Rutherford Road Toolamba
Flora and Fauna Assessment

May 2012

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PROJECT DETAILS

Project Name	Rutherford Road, Toolamba Flora and Fauna Assessment
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Cover Photo: Chris Neilson measuring the DBH of a large Grey Box within the Paddock Zone.

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1. INTRODUCTION

Water Technology was appointed by Chris Smith & Associates, acting on behalf of Herdstown Pty Ltd (Mr Stuart Rea), to undertake a Flora and Fauna Assessment upon lands at 335 Rutherford Road, Toolamba, Victoria. The purpose of the assessment is to support a submission for the rezoning of the subject site.

The site is divided into three parcels, identified as lots 4, 5, and 6 on TP825016. It is estimated that that there is approximately 70 hectares of land bounded by the existing town, the railway line, Rutherford Road and the river environs.

A portion of the site is designated for the proposed Shepparton bypass, and although within the bounds of the subject site, is not relevant to this assessment. It is assumed that Vic Roads have undertaken appropriate survey and assessment upon this land and will address impacts associated with that development.

Desktop tasks were undertaken prior to field survey, with the survey being conducted by Water Technology Ecologists Jamie Kaye and Christopher Neilson on Friday 5 August, 2011. The site was traversed during daylight hours identifying a number of aspects associated with vegetation diversity, abundance and health whilst also conducting habitat searches and recording opportunistic sightings of fauna. Spotlighting of fauna species was undertaken in the evening as well as identifying calls for various species along the more heavily treed sections, both within and adjacent to the subject site.

2. LOCATION AND SITE DESCRIPTION

The subject site is within the City of Greater Shepparton directly adjacent to the township of Toolamba, approximately 17 road kilometres south-east of Shepparton. The property abuts the township on the northern side, the railway line to the east, Rutherford road to the west, with the southern boundary adjacent to crown land and Goulburn River riparian environs; as depicted in Figure 1. The site is undulating and used for agricultural purposes. The land having a long standing association with grazing and fodder production with almost the entire site cleared for this purpose. The site is non-irrigated and has never been used for irrigated agricultural pursuits.

A dwelling was previously existed towards the middle of the southern boundary; however this has now been replaced by a facility housing the local fishing club. Evidence of the original dwelling can be identified from stacked bricks following demolition and some remaining foundations. Mature exotic species can also be observed, assumed to be part of garden plantings, associated with the original dwelling.

The site contains a large number of indigenous trees both as scattered isolated paddock trees and in clusters in the north-east and southern zones. There is also purpose planting of exotics including Peppercorn Trees (*Schinus areira*) throughout the site. No mid-storey exists, with groundcover dominated by cropping and other exotic species, while native grasses are scarce within the treed zones.

An exception is a natural drainage area that traverses the site forming a wetland, although constrained, containing a diversity of native species. This drainage system appears to originate from land to the north-west and discharging into the Goulburn River to the south.

A number of scar trees were identified within the remnant area to the north-east. The large number of scar trees demonstrating the extent of activity in this area. There is no doubt that Aboriginals existed upon these lands utilising the riverine environment.

Figure 1 Subject site boundary and location (source Google Earth)

The northern boundary and a portion of the eastern boundary backs onto residential allotments providing limited habitat, with the exception of a remnant patch in the north-eastern corner, as mentioned. The Rutherford Road reserve is typical with scattered mature trees, some recruitment, and a mix of exotic and native understory species. These provide some connectivity to the River system and other roadside areas, however, have limited association with other remnant zones as they are adjacent to agricultural lands and heavily denuded landscapes.

Crown Lands to the south containing the Goulburn River provide excellent habitat for a number of fauna species. Large old trees and very large old trees within the site extend this habitat potential and provide a buffer between the developed and riverine zones. The Goulburn Broken Catchment Management Authority having recently revegetated and fenced a large portion of the riverine frontage adjacent to the subject site.

3. LEGISLATIVE REQUIREMENTS

3.1 National Legislation

3.1.1 Environmental Protection and Biodiversity Conservation Act 1999

The Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act) protects matters of national environmental significance and Commonwealth land (EPBC 1999). There are eight matters of national environmental significance (NES), which are triggers for Commonwealth assessment and approval. These matters of NES are:

1. World Heritage properties.
2. National Heritage Places (from Jan 01 2004).
3. Wetlands which are listed as Ramsar wetlands of international importance.
4. Nationally threatened species and communities which are listed under the EPBC Act (note these species may not be the same as those listed under state legislation).
5. Migratory species that are listed under the EPBC Act (these are migratory species protected under international agreements).
6. Nuclear actions, including uranium mining.
7. Commonwealth marine areas (which is generally Australian waters beyond the 3 nautical mile limit of state waters).
8. The Great Barrier Reef Marine Park.

Under the EPBC Act a person must not take an action that has, will have or is likely to have a significant impact on any of these matters of NES without approval from the Commonwealth Environment Minister (EPBC 1999).

Not all actions that may affect a matter of NES will have a significant impact and therefore need referral or approval under the EPBC Act. The Administrative Guidelines on Significance explain what types of actions and impacts may be considered significant and may need to be referred (EPBC 1999).

3.2 State Legislation

3.2.1 Flora and Fauna Guarantee Act 1988

The Flora and Fauna Guarantee Act 1988 (the FFG Act) legislates for the conservation of threatened species and communities and for the management of potentially threatening processes. The FFG Act provides for the listing of taxa (genera, species, subspecies and varieties) and communities of flora and fauna which are threatened, and potentially threatening processes.

The FFG Act conservation and management objectives are:

1. To guarantee that all taxa of Victoria's flora and fauna ….. can survive, flourish and retain their potential for evolutionary development in the wild.
2. To conserve Victoria's communities of flora and fauna.
3. To manage potentially threatening processes.
4. To ensure that any use of flora or fauna by humans is sustainable.
5. To ensure that the genetic diversity of flora and fauna is maintained.
6. To provide programs:
    a) Of community education in the conservation of flora and fauna,

b) To encourage co-operative management of flora and fauna through, amongst other things, the entering into of land management co-operative agreements under the Conservation, Forests and Lands Act 1987; and

c) Of assisting and giving incentives to people, including landholders, to enable flora and fauna to be conserved.

7. To encourage the conserving of flora and fauna through co-operative community endeavours.

3.2.2 Victorian Native Vegetation Management – A Framework for Action

Victoria's Native Vegetation Management – A Framework for Action (the Framework) was released in August 2002 and the policy was incorporated into the Victorian Planning Provisions on 24th July 2003.

The Framework aims to guide vegetation management in Victoria to achieve the goal of Net Gain, which is defined as "….the outcome for native vegetation and habitat where overall gains are greater than overall losses and where individual losses are avoided where possible" (NRE 2002).

The three steps involved in applying the Net Gain principle are (NRE 2002):

1. To **avoid** adverse impacts, particularly through vegetation clearance.
2. If impacts cannot be avoided, to **minimise** impacts through appropriate consideration in planning processes and expert input to project design or management.
3. Identify appropriate **offset** options.

4. METHOD

A ***Desktop Review*** was conducted prior to field survey in order to predict the presence of vegetation types and to establish vulnerable, threatened or endangered species, habitat and communities that may exist upon or adjacent to the subject site; which could be impacted by rezoning of the land and subsequent development.

The desktop tasks involved:

- Accessing the EPBC Protected Matters Search Tool (DSEWPC, 2011) which searches and summarises matters of national environmental significance that may occur in, or may relate to, the subject site or study area and other matters protected under the Act.
- A Biodiversity Information Request being lodged with the Department of Sustainability and Environment (DSE) for all species previously observed at either the subject site or within the study area for both flora and fauna and subsequently reviewed.
- Utilisation which classifies biodiversity with Victoria. Once bioregions had been identified thence Ecological Vegetation Classes (EVC) were established that characterise species, expected density and structure typical of that vegetation class. EVC information providing the basis for completing native vegetation assessments using the 'habitat hectares approach' as required for the Framework. An EVC benchmark outlines the expected percentage of vegetation cover in a particular vegetation type and is used to compare the existing vegetation quality against the vegetation quality which existed prior to European settlement; and
- The preparation of base maps, using aerial photography, to identify large trees and possible patch vegetation.

Field Survey involved traversing the site and recording information on the purpose developed data sheets. The main focus of the survey was to assess the health and condition of paddock trees that may be affected by the rezoning and future development and noting any other vegetation and/or communities that are currently listed as threatened, vulnerable or endangered.

Data collection involved the recording of:

- Native tree species, their diameter (DBH), assessment of health (canopy cover) and presence of hollows.
- The GPS location of native trees.
- All other vegetative species including exotics, naturalised and natives.
- Opportunistic sightings and detected calls for diurnal fauna species; and
- Any notable potential habitat for native fauna was also recorded.

Habitat searches were conducted at this time including log rolling and inspection of hollows.

Some trees and areas of potential habitat were also photographed along with any other notable features including scar trees.

A more ***targeted nocturnal fauna survey*** was undertaken in the evening using spotlighting and listening techniques. This was conducted within treed areas to the north-east and south-west of the property. Areas abutting the property were also spotlighted including the crown reserve adjacent to the Goulburn River to ascertain nocturnal species that may potentially inhabit or utilise the subject site.

Information regarding species from desktop survey and field identification was compiled to develop a comprehensive table of flora and fauna that were either confirmed or had the potential to inhabit the site. These species were assessed as to their likelihood to inhabit the subject site so that impacts from rezoning and future development could be considered.

All information from desktop tasks and site survey has been compiled and included in the results section.

More specifically this report addresses:

- Site condition, habitat quality, and any identified issues in relation to threat status of species or communities encountered.
- Recommendations in regard to likely future requirements and options in the development of the site, including the need for any future assessment.
- High conservation areas recommended for protection.
- Determination of the conservation significance of all native vegetation and offset requirements for potential removal; and
- Mapping indicating the location of significant vegetation, habitat zones and species.

5. RESULTS

5.1 Desktop Assessment

5.1.1 Environment Protection and Biodiversity Conservation Search Tool

Results from the EPBC Protected Matters Search (10km buffer) are presented as Appendix A – EPBC Protected Matters Report. The search indicated that 5 RAMSAR Sites and 1 Nationally Important Wetland existed within the same catchment and that 3 Threatened Ecological Communities are either known, likely, or may occur within the nominated area.

The search also identified 14 Threatened Species and 11 Migratory Species as potentially occurring in the vicinity of the project area. Comments on species presence or species habitat for the species listed within the nominated area are either likely to occur or may occur with only one, the Australasian Bittern (*Botaurus poiciloptilus*), known to exist or have habitat within the nominated area.

Also listed are 9 Marine Species as other matters protected by the EPBC Act which state presence and habitat as to likely or may occur within the nominated area.

5.1.2 Biodiversity Information Request

Biodiversity that has been previously recorded within 5 km of the subject site, according to information as supplied by DSE, identified 16 native species that were noted to have a conservation status assigned. At a State level these species are provided a status through either Flora and Fauna Guarantee listing or the Victorian Advisory List for Threatened Species. Of these, 3 are plant species, 2 mammals, 4 birds and a single fish species. Details are provided within Appendix B – Conservation Status Listing.

5.1.3 Likelihood of Occurrence

A table containing flora and fauna that could potentially inhabit the site has been included as Appendix C – Likelihood of Occurrence. This information is a compilation of the information accessed from the EPBC Protected Matters search tool and the Biodiversity Information Request (BIR) as described within the preceding Method section. Only species that possess a conservation status are included (all EPBC entries are associated with a specified conservation status, whilst inclusions within BIR results can include any species recorded within the study area).

The likelihood of occurrence is assessed by utilising current species information regarding habitat preferences and the assessment ecologist's experience and observations within the designated study area. Results for species that have been assessed to either possibly, probably or have been confirmed on the site are listed within Table 1. Information regarding these species demonstrated a potential to exist upon the subject site.

Table 1 Threatened fauna species potential to exist upon the subject site

Scientific Name	Common Name	Likelihood of Occurrence
Climacteris picumnus victoriae	Brown Treecreeper (SE ssp.)	Probable and Confirmed
Apraisia parapulchella	Pink-tailed Worm-lizard	Possible
Delma impar	Striped Legless Lizard	Possible
Petaurus norfolcensis	Squirrel Glider	Possible
Phascogale tapoatafa tapoatafa	Brush-tailed Phascogale	Possible
Lathamus discolor	Swift Parrot	Possible

5.1.4 EVC Classes (Native Vegetation Framework)

The DSE Biodiversity Interactive Mapping Tool (2011) indicated that the study area was situated within the Victorian Riverina Bioregion and the likely EVC present over the subject site prior to European disturbance was Plains Woodland (*syn. Riverina Plains Grassy Woodland*); as presented in Figure 2. It can be observed that Plains Woodland throughout the study area has been severely disturbed or removed, with EVC mapping for 2005 depicting constrained areas of this EVC class. Detailed maps are included within Appendix D – Bioregion and EVC Class Maps.

The EVC/Bioregion Benchmark for Vegetation Quality Assessment (DSE, 2011) describes Plains Woodland as open, eucalypt woodland to 15 m tall occurring on a number of geologies and soil types. The Class occupies fertile clays and clay loam soils on flat or gently undulating plains at low elevations in areas with <600 mm annual rainfall. The understorey consists of a few sparse shrubs over a species-rich grassy and herbaceous ground layer and chenopods are often present.

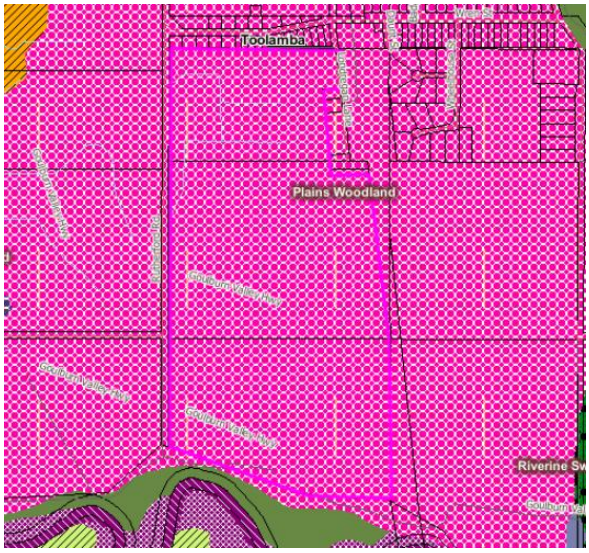

Figure 2 Plains Woodland EVC cover - 1750

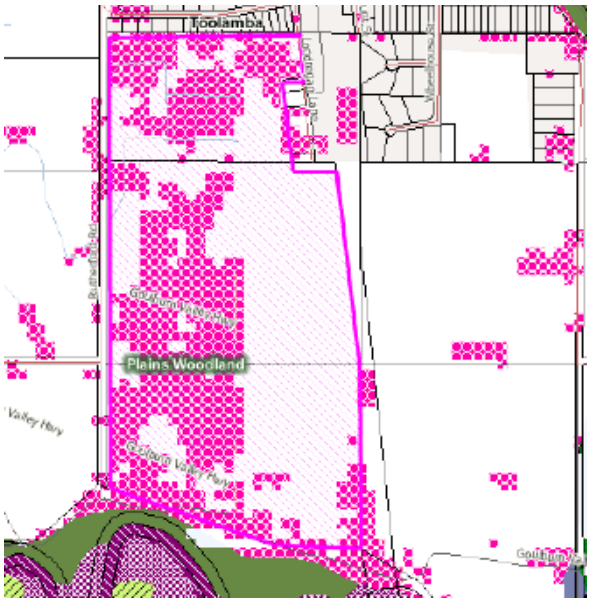

Figure 3 Plains Woodland EVC cover - 2005

Source: DSE Interactive Mapping Tool

DSE (EVC Benchmarks – Victorian Riverina Bioregions, 2011) has determined the Bioregional Conservation Status for each EVC in each Bioregion based upon the relative amount (area) of each EVC still existing compared with that prior to European settlement. The Bioregional Conservation Status (BCS) of Plains Woodland within the Riverina Bioregion is listed as Endangered.

Endangered BCS indicates that this Vegetation Class has contracted to less than 10% of former range or less than 10% pre-European extent remains or combination of depletion, degradation, current threats and rarity is comparable overall to the above if:

- 10 to 30% pre-European extent remains and severely degraded over a majority of this area; or
- Naturally restricted EVC reduced to 30% or less of former range and moderately degraded over a majority of this area; or
- Rare EVC cleared and/or moderately degraded over a majority of former area.

(DSE EVC Benchmarks for each Bioregion, 2011).

6. FIELD ASSESSMENT RESULTS

The project area is highly modified with the majority of the site cleared, cultivated and sown to exotic flora species. The majority of habitats that would have once been present on the site have been removed. Subsequently, the flora and fauna species diversity is much reduced relative to pre-European levels.

6.1 Flora

6.1.1 Understorey

Landscape characteristics and vegetation type resulted in three distinct zones across the subject land. This included the south-eastern boundary, paddock and the north-eastern corner zones. The subject land is completely denuded of original native understory structure and diversity through years of agricultural practice including clearing for cropping, pasture production and rotational grazing.

Figure 4 South-eastern boundary zone (south eastern aspect)

Figure 5 Paddock zone (southern aspect)

Figure 6 North-eastern corner zone (north-eastern aspect)

A total of 34 vascular plant species (excluding trees) were detected during the survey (refer Appendix E – Flora Species List). Of these 25 species were introduced and commonly associated with agriculture, a large number occurring in the paddock zone. Included in these was 1 tree species, Peppercorn Tree (*Schinus areira*),* which is wide spread through the subject site.

Most diversity was found within the natural drainage line/wetland containing at least 7 associated native species. However, this area is within the proposed freeway boundary and not part of the assessment project. One other notable native species was Wattle Mat-rush (*Lomandra filiformis*) found in very small occurrences within the north-eastern corner zone.

Figure 7 Wetland (South-Western aspect)

Figure 8 Wetland (Southern aspect)

Figure 9 **Wetland (Western aspect)**

6.1.2 Native Trees

Figure 10 indicates the location of all native trees assessed throughout the subject site during the field survey. Details associated with species, health and size are provided within Appendix F - Field Tree Data. A total of 137 trees were noted and a breakdown of species and size class are included in the Table 2.

Table 2 **Total Tree Species and Size Class**

Species	Individuals	Small	Medium	Large	Very Large
Yellow Box	63	1	5	18	39
Grey Box	48	2	1	11	34
River Red Gum	15	1	2	5	7
White Box	9		1	5	3
Sugar Gum*	2				2
Totals	137	**4**	**9**	**39**	**85**

*Non-indigenous native

The subject site however, contains an area of land to be acquired for the construction of the proposed Shepparton bypass. If the trees within the acquisition area are removed from the total count (i.e. Table 2) then the following tree numbers remain.

Table 3 Project Area Tree Species and Size Class

Species	Individuals	Small	Medium	Large	Very Large
Yellow Box	29	1	3	8	17
Grey Box	44	2	1	11	30
River Red Gum	5				5
White Box	9		1	5	3
Sugar Gum*	1				1
Totals	88	**3**	**5**	**24**	**56**

*Non-indigenous native

Figure 10 **Rutherford Road Toolamba Native Tree Locations**

6.2 Fauna

23 bird species were detected during diurnal survey with all being either sighted and/or heard except for the Little Corella (*Cacatua sanguinea*) that was identified by a carcass. None of the bird species detected are assigned a current conservation status.

Common Froglet (*Crinia signifera*) was heard during the day while the Beeping Froglet (*Crinia parinsignifera*) was heard during nocturnal searches. Ringtail Possum (*Pseudocheirus* peregrinus) and Brush-tailed Possum (*Trichosurus vulpecular*) were spotlighted along the Goulburn River crown reserve and a large population of Ringtails dominated the north-eastern corner zone. Also 1 Tawny Frogmouth (*Podargus strigoides*) was spotlighted within the riverine crown reserve. None of these species are assigned a current conservation status.

6.3 Cultural Heritage

It was observed that historically there had been Aboriginal activity on the subject site. This was particularly the case in the north-eastern zone where most Box trees have been utilised to craft common items used by Aboriginal society. This probably included the manufacture of canoes, shields and other everyday implements.

Figure 11 Large Aboriginal Scar

Figure 12 Medium Aboriginal Scar

Although heritage is not within the scope of this flora and fauna assessment it should be noted that these trees have cultural importance.

7. REZONING AND LAND DEVELOPMENT - REQUIRMENTS OF THE NATIVE VEGETATION FRAMEWORK

As previously indicated in Section 3, native vegetation is protected under State legislation to ensure that losses are avoided where possible and that if vegetation is approved for removal, offsets are required to ensure overall gains are greater than overall losses.

The implication of this legislation to the development of the site is that all native trees are protected and their removal will require extraordinary justification as they currently pose no threat to an urban environment. As such, suggesting a particular tree is unsuitable for an urban environment is no reason to propose its removal. The built environment must accommodate the vegetation.

In addition to retention of trees wherever possible, there are rules regarding the zone around a tree that must be protected to ensure the health of that tree is not compromised. The following information, and Figure 13, regarding Tree Protection Zones was recently provided in a DSE Technical Information Sheet – Defining an acceptable distance for tree retention during construction works:

'Construction projects that involve earthworks can cause indirect losses of native vegetation. Of particular concern is the longer-term impact of soil compaction and excavation (e.g. trenching for pipelines, cabling, etc) close to trees and the effects on tree health. To prevent indirect losses of native vegetation it is recommended that Tree Retention Zones (TRZs) be implemented for the duration of construction activities. A TRZ is a specific area above and below the ground, with a radius 12 x the Diameter at Breast Height (DBH) (see figure 1). The TRZ of trees should be no less than 2 m or greater than 15 m. The TRZ of tree ferns should not be less than 1 m outside the crown projection. It is recommended that during construction activities, physical barriers be erected to delineate the TRZ. During construction, the following activities should be excluded from the TRZ:

- *machine excavation including trenching*
- *directional drilling that is less than 600 mm deep*
- *excavation for silt fencing*
- *storage*
- *preparation of chemicals, including preparation of cement products*
- *parking of vehicles and plant*
- *refuelling*
- *dumping of waste*
- *placement of fill*
- *temporary or permanent installation of utilities and signs*
- *physical damage to the tree.*

By default, a tree will be considered lost and require an offset if one of the above activities occurs over more than 10% of the total area of the TRZ. However, if a qualified arborist confirms that the specific works will not significantly damage the tree will be considered retained and no offset will be required. In some cases construction works may occur within areas that have been subject to previous soil disturbance through ongoing agricultural activities. Where work within the TRZ results in no additional soil disturbance than has occurred through previous ongoing agricultural activities, such as cropping or cultivation, the trees will not be considered lost and no offset will be required'.

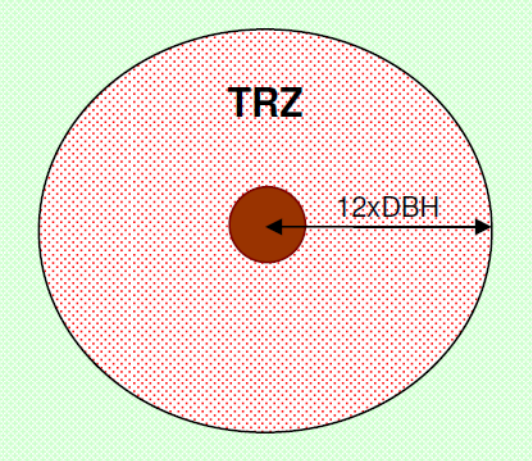

Figure 13 Tree Retention Zone (TRZ)

This advice suggests that the Tree Retention Zone is a maximum of 15m from each tree. Since the majority of trees are very large (i.e. ≥ 120cm DBH), the maximum TRZ radius of 15m would apply. Each tree within the subject site has been geolocated and the DBH measured. Tree Retention Zones can be determined for all trees on the site, but for simplicity during design planning, a 15 m radius protection envelope could be applied to all trees.

Should tree removal be approved, Table 4 indicates the offsets required for each tree assuming a **High** Conservation Significance. Note that the offsets must be provided within the same bioregion (Victorian Riverina) and be initiated as soon as possible after the loss occurs but no more than 1 year (seasonal requirements to be permitted).

Table 4 Offset requirements for tree removal

Tree Class	Protection offset	Recruitment offset
Very Large Old Tree (VLOT)	4	20
Large Old Tree (LOT)	2	10
Medium Old Tree (MOT)	1	5
Small Tree	-	5

8. CONCLUSIONS AND RECOMMENDATIONS

The site contains an abundance of scattered trees that should be retained as part of any future development. The obligations for protection and the 3 Step Approach have been detailed in this report, however, should tree removal be absolutely necessary, and approved, the requirements for offset have also been stated. It is advised that all indigenous trees should be retained as a matter of course.

The native ground layer vegetation has been mostly replaced by exotic species and would not be considered 'patch' vegetation anywhere within the project area. However, where a group of 3 or more trees project a canopy cover of at least 20%, this grouping would be considered a patch and additional assessment and offset actions will be required.

All native trees have been measured (DBH) and therefore each trees retention zone (TRZ) can be determined. However, the tree location was undertaken with a handheld GPS from one edge of the trunk and therefore precise locations may need to be resurveyed prior to detail design.

The natural drainage line does contain a high percentage of native ground cover, however, this area is fully contained within the Shepparton By-pass acquisition area and its disturbance has not been considered as part of this report.

The trees in the north-east corner of the property were observed to have cultural significance and also contained an abundance hollow habitat utilised by a range of fauna species. It is advised that any development in the vicinity of this area should be sensitive to these identified values and each large tree should be protected with an appropriate protection envelope. Careful consideration should also be given to ensure this area is not fragmented or cut off from adjoining vegetation or corridors.

The Goulburn River riparian area is an important flora and fauna corridor. Any opportunity to enhance areas of native vegetation adjacent to this corridor should be explored.

9. REFERENCES

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APPENDIX A EPBC PROTECTED MATTERS REPORT

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

EPBC Act Protected Matters Report: Coordinates

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 about the EPBC Act including significance guidelines, forms and application process details can be found at http://www.environment.gov.au/epbc/assessmentsapprovals/index.html

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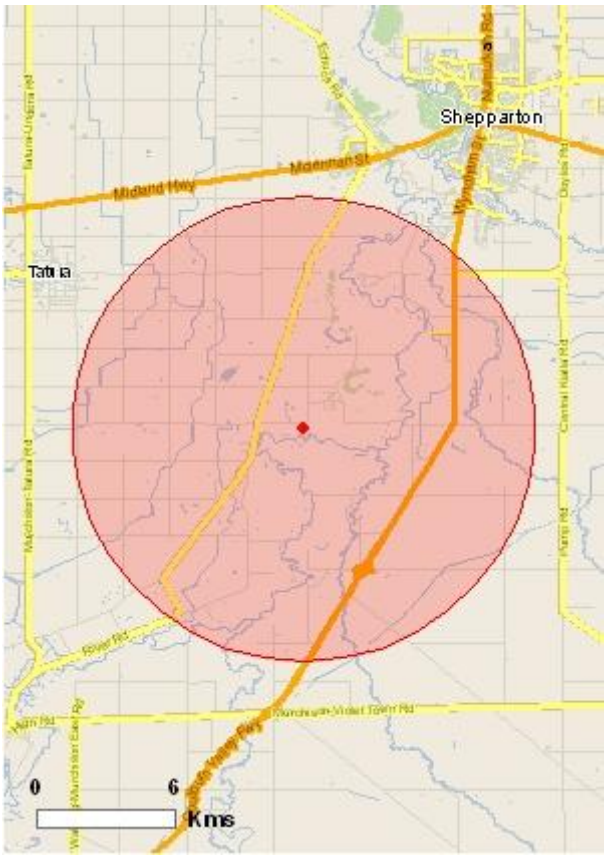

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

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 - see http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance (Ramsar Wetlands):	5
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communitites:	3
Threatened Species:	14
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 and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage/index.html

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

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. Information on EPBC Act permit requirements and application forms can be found at http://www.environment.gov.au/epbc/permits/index.html.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	9
Whales and Other Cetaceans:	None

Critical Habitats:	None
Commonwealth Reserves:	None

Report Summary for Extra Information

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

Place on the RNE:	1
State and Territory Reserves:	4
Regional Forest Agreements:	None
Invasive Species:	13
Nationally Important Wetlands:	1

Details

Matters of National Environmental Significance

Wetlands of International Significance (RAMSAR Sites) [Resource Information]

Name	Proximity
Coorong and lakes alexandrina and albert	Upstream from Ramsar site
Banrock station wetland complex	Upstream from Ramsar site
Riverland	Upstream from Ramsar site
Nsw central murray state forests	Upstream from Ramsar site
Gunbower forest	Upstream from Ramsar site

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
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community known to occur within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area

Threatened Species [Resource Information]

Name	Status	Type of Presence
BIRDS		
Anthochaera phrygia		
Regent Honeyeater [82338]	Endangered	Species or species habitat may occur within area
Botaurus poiciloptilus		

Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Lathamus discolor		
Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Pedionomus torquatus		
Plains-wanderer [906]	Vulnerable	Species or species habitat may occur within area
Polytelis swainsonii		
Superb Parrot [738]	Vulnerable	Species or species habitat may occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Vulnerable	Species or species habitat may occur within area
FISH		
Maccullochella peelii peelii		
Murray Cod, Cod, Goodoo [68443]	Vulnerable	Species or species habitat may occur within area
Macquaria australasica		
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
FROGS		
Litoria raniformis		
Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat likely to occur within area
INSECTS		
Synemon plana		
Golden Sun Moth [25234]	Critically Endangered	Species or species habitat may occur within area
MAMMALS		
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area
PLANTS		
Amphibromus fluitans		
River Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat may occur within area
REPTILES		
Aprasia parapulchella		
Pink-tailed Worm-lizard [1665]	Vulnerable	Species or species habitat likely to occur within area
Delma impar		
Striped Legless Lizard [1649]	Vulnerable	Species or species habitat may occur within area

Migratory Species [Resource Information]

Name	Status	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		

Cattle Egret [59542]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat may occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Xanthomyza phrygia		
Regent Honeyeater [430]	Endangered*	Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Rostratula benghalensis s. lat.		
Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		**[Resource Information]**
Name	Status	Type of Presence
Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may 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]		Species or species habitat may occur within area
Lathamus discolor		
Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Rostratula benghalensis s. lat.		
Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Extra Information

Places on the RNE [Resource Information]

Note that not all Indigenous sites may be listed.

Name	Status
Historic	
Calder Woodburn Memorial Avenue VIC	Registered

State and Territory Reserves [Resource Information]

Arcadia H59, VIC
Goulburn River, VIC
Goulburn River K50, VIC
Arcadia, VIC

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
Mammals		
Capra hircus Goat [2]		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
Oryctolagus cuniculus Rabbit, European Rabbit [128]		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		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat may occur within area
Nassella trichotoma Serrated Tussock, Yass River		Species or species habitat likely to occur within area

Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]	
[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 reichardtiji](#)	
Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]	Species or species habitat likely to occur within area
[Ulex europaeus](#)	
Gorse, Furze [7693]	Species or species habitat likely to occur within area

Nationally Important Wetlands **[Resource Information]**

[Lower Goulburn River Floodplain, VIC](#)

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 Heritage and Register of National Estate properties, Wetlands of International 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.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

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

-36.50095 145.33012

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:

-Department of Environment, Climate Change and Water, New South Wales
-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia
-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA 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, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-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.

Last updated: Thursday, 16-Sep-2010 09:13:25 EST

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APPENDIX B CONSERVATION STATUS LISTING

Conservation Status Listing

Scientific Name	**Common Name**	**FFG Listing**	**VICADV Listing**	**EPBC Listing**
		Flora		
Amphibromus fluitans	River Swamp Wallaby-grass	Rejected		Vulnerable
Cullen parvum	Small Scurf-pea	Listed	Endangered	
Fimbristylis velata	Veiled Fringe-sedge		Rare	
Juncus psammophilus	Sand Rush		Rare	
		Fauna		
Anas rhynchotis	Australasian Shoveler		Vulnerable	
Ardea modesta	Eastern Great Egret	Listed	Vulnerable	
Climacteris picumnus victoriae	Brown Treecreeper (south-eastern ssp.)		Near threatened	
Coturnix ypsilophora australis	Brown Quail		Near threatened	
Melanotaenia fluviatilis	Crimson-spotted Rainbowfish	Listed	Data deficient	
Nycticorax caledonicus hillii	Nankeen Night Heron		Near threatened	
Oxyura australis	Blue-billed Duck	Listed	Endangered	
Petaurus norfolcensis	Squirrel Glider	Listed	Endangered	
Phascogale tapoatafa tapoatafa	Brush-tailed Phascogale	Listed	Vulnerable	
Platalea regia	Royal Spoonbill		Vulnerable	
Pluvialis fulva	Pacific Golden Plover		Near threatened	
Porzana pusilla palustris	Baillon's Crake	Listed	Vulnerable	
Tringa glareola	Wood Sandpiper		Vulnerable	

APPENDIX C LIKELIHOOD OF OCCURRENCE

Likelihood of Occurrence - Rutherford Road Toolamba				
Conservation Status	**Scientific Name**	**Common Name**	**Habitat Information**	**Likelihood of Occurrence**
Flora				
EPBC - Vulnerable	*Amphibromus fluitans*	River Swamp Wallaby-grass	A wetland plant found besides swamps in grassy low open forest and riparian. It can also be found in roadside ditches.	Unlikely
EPBC - Endangered	*Cullen parvum*	Small Scurf-pea	Hound in grasslands and grassy woodlands on sites that are prone to flooding.	Unlikely
FFG - Listed	*Cullen parvum*	Small Scurf-pea	As Above	As Above
VICADV - Endangered	*Cullen parvum*	Small Scurf-pea	As Above	As Above
VICADV - Rare	*Fimbristylis velata*	Veiled Fringe-sedge	Rare in Victoria with few known populations. Known from a single population in the Yarra flats area. Grows in wet soil and mud in seasonally wet depressions.	Unlikely
VICADV - Rare	*Juncus psammophilus*	Sand Rush	Limited Information	Unlikely

Conservation Status	Scientific Name	Common Name	Habitat Information	Likelihood of Occurrence
Fauna				
Reptiles				
EPBC - Vulnerable	*Apraisia parapulchella*	Pink-tailed Worm-lizard	Inhabits sloping, open woodland areas with predominantly native grassy groundlayers. Commonly found beneath small, partially-embedded rocks spending considerable time in burrows beneath; constructed by and are often still inhabited by small black ants and termites.	Possibly
EPBC - Vulnerable	*Delma impar*	Striped Legless Lizard	Inhabits temperate lowland grasslands and grassy woodlands, although it is often found in unimproved paddocks or roadsides. It utilises cracks in ground, crevices under rocks, base of grass tussocks and in or under fallen timber.	Possibly

Frogs				
EPBC - Vulnerable	*Litoria rainformis*	Growling Grass Frog	Found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat. During the breeding season animals are found floating amongst aquatic vegetation (especially cumbungi or Common Reeds) within or at the edge of slow-moving streams, marshes, lagoons, lakes, farm dams and rice crops.	Unlikely

Mammals				
EPBC - Endangered	*Dasyurus maculatus maculatus*	Spotted-tail Quoll	Prefers mature wet forest habitat, especially in areas with rainfall 600 mm/year. Unlogged forests or forests with minimal disturbance by timber harvesting are also preferable as they require den sites in hollow logs or trees along with rock outcrops or caves. They also require relatively intact vegetation to house abundant food sources of birds and small mammals.	Unlikely
FFG - Listed	*Petaurus norfolcensis*	Squirrel Glider	Prefers extensive intact woodlands with significant shrub and litter layers. It inhabits dry sclerophyll forest and woodland and is absent from the dense coastal ranges. An important habitat for the species is remnant vegetation along roadsides and creek and river frontages in cleared pasture.	Possibly
VICADV - Endangered	*Petaurus norfolcensis*	Squirrel Glider	As Above	As Above
FFG - Listed	*Phascogale tapoatafa tapoatafa*	Brush-tailed Phascogale	Open dry foothill forests with little ground cover, typically associated with box, ironbark and Stringybark eucalyptus. They occur in low densities and forage over a very large home range. Hollows in dead or live trees provide preferred den sites.	Possibly
VICADV - Vulnerable	*Phascogale tapoatafa tapoatafa*	Brush-tailed Phascogale	As Above	As Above

Aves				
VICADV - Vulnerable	*Anas rhynchotis*	Australasian Shoveler	All kinds of wetlands, preferring large undisturbed heavily vegetated freshwater swamps. It is also found on open waters and occasionally along the coast.	Unlikely
EPBC - Endangered	*Anthochaera phyrygia*	Regent Honeyeater	Temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. They inhabit woodlands that support a significantly high abundance and bird species richness. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoe.	Unlikely
VICADV - Vulnerable	*Ardea modesta*	Eastern Great Egret	Has been reported in a wide range of wetland habitats (for example inland and coastal, freshwater and saline, permanent and ephemeral, open and vegetated, large and small, natural and artificial). In Australia, the largest breeding colonies, and greatest concentrations of breeding colonies, are located in near-coastal regions of the Northern Territory.	Unlikely
FFG - Listed	*Ardea modesta*	Eastern Great Egret	As Above	As Above
EPBC - Endangered	*Botaurus poiciloptilus*	Australian Bittern	Found in wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and/or reeds	Unlikely

VICADV - Near threatened	*Climacteris picumnus victoriae*	Brown Treecreeper (SE ssp.)	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains. Mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. Also found in mallee and River Red Gum and forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses. Usually not found in woodlands with a dense shrub layer and fallen timber is an important habitat component for foraging.	Possibly
VICADV - Near threatened	*Coturnix ypsilophora australis*	Brown Quail	Restricted to wetter, dense, tall grasslands. Regular cultivation makes it unlikely that the site supports habitat suitable for this species.	Unlikely
EPBC - Endangered	*Lathamus discolor*	Swift Parrot	Inhabits dry sclerophyll forests and woodlands, suburban parks and gardens and flowering fruit trees. Also found in extensive riparian forests and woodlands, and adjacent agricultural land.	Possibly
VICADV - Near threatened	*Nycticorax caledonicus hillii*	Nankeen Night Heron	Found wherever there is permanent water. It frequents well-vegetated wetlands, and is found along shallow river margins, mangroves, floodplains, swamps, and parks and gardens.	Unlikely
VICADV - Endangered	*Oxyura australis*	Blue-billed Duck	Almost wholly aquatic, and is seldom seen on land. Non-breeding flocks, often with several hundred individuals, congregate on large, deep open freshwater dams and lakes in autumn. The daylight hours are spent alone in small concealed bays within vegetation or communally in large exposed rafts far from the shore.	Unlikely
FFFG - Listed	*Oxyura australis*	Blue-billed Duck	As Above	As Above

EPBC - Vulnerable	*Pedionomus torquatus*	Plains-wanderer	Found in high quality, semi-arid, lowland native grasslands that typically occur on hard red-brown soils. These grasslands support a high diversity of plant species, including a number of state and nationally threatened species.	Unlikely
VICADV - Vulnerable	*Platalea regia*	Royal Spoonbill	Found in shallow freshwater and saltwater wetlands, intertidal mud flats and wet grasslands. Both permanent and temporary inland waters are used when available in the arid zone; the species will also use artificial wetlands such as sewage lagoons, salt fields, dams and reservoirs.	Unlikely
FFG - Listed	*Platalea regia*	Royal Spoonbill	As Above	As Above
VICADV - Near threatened	*Pluvialis fulva*	Pacific Golden Plover	This species usually inhabits coastal habitats, though it occasionally occurs around inland wetlands. They are less often recorded in terrestrial habitats, usually wetlands such as fresh, brackish or saline lakes, billabongs, pools, swamps and wet claypans, especially those with muddy margins and often with submerged vegetation or short emergent grass. Other terrestrial habitats inhabited include short (or, occasionally, long) grass in paddocks, crops or airstrips, or ploughed or recently burnt areas, and they are very occasionally recorded well away from water.	Unlikely
EPBC - Vulnerable	*Polytelis swansonii*	Superb Parrot	Found along timbered waterways and nearby well-watered woodlands, especially in River Red Gums along the Murray and Murrumbidgee Rivers. They are usually seen in family parties or small flocks.	Likely

VICADV - Vulnerable	*Porzana pusilla palustris*	Baillon's Crake	This species is migratory, wintering in east Africa and south Asia. In Australia, they are found in most areas where wetlands exist. It can be found foraging for insects and molluscs in the mud or shallow waters of swamps and dams.	Likely
FFG - Listed	*Porzana pusilla palustris*	Baillon's Crake	As Above	As Above
EPBC - Vulnerable	*Rostratula australis*	Australian Painted Snipe	Inhabits shallow freshwater wetlands, vegetated ephemeral and permanent lakes and swamps, and inundated grasslands. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber, and nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds.	Unlikely
VICADV - Vulnerable	*Tringa glareola*	Wood Sandpiper	Scattered in coastal areas and sparse inland. Commonly seen singly, or in small to large flocks in fresh or brackish wetlands such as rivers, water meadows, sewage farms, drains, lagoons and swamps.	Unlikely

Fishes				
EPBC - Vulnerable	*Maccullochella peelii peelii*	Murray Cod	Has the ability to live in a diverse range of habitats, including clear rocky streams through to slow flowing turbid rivers and billabongs. Usually found near complex structural cover such as large rocks, snags, overhanging vegetation and other woody structures. Considered a main channel specialist as it is frequently found in the main river channel and larger tributaries.	Unlikely
EPBC - Endangered	*Macquaria australasica*	Macquarie Perch	A riverine, schooling species. Prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks.	Unlikely
VICADV - Listed	*Melanotaenia fluviatilis*	Crimson-spotted Rainbowfish	The most southward living of all the Australian Rainbowfish species and lives in the streams of south-eastern Australia. It is found in New South Wales, South Australia and Victoria and can be encountered as south as the River Campaspe and River Goulburn. It is found in many different types of waterways, from streams and drainage ditches to ponds, backwaters, overflows and reservoirs.	Unlikely

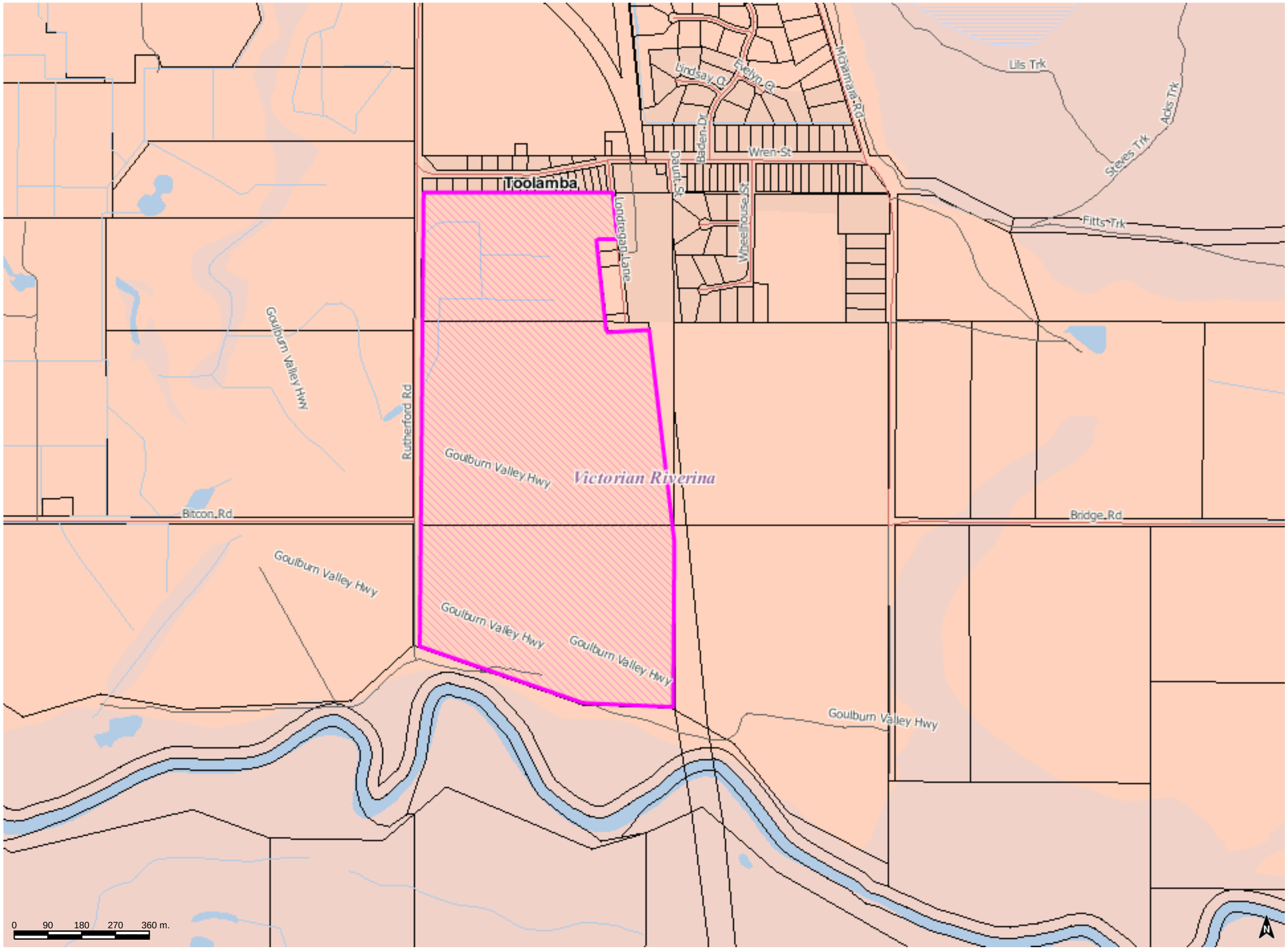
Threatened Ecological Communities

Conservation Status	Common Name	Habitat Information	Likelihood of Occurrence
EPBC - Critically Endangered	White Box-Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Box – Gum Grassy Woodlands and Derived Grasslands are characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and the dominance, or prior dominance, of White Box, Yellow Box or Blakely's Red Gum trees. The tree-cover is generally discontinuous and consists of widely-spaced trees of medium height in which the canopies are clearly separated.	Not present on subject site.
EPBC - Endangered	Buloke Woodlands of the Riverina and Murray - Darling Depression Bioregions	Generally characterised as woodland or open woodland with a well-developed ground stratum that is usually grassy, but also includes many subshrubs and herbs; some communities have understoreys that are predominantly shrubby or herbaceous. Most communities lack a well-developed tall shrub layer. Buloke is common to all communities, but slender cypress-pine and grey box may be structurally dominant in some. The composition of the ground stratum varies considerably among communities.	Not present on subject site.
EPBC - Endangered	Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	An ecological community occupying a position in the landscape that is transitional between the temperate woodlands and forests of the lower slopes and tablelands of south-eastern Australia, and the semi-arid communities further inland. Typically occurs in landscapes of low-relief on productive soils derived from alluvial or colluvial materials but may occur on a range of substrates. A tree canopy dominated by Eucalyptus microcarpa (Grey Box) is typically present with a range of other associated tree species may be present but do not dominate. The understorey comprises a sparse shrub layer and a species-rich ground layer of grasses and herbs. Chenopods are often present, particularly in drier parts of the range. Includes patches of derived grassland where a tree canopy of Grey Box was known to have been present but has been removed, and the native ground layer remains largely intact.	Not present on subject site.

APPENDIX D BIOREGION AND EVC MAPS

Victorian Riverina Bioregion

Department of Sustainability and Environment



ROADS
- Freeway
- Highway
- Main Road
- Secondary Road
- Local Road
- 2WD (Unsealed)
- 4WD Only
- Walking or Cycle Track

WATERCOURSES

UNNAMED DRAINAGE LINES

APPROVED PARCELS

WATERBODIES
- Watercourse Area
- Permanent Waterbody
- Wetland Area
- Inundation Area

BUILT UP AREAS

BIOREGIONS
- 1.1 Lowan Mallee (LoM)
- 1.2 Murray Mallee (MuM)
- 1.3 Wimmera (Wim)
- 2.1 Glenelg Plain (GleP)
- 2.2 Bridgewater (Brid)
- 3.1 Victorian Volcanic Plain (VVP)
- 4.1 Victorian Riverina (VRiv)
- 4.2 Murray Scroll Belt (MSB)
- 4.3 Robinvale Plains (RobP)
- 4.4 Murray Fans (MuF)
- 5.1 Gippsland Plain (GipP)
- 5.2 Otway Plain (OtP)
- 5.3 Warrnambool Plain (WaP)
- 6.1 Goldfields (Gold)
- 6.2 Central Victorian Uplands (CVU)
- 6.3 Greater Grampians (GGr)
- 6.4 Dundas Tablelands (DunT)
- 7.1 Northern Inland Slopes (NIS)
- 8.1 East Gippsland Lowlands (EGL)
- 8.2 East Gippsland Uplands (EGU)
- 9.1 Wilsons Promontory (WPro)
- 10.1 Highlands - Southern Fall (HSF)
- 10.2 Highlands - Northern Fall (HNF)
- 10.3 Otway Ranges (OtR)
- 10.4 Strzelecki Ranges (Strz)
- 10.5 Monaro Tablelands (MonT)
- 10.6 Highlands - Far East (HFE)
- 11.1 Victorian Alps (VAlp)

Map Scale 1:10,000

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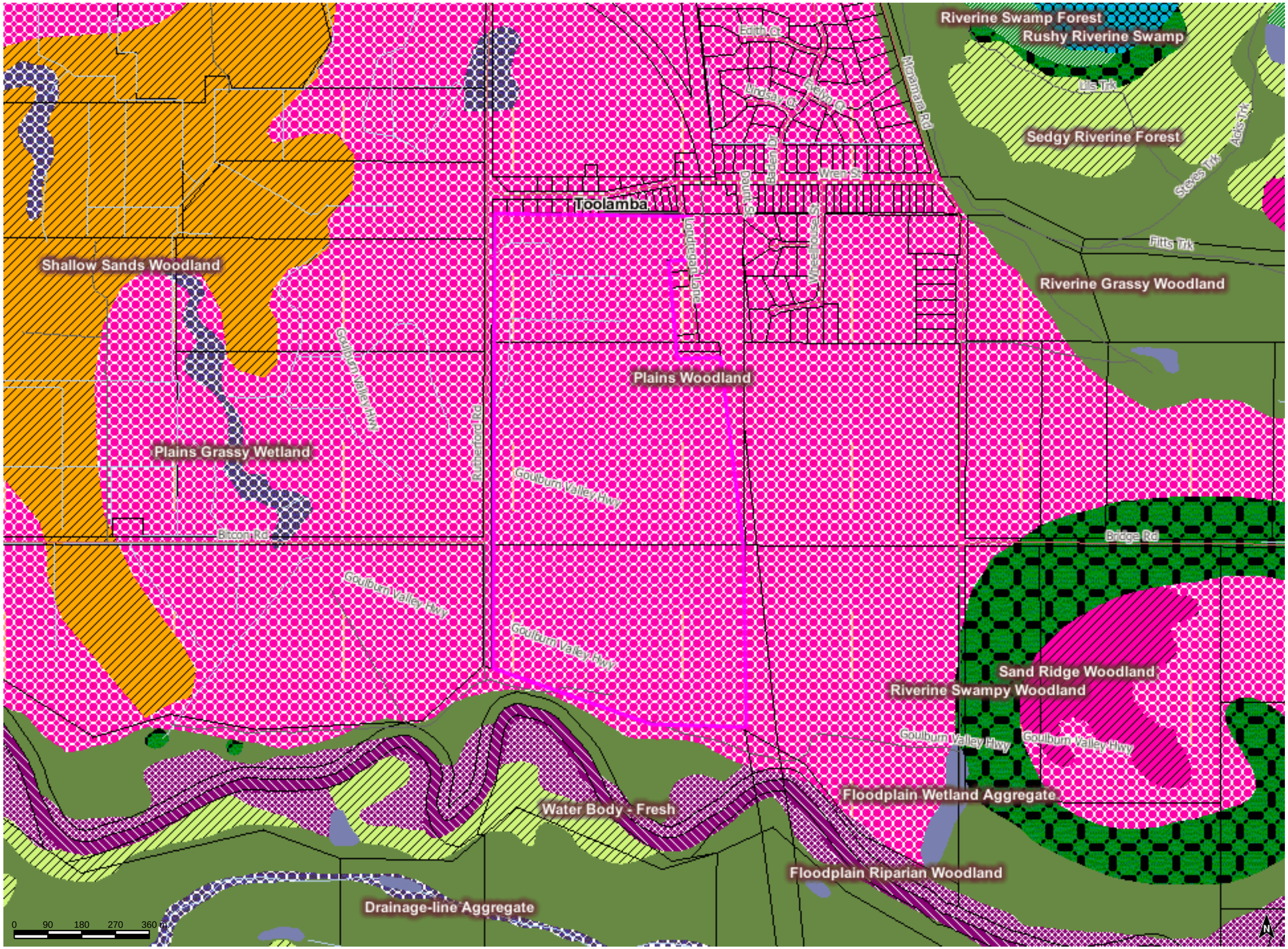
State Government Victoria

Plains Woodland EVC 1750

Department of Sustainability and Environment



ROADS
- Freeway
- Highway
- Main Road
- Secondary Road
- Local Road
- 2WD (Unsealed)
- 4WD Only
- Walking or Cycle Track

WATERCOURSES

UNNAMED DRAINAGE LINES

APPROVED PARCELS

1750 EVCs
- 814 Riverine Swamp Forest
- 815 Riverine Swampy Woodland
- 816 Sedgy Riverine Forest
- 992 Water Body - Fresh
- 56 Floodplain Riparian Woodland
- 804 Rushy Riverine Swamp
- 125 Plains Grassy Wetland
- 168 Drainage-line Aggregate
- 172 Floodplain Wetland Aggregate
- 264 Sand Ridge Woodland
- 803 Plains Woodland
- 882 Shallow Sands Woodland
- 295 Riverine Grassy Woodland

WATERBODIES
- Watercourse Area
- Permanent Waterbody
- Wetland Area
- Inundation Area

BUILT UP AREAS

Map Scale 1:10,000

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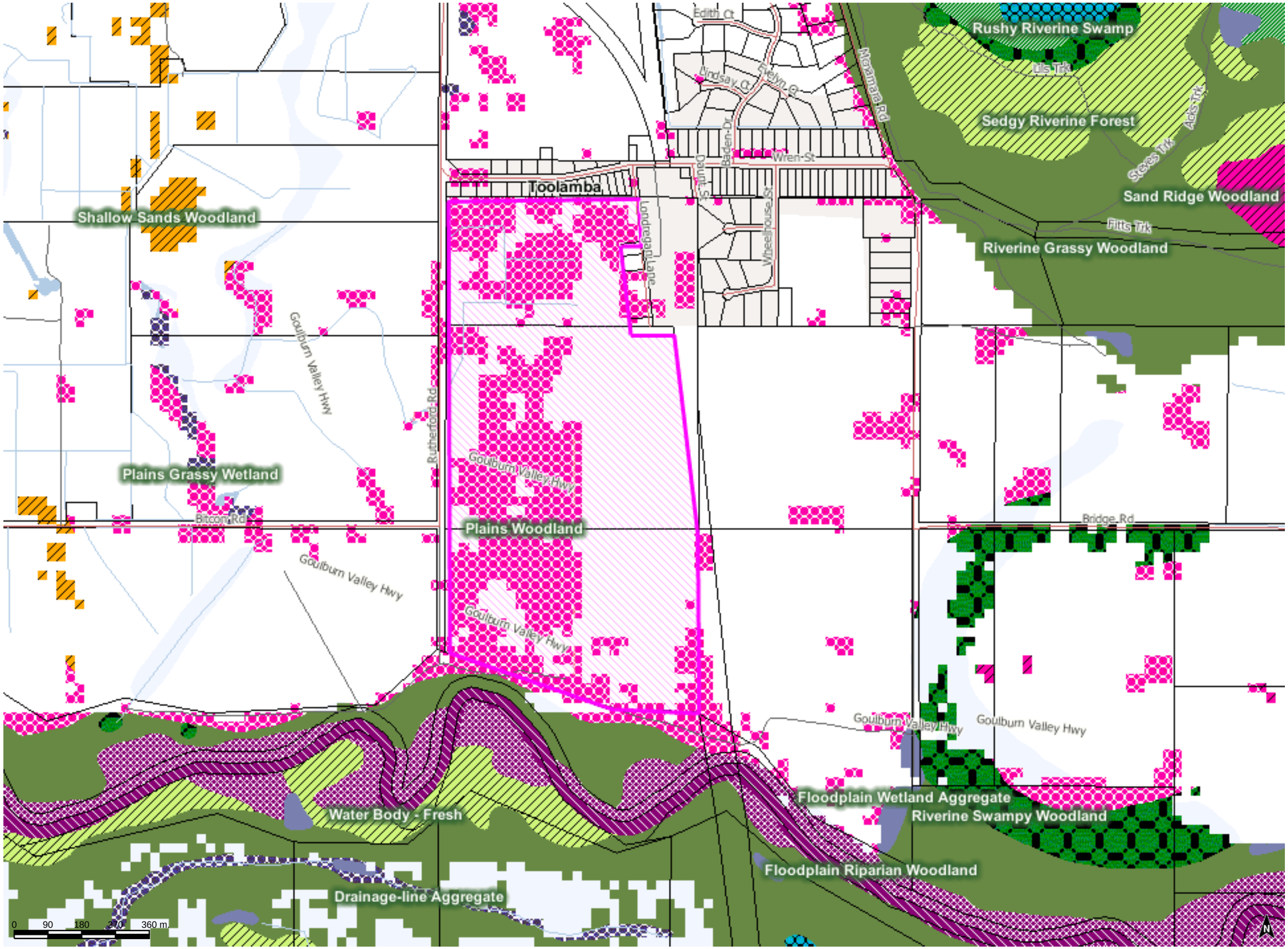
Plains Woodland EVC 2005

Department of Sustainability and Environment



ROADS
- Freeway
- Highway
- Main Road
- Secondary Road
- Local Road
- 2WD (Unsealed)
- 4WD Only
- Walking or Cycle Track

WATERCOURSES

UNNAMED DRAINAGE LINES

APPROVED PARCELS

ECOLOGICAL VEGETATION CLASSES
- 814 Riverine Swamp Forest
- 815 Riverine Swampy Woodland
- 816 Sedgy Riverine Forest
- 992 Water Body - Fresh
- 56 Floodplain Riparian Woodland
- 804 Rushy Riverine Swamp
- 125 Plains Grassy Wetland
- 168 Drainage-line Aggregate
- 172 Floodplain Wetland Aggregate
- 264 Sand Ridge Woodland
- 803 Plains Woodland
- 882 Shallow Sands Woodland
- 295 Riverine Grassy Woodland

WATERBODIES
- Watercourse Area
- Permanent Waterbody
- Wetland Area
- Inundation Area

BUILT UP AREAS

Map Scale 1:10,000

Biodiversity Interactive Map A3 Landscape

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State Government Victoria

APPENDIX E FLORA AND FAUNA SPECIES LISTS

Species List

Flora - Paddock/South East Boundary Zone

Scientific Name	Common Name
Arctotheca calendula*	Capeweed
Atropa belladonna*	Deadly Nightshade
Avena sativa*	Oats
Capsella bursa-pastoris*	Shepherd's Purse
Cucumis myriocarpus*	Paddy Melon
Echium plantagineum*	Patersons Curse
Erodium botrys*	Long Storksbill
Eucalyptus camaldulensis	River Red Gum
Eucalyptus cladoocalyx	Sugar Gum
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Grey Box
Hordeum leporinum*	Barley grass
Hypochoeris radicata*	Flatweed
Lolium perenne*	Perennial Ryegrass
Lycium ferocissimum*	African Boxthorn
Marrubium vulgare*	Horehound
Modiola caroliniana*	Red-flowered Mallow
Oxalis pes-caprae*	Soursob
Paspalum dilatatum*	Paspalum
Plantago major*	Greater Plantain
Polygonum aviculare*	Wireweed
Rumex crispus*	Curled Dock
Schinus areira*	Pepper Tree
Solanum nigrum*	Black-berry Nightshade
Sonchus asper*	Rough Sowthistle
Sonchus oleraceus*	Common Sowthistle
Trifolium sp.*	Clover
Triticum aestivum*	Wheat
Urtica incisa	Stinging Nettle
Xanthium spinosum*	Bathurst Burr

Flora – Drainage Line/Wetlands

Scientific Name	Common Name
Amphibromus neesii	Swamp Wallaby (s)
Eleocharis acuta	Common Spike-rush
Eragrostis brownii	Browns Lovegrass
Lythrum hyssopifolia	Lythrum
Myriophyllum propinquum	Common Water Milfoil
Potamogeton sulcatus	Potamogeton
Typha orientalis	Typha

Flora - North East Corner Zone	
Scientific Name	Common Name
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Grey Box
Lomandra filiformis	Wattle Mat-rush
Fauna	
Cacatua galerita	Sulphur-crested Cockatoo
Cacatua sanguinea	Little Corella
Chenonetta jubata	Australian Wood Duck
Climacteris picumnus	Brown Treecreeper
Corcorax melanorhamphos	White-winged Chough
Corvus coronoides	Australian Raven
Crinia parinsignifera	Beeping Froglet
Crinia signifera	Common Froglet
Eolophus (Cacatua) roseicapillus	Galah
Grallina cyanoleuca	Magpie Lark
Gymnorhina tibicen	Australian Magpie
Hirundo rustica	Welcome Swallow
Malurus cyanochlamys	Blue Wren
Manorina melanophrys	Noisy Miner
Neochmia temporalis	Red-browed Fire Tail
Ocyphaps (Geophaps) lophotes	Crested Pigeon
Pardalotus striatus	Striated Pardalote
Petroica goodenovii	Red-capped Robin (female)
Platycercus eximinus	Eastern Rosella
Podargus strigoides	Tawny Frogmouth
Psephotus haematonotus	Red-rumped Parrot
Pseudocheirus peregrinus	Ringtail Possum
Rhipidura leucophrys	Willie Wagtail
Strepera graculina	Pied Currawong
Threskiornis spinicollis	Straw-necked Ibis
Trichosurus vulpecula	Brush-tailed Possum
Vanellus miles	Masked Lapwing
	Eagle sp.

APPENDIX F FIELD TREE DATA

Field Tree Data

Tree	Zone	Species	DBH*	Health	Hollows	Size
1	SE Boundary	RRG	54	G	A	M
2	SE Boundary	RRG	94	G	A	L
3	SE Boundary	RRG	44	M	A	S
4	SE Boundary	RRG	114	M	A	VL
5	SE Boundary	RRG	72	G	A	L
6	SE Boundary	RRG	85	G	A	L
7	SE Boundary	RRG	75	G	A	L
8	Paddock	SG	167	G	S	VL
9	Paddock	SG	160	M	S	VL
10	Paddock	YB	35	G	A	S
11	Paddock	YB	88	G	S	L
12	Paddock	YB	132	M	S	VL
13	Paddock	GB	110	G	S	VL
14	Paddock	YB	113	D	S	VL
15	Paddock	YB	89	M	S	L
16	Paddock	YB	75	M	S	L
17	Paddock	YB	147	P	S	VL
18	Paddock	RRG	145	M	L	VL
19	Paddock	RRG	112	G	S	VL
20	Paddock	RRG	105	M	S	VL
21	Paddock	YB	147	G	S	VL
22	Paddock	YB	135	G	S	VL
23	Paddock	YB	140	M	S	VL
24	Paddock	YB	148	M	S	VL
25	Paddock	YB	86	G	S	L
26	Paddock	YB	82	G	A	L
27	Paddock	YB	136	G	S	VL
28	Paddock	YB	75	M	S	L
29	Paddock	YB	96	G	A	L
30	Paddock	YB	128	M	S	VL
31	Paddock	YB	128	M	S	VL
32	Paddock	YB	83	G	A	L
33	Paddock	RRG	52	M	A	M
34	Paddock	RRG	239	M	S	VL
35	Paddock	RRG	101	G	A	L
36	Paddock	YB	107	M	A	VL
37	Paddock	YB	53	M	A	M
38	Paddock	YB	102	D	A	L
39	Paddock	YB	129	M	S	VL
40	Paddock	YB	161	G	A	VL
41	Paddock	YB	116	G	A	VL
42	Paddock	YB	119	M	A	VL
43	Paddock	YB	117	D	L	VL

Tree	Zone	Species	DBH*	Health	Hollows	Size
44	Paddock	YB	108	G	A	VL
45	Paddock	YB	147	M	A	VL
46	Paddock	YB	185	G	A	VL
47	Paddock	YB	82	M	A	L
48	Paddock	YB	112	G	A	VL
49	Paddock	YB	79	G	A	L
50	Paddock	YB	99	G	A	L
51	Paddock	YB	85	G	A	L
52	Paddock	YB	66	G	A	M
53	Paddock	YB	66	P	A	M
54	Paddock	YB	63	G	A	M
55	House	YB	128	G	S	VL
56	NE Corner	GB	61	G	A	M
57	NE Corner	GB	45	G	A	S
58	NE Corner	GB	116	M	S	VL
59	NE Corner	GB	91	G	S	L
60	NE Corner	GB	105	G	S	VL
61	NE Corner	GB	110	G	S	VL
62	NE Corner	GB	117	M	S	VL
63	NE Corner	GB	111	G	L	VL
64	NE Corner	GB	161	G	L	VL
65	NE Corner	GB	77	M	S	L
66	NE Corner	GB	104	M	L	L
67	NE Corner	GB	95	M	S	L
68	NE Corner	GB	135	G	L	VL
69	NE Corner	GB	98	M	S	L
70	NE Corner	GB	81	M	S	L
71	NE Corner	GB	77	P	S	L
72	NE Corner	GB	98	M	S	L
73	NE Corner	WB	144	M	L	VL
74	NE Corner	WB	142	M	S	VL
75	NE Corner	GB	100	G	S	L
76	NE Corner	WB	72	G	S	L
77	NE Corner	GB	126	M	A	VL
78	NE Corner	WB	65	M	S	M
79	NE Corner	GB	136	G	L	VL
80	NE Corner	GB	135	G	L	VL
81	NE Corner	GB	45	M	S	S
82	NE Corner	GB	76	M	S	L
83	NE Corner	WB	110	G	S	VL
84	NE Corner	WB	89	M	S	L
85	NE Corner	WB	80	G	S	L
86	NE Corner	WB	100	G	L	L
87	NE Corner	WB	79	G	S	L
88	Paddock	RRG	120	G	A	VL

Tree	Zone	Species	DBH*	Health	Hollows	Size
89	Paddock	RRG	119	M	A	VL
90	Paddock	GB	132	G	S	VL
91	Paddock	GB	152	G	S	VL
92	Paddock	GB	174	G	S	VL
93	Paddock	GB	171	G	S	VL
94	Paddock	GB	152	M	S	VL
95	Paddock	GB	137	G	S	VL
96	Paddock	GB	166	G	S	VL
97	Paddock	GB	167	G	S	VL
98	Paddock	GB	128	M	S	VL
99	Paddock	GB	144	G	S	VL
100	Paddock	GB	168	G	S	VL
101	Paddock	GB	145	G	S	VL
102	Paddock	GB	118	P	L	VL
103	Paddock	GB	127	P	L	VL
104	Paddock	GB	129	G	S	VL
105	Paddock	YB	91	M	L	L
106	Paddock	YB	126	G	S	VL
107	Paddock	YB	105	G	A	VL
108	Paddock	YB	174	G	S	VL
109	Paddock	GB	145	M	S	VL
110	Paddock	YB	134	G	S	VL
111	Paddock	YB	118	G	S	VL
112	Paddock	YB	116	G	S	VL
113	Paddock	YB	138	G	S	VL
114	Paddock	YB	156	G	S	VL
115	Paddock	YB	115	G	S	VL
116	Paddock	YB	55	G	S	M
117	Paddock	YB	120	M	S	VL
118	Paddock	YB	124	G	S	VL
119	Paddock	YB	131	G	S	VL
120	Paddock	YB	84	G	S	L
121	Paddock	YB	85	P	A	L
122	Paddock	YB	136	G	L	VL
123	Paddock	YB	94	G	S	L
124	Paddock	YB	122	G	S	VL
125	Paddock	YB	172	G	S	VL
126	Paddock	YB	81	G	S	L
127	Paddock	YB	139	G	S	VL
128	Paddock	YB	106	G	L	VL
129	Paddock	GB	118	G	S	VL
130	Paddock	GB	150	G	S	VL
131	Paddock	GB	102	G	S	L
132	Paddock	GB	166	G	L	VL
133	Paddock	GB	140	G	S	VL

Tree	Zone	Species	DBH*	Health	Hollows	Size
134	Paddock	GB	163	G	S	VL
135	Paddock	GB	132	G	S	VL
136	Paddock	GB	105	D	L	VL
137	Paddock	YB	134	M	S	VL

DBH* - Diameter Breast Height cm, 1.3 meters from natural surface level (NSL)

Species Abbreviation	Common Name	Scientific Name
WB	White Box	*Eucalyptus albens*
RRG	River Red Gum	*Eucalyptus camaldulensis*
SG	Sugar Gum	*Eucalyptus cladocalyx*
YB	Yellow Box	*Eucalyptus melliodora*
GB	Grey Box	*Eucalyptus microcarpa*

Health Abbreviation	Definition
G	Good ≥ 80 % of expected healthy foliage cover
M	Medium 40 – 79 % of expected healthy foliage cover
P	Poor ≤ 39 % of expected healthy foliage cover
D	Dead 0 % foliage cover

Hollows Abbreviation	Definition
L	Large
S	Small
A	Absent

Size Class Abbreviation	Definition
VL	Very large old - ≥ 1.5*70cm = 105cm plus
L	Large old - ≥ 70cm = 70-104cm
M	Medium old -≥ 0.75*70cm = 52-69cm
S	Small ≤ 51 cm