOCUMENT STAGE: **PRELIMINARY ISSUE**

DESCRIPTION **PRELIMINARY LAYOUT**
DRAWN BY **JT**
CHECKED **CT**
CLIENT **MAXIMUM YIELD**
SCALE: **As Shown**

JOB NUMBER	SHEET	TITLE	Dwg. No.	REV.	Size
C19 291	1 of 1	PROPOSED INTERSECTION LOCATION	G001	A	A1