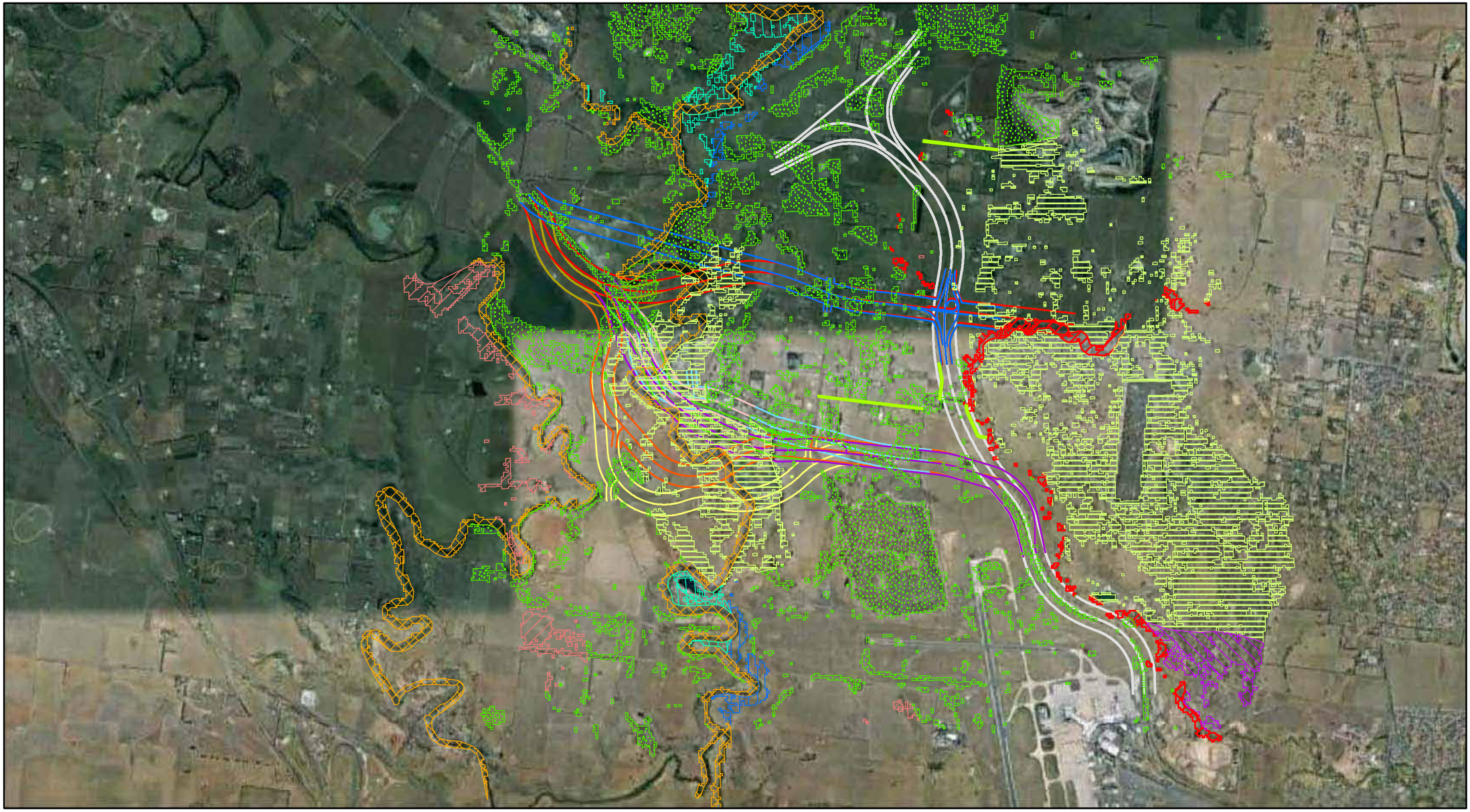

Figure 12: Alignments overview and DSE 2005 EVC mapping

Project: Tullamarine Freeway Extension

Client: VicRoads

Project No.: 10155	Date: 15/02/2011	Created By: B.Wallach/ M.Ghasemi

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7. IMPACTS AND REGULATORY IMPLICATIONS

7.1. Direct impacts of the route alignments

There are ten alignments being considered for the OMR link to Melbourne Airport and Bulla Bypass as well as the access restoration areas. Impacts that may result from the construction and operation of a new freeway-standard road in the study area are listed below. The extent to which these impacts occur along each alternative route alignment is considered in Table 4.

- Removal of native vegetation in the form of remnant patch, scattered tree, and/or the removal of degraded treeless vegetation;
- Removal of fauna habitat;
- Increased risk of road fatalities of wildlife where movement of fauna occurs; and
- Impacts on Deep Creek, including erosion, sedimentation and altered run-off and pollution.

Table 4 also indicates the legislation and planning provisions that would need to be addressed given the potential impacts of each alignment.

The Australian Platypus Conservancy has indicated that there are records of Platypus or that habitat is potentially better for breeding on the Deep Creek where alignments A, B, D and H cross the creek. Therefore there would be lower impacts on the Platypus and its habitat if alignment options E, F or G were chosen.

Table 4 also provides a qualitative assessment of the comparative impact of each alignment. This is based on the number of matters impacted. A 'higher' impact is assigned to an alignment that may result in three out of four of the impacts described above. A 'moderate' impact is indicated if two of the impacts above are relevant. A 'lower' impact is indicated if one or none of the impacts above is possible.

Based on this evaluation, relative impact levels are summarised below.

- Alignments A, B, C, D, H and F-G are considered to have relatively higher impacts on flora and fauna;
- Alignments E, F and G are considered to have a more moderate impact on flora and fauna;
- Alignment Tulla is considered to have a comparatively lower impact on flora and fauna.
- The access restoration road areas have a low impact on flora and fauna.

Table 3: Comparative impacts of each alignment

Alignment Option	Potential Impacts	Possible Mitigation Measures	Legislation applicable*	Impact Rank#
A	Removal of some scattered trees, fauna habitat, and impacts to Deep Creek. Two EPBC Act listed communities (Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia and Grassy Eucalypt woodland of the Victorian Volcanic Plain) may occur within this alignment. One known record of a threatened flora species occurs within this alignment, although it is unlikely to have persisted. Impacts on higher potential Platypus breeding habitat in Deep Creek.	▪ Careful design of actual road to avoid as much native vegetation as possible ▪ Avoidance of Grey Box Woodland ▪ Careful design and construction of Deep Creek crossing to avoid impacts on waterway and Platypus.	▪ CALP Act (waterway works) ▪ EPBC Act (Grey Box Woodland) ▪ NVMF (native vegetation and scattered trees)	Higher
B	Removal of some scattered trees (more than in A), fauna habitat, and impacts to Deep Creek. Two EPBC Act listed communities (Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia and Grassy Eucalypt woodland of the Victorian Volcanic Plain) may occur within this alignment. One known record of a threatened flora species occurs within this alignment, although it is unlikely to have persisted. Impacts on higher potential Platypus breeding habitat in Deep Creek.	▪ Careful design of actual road to avoid as much native vegetation as possible ▪ Avoidance of Grey Box Woodland ▪ Careful design and construction of Deep Creek crossing to avoid impacts on waterway and Platypus.	▪ CALP Act (waterway works) ▪ EPBC Act (Grey Box Woodland) ▪ NVMF (native vegetation and scattered trees)	Higher
C	Removal of Hills Herb-rich Woodland (EVC 71), possible EPBC Act listed Plains Grassy Woodland (EVC 55), scattered trees, fauna	▪ Careful design of actual road to avoid as much native	▪ CALP Act (waterway works) ▪ EPBC Act (Plains	Higher

	habitat. Impacts on higher potential Platypus breeding habitat in Deep Creek. No known records of threatened species.	vegetation as possible ▪ Avoid Plains Grassy Woodland ▪ Careful design and construction of Deep Creek crossing to avoid impacts on waterway and Platypus.	Grassy Woodland) ▪ NVMF (native vegetation and scattered trees)	
D	Removal of Hills Herb-rich Woodland (EVC 71), possible EPBC Act listed Plains Grassy Woodland (EVC 55), scattered trees, fauna habitat, and impacts on higher potential Platypus breeding habitat in Deep Creek. No known records of threatened species.	▪ Careful design of actual road to avoid as much native vegetation as possible ▪ Avoid Plains Grassy Woodland ▪ Careful design and construction of Deep Creek crossing to avoid impacts on waterway and Platypus.	▪ CALP Act (waterway works) ▪ EPBC Act (Plains Grassy Woodland) ▪ NVMF (native vegetation and scattered trees)	Higher
E	Removal of Stream Bank Shrubland (EVC 851), a small number of scattered trees, limited areas of fauna habitat, and impacts on a section of Deep Creek not considered potentially to provide breeding habitat for the platypus. No known records of threatened species. Possible impacts on EPBC Act listed communities (Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands	▪ Careful design of actual road to avoid as much native vegetation as possible ▪ Avoidance of Grey Box Woodland ▪ Careful design and construction of Deep	▪ CALP Act (waterway works) ▪ EPBC Act (Grey Box Woodland) ▪ NVMF (native vegetation and scattered trees)	Moderate

	and Derived Native Grasslands of South-eastern Australia and Grassy Eucalypt woodland of the Victorian Volcanic Plain) in eastern extension of this alignment	Creek crossing to avoid impacts on waterway condition.		
F	Removal of Stream Bank Shrubland (EVC 851), a small number of scattered trees, fauna habitat, and impacts and impacts on a section of Deep Creek not considerd potentially to provide breeding habitat for the platypus. Two EPBC Act listed communities may occur within this alignment. One known record of a threatened flora species occurs within this alignment although it is unlikely to have persisted.	▪ Careful design of actual road to avoid as much native vegetation as possible ▪ Avoidance of Grey Box Woodland ▪ Careful design and construction of Deep Creek crossing to avoid impacts on waterway condition	▪ CALP Act (waterway works) ▪ EPBC Act (Grey Box Woodland) ▪ NVMF (native vegetation and scattered trees)	Moderate
G	Removal of Stream Bank Shrubland (EVC 851), fauna habitat, and impacts to a section of Deep Creek not considered potentially to provide breeding habitat for the platypus. No known records of threatened species.	▪ Careful design of actual road to avoid as much native vegetation as possible ▪ Careful design and construction of Deep Creek crossing to avoid impacts on waterway condition.	▪ CALP Act (waterway works) ▪ NVMF (native vegetation and scattered trees)	Moderate
H	Removal of Hills Herb-rich Woodland (EVC 71), Plains Grassy Woodland (EVC 55), a small number of scattered trees and fauna habitat. No known records of threatened species. Impacts on higher potential Platypus breeding habitat in Deep Creek.	▪ Careful design of actual road to avoid as much native vegetation as possible ▪ Careful design and	▪ CALP Act (waterway works) ▪ NVMF (native vegetation and scattered trees)	Higher

		construction of Deep Creek crossing to avoid impacts on waterway and Platypus.		
F/G	Removal of Stream Bank Shrubland (EVC 851), a small number of scattered trees, fauna habitat, and impacts to a section of Deep Creek not considered potentially to provide breeding habitat for the platypus. Two EPBC Act listed communities (Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia and Grassy Eucalypt woodland of the Victorian Volcanic Plain) may occur within this alignment. One known record of a threatened flora species occurs within this alignment.	▪ Careful design of actual road to avoid as much native vegetation as possible ▪ Avoidance of Grey Box Woodland ▪ Careful design and construction of Deep Creek crossing to avoid impacts on waterway condition.	▪ CALP Act (waterway works) ▪ EPBC Act (Grey Box Woodland) ▪ NVMF (native vegetation and scattered trees)	Higher
Tulla	Removal of very few scattered trees. Two EPBC Act listed communities (Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia and Grassy Eucalypt woodland of the Victorian Volcanic Plain) may occur within this alignment. No known records of threatened species.	▪ Careful design of actual road to avoid as much native vegetation as possible ▪ Avoidance of Grey Box Woodland	▪ EPBC Act (Grey Box Woodland) ▪ NVMF (native vegetation and scattered trees)	Lower
Access Restoration Roads	These areas consist of disturbed land and have a high cover of weeds present. Planted trees including Sugar Gums and Cypress Pines are common within these areas.	▪ Retain planted trees where possible as they are habitat for bird species.	▪ N/A	Low

* CALP Act = Catchment and Land Protection Act 1994;EPBC Act = Environment Protection and Biodiversity Conservation Act 1999; NVMF = Cl. 52.17 and Cl. 15.09 of the City of Hume Planning Scheme; # See section 7.1 for explanation

7.2. Planning controls

7.2.1. State provisions

Destruction, lopping or removal of native vegetation on allotments of 0.4 hectares or more requires a planning permit under Clause 52.17 of all Victorian Planning Schemes. This includes the removal of dead trees with a DBH of 40 centimetres or greater, native degraded treeless vegetation and/or any individual scattered native plants.

A permit would be required under Clause 52.17 for the removal of native vegetation for the development of the OMR link to Melbourne Airport and Bulla Bypass. Based on the assessment of impacts in section 7.1, all alternative route alignments would require a planning permit for the removal of a varying amount of native vegetation.

Before issuing a planning permit, Responsible Authorities are obligated to refer to Clause 15.09 (Protection of Flora and Fauna) in the Planning Scheme. This refers in turn to the Native Vegetation Management Framework, discussed in the following section.

Approval or any works in waterways associated with the crossing of Deep Creek would be required from Melbourne Water under the state *Catchment and Land Protection Act 1994* (CALP Act).

7.2.2. Local provisions

The steep escarpments that occur along Deep Creek near the Bulla Township are covered by an Environmental Significance Overlay – Schedule 1 (ESO1). The overlay covers a number of waterways within the Hume City Council that are considered to have significant visual and geological features of the rural landscape and which serve important ecological, drainage and recreational functions. This overlay aims to protect and enhance the health and vitality of the aquatic ecosystem.

The proposed works will require a planning permit if any native vegetation is proposed to be removed within the ESO1. A planning permit would also be required if any degradation is expected along Deep Creek. Specific construction control measures should however be put in place to avoid any impact on this aquatic ecosystem.

7.3. Native Vegetation Management Framework

7.3.1. How the Framework operates

Any proposal that requires a permit under Clause 52.17 to remove native vegetation from the study area must demonstrate that the three-step approach of 'Net Gain' outlined in the Framework has been applied. This approach is hierarchical and includes the following principles:

- Adverse impacts on native vegetation should be ***avoided***, particularly removal of vegetation.
- Where impacts cannot be avoided, impacts should be ***minimised*** through responsive planning and design, with input from relevant experts.

- Appropriate ***offsets*** need to be identified to compensate for native vegetation removal.

A combination of project design and offsetting should aim to achieve a net gain in the area and quality of native vegetation across Victoria.

Responses to planning permit applications to remove native vegetation vary depending on the conservation significance of the vegetation proposed for removal. Conservation significance determines both the likelihood of approval and, importantly, the scale of the required offset. This is summarised in Table 4.

Table 4: Likely response to applications for removal of intact native vegetation

Framework conservation significance	Likely response to application for clearing	Likely offset requirements
VERY HIGH	Clearing not permitted unless exceptional circumstances apply. Offset Management Plan to be submitted with application.	Substantial Net Gain At least 2 X calculated loss in habitat hectares plus a large tree protection and replacement offset if any large trees are removed
HIGH	Clearing generally not permitted	Net Gain At least 1.5 X calculated loss in habitat hectares plus a large tree protection and replacement offset if any large trees are removed
MEDIUM	Clearing generally not permitted	Equivalent Gain At least 1 X calculated loss in habitat hectares plus a large tree protection and replacement offset if any large trees are removed
LOW	Clearing may be permitted but only as part of an appropriate sustainable use response	Equivalent Gain At least 1 X calculated loss in habitat hectares

The conservation significance of native vegetation within the study area can only be determined through a detailed flora and fauna assessment that includes habitat hectare assessment of vegetation remnants and surveys for rare and threatened species, where relevant (see later).

Offset targets are directly related to the habitat hectare value of the removed vegetation. They can comprise indigenous vegetation retained for conservation purposes within the study area, or vegetation elsewhere, secured on a case-by-case basis by the proponent or through the DSE Bush Broker scheme.

Clause 66.02 of the planning scheme determines the role of the DSE in the assessment of indigenous vegetation removal planning permit applications. If an application is referred to the DSE then the Responsible Authority must follow that department's recommendation in relation to that permit application. The criteria presented in Table 5 indicate when the DSE becomes a referral authority.

Table 5: Application referral criteria

Applications will be referred to the Department of Sustainability and Environment under the following circumstances:
Scattered Trees ▪ To remove more than 15 native or indigenous trees of DBH less than 40 centimetres ▪ To remove more than five native or indigenous trees of DBH 40 centimetres or greater (DBH = diameter at 1.3 metres above ground)
Remnant Patch Vegetation (may include trees) ▪ To remove more than 0.5 hectares of vegetation in an EVC with Bioregional Conservation Status of Endangered, Vulnerable or Rare. ▪ To remove more than one hectare of vegetation in an EVC with Bioregional Conservation Status of Depleted or Least Concern.

7.4. EPBC Act

The *Environment Protection and Biodiversity Conservation Act 1999* contains a list of threatened species and ecological communities that are considered to be of national conservation significance. Any impacts on these species considered significant requires the approval of the Australian Minister for the Environment. If there is a possibility of a significant impact on nationally threatened species or communities or listed migratory species, a Referral under the EPBC Act should be considered. The Minister will decide after 20 business days whether the project will be a 'controlled action' under the EPBC Act, in which case it cannot be undertaken without the approval of the Minister. This approval depends on a further assessment and approval process (lasting between three and nine months, depending on the level of assessment).

Two EPBC Act listed communities are considered potentially to occur in the study area.

A small area of Plains Grassy Woodland (EVC 55) shown in Figures 2 to 11 in the southern and south-eastern parts of the study area may be impacted on by some of the route alignments. This EVC may correspond to Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia, listed as endangered under the EPBC Ac, or Grassy Eucalypt Woodland of the Victorian Volcanic Plain, listed as critically endangered under the EPBC Act.

The extent to which the woodland in the study area meets the specific criteria for these communities requires further investigation but it is considered likely. These communities therefore may be impacted by the proposed works.

No EPBC Act listed flora species are considered likely to occur in the study area. The proposed development will therefore not impact on any flora species listed under the EPBC Act.

The following six EPBC Act listed fauna species have suitable habitat in the study area therefore have potential to occur:

- Regent Honeyeater (Grey Box in Plains Grassy Woodlands);
- Swift Parrot (Grey Box and River Red Gum in Plains Grassy Woodlands);
- Grey-headed Flying-fox (generally in trees);

- Growling Grass Frog (along Deep Creek);
- Dwarf Galaxias (along Deep Creek); and
- Golden Sun Moth (in Plains Grassy Woodland).

These species could be susceptible to significant impacts from the proposed development. More detailed surveys are required to determine if these species are likely to occur in any of the alternative route alignments and assess potential impacts in more detail and develop specific mitigation strategies and measures.

7.5. FFG Act

The Victorian *Flora and Fauna Guarantee Act 1988* lists threatened flora and fauna species to provide for their protection and management. The FFG Act has limited direct application to private land. However, Clause 15.09 of the Planning Scheme makes reference to this Act. The local planning authority is likely to consider impacts on FFG Act-listed species and communities when deciding on planning permit applications.

The removal of threatened species or communities, or protected flora under the FFG Act from public land requires a licence under the Act. This licence is obtained from the Department of Sustainability and Environment.

No flora species listed on the FFG Act are susceptible to impacts from the proposed development.

No ecological communities listed as threatened under the FFG Act were recorded in the study area.

No protected flora values listed under the FFG Act were recorded on public land within the study area.

The five fauna species listed below are protected under the FFG Act. There is suitable potential habitat in the study area for them. These species could be susceptible to significant impacts from the proposed development. A more detailed survey is required to determine if these species are likely to occur and assess potential impacts. The timing of these surveys is provided in brackets.

- Diamond Dove (spring);
- Diamond Firetail (spring);
- Eastern Great Egret (summer);
- Lewin's Rail (summer); and
- Brown Toadlet (autumn).

Although no roadside vegetation was found based on the desktop assessment, a more detailed inspection of roadsides possible affected by route alignments is recommended to confirm if any listed communities under the state FFG Act occur. If they do then a licence under that Act will be required from DSE before any removal of protected flora or listed communities (the most likely listed matters to occur).

7.6. EE Act

Under the *Environment Effects Act 1978*, proponents are required to prepare a Referral to the state minister for Planning, which will determine if an Environment Effects Statement (EES) is required for the project. Criteria related to flora and fauna are:

- Potential clearing of ten hectares or more of native vegetation from an area with endangered EVC, or vegetation that is or is likely to be, of very high conservation significance according to Victoria's Native Vegetation Management Framework, except where authorised under an approved Forest Management Plan or Fire Protection Plan;
- Potential long-term loss of a significant proportion (1 to 5% depending upon conservation status of species concerned) of known remaining habitat or population of a threatened species in Victoria;
- Potential long-term change to a wetland's ecological character, where that wetland is Ramsar listed, or listed in 'A Directory of Important Wetlands in Australia';
- Potential major effects upon the biodiversity of aquatic ecosystems over the long term;
- Potential significant effects on matters listed under the *Flora and Fauna Guarantee Act 1988*.

One or a combination of these criteria may trigger a requirement for a Referral to the Victorian Minister for Planning who will determine if an EES is required.

All of the ten currently proposed alignments are unlikely to require a Referral to the state Minister for Planning under the EE Act.

7.7. DSE advisory lists

Rare and threatened species advisory lists administered by the Department of Sustainability and Environment include flora and fauna species known to be rare or threatened throughout the state. Although the advisory list has no statutory status, the Responsible Authority will consider impacts on any species on the list when assessing a planning application.

No flora species from the DSE *Advisory List of Rare and Threatened Plants in Victoria* (DSE 2005) were recorded in the study area. There are three flora species that are considered likely to occur in the study area. Black Roly-poly, Austral Tobacco and Fragrant Saltbush may be susceptible to impacts from the proposed development.

The following seven fauna species listed on the DSE *Advisory List of Threatened Vertebrate Fauna in Victoria* (DSE 2007b) have suitable habitat in the study area therefore have potential to occur:

- Black Falcon
- Black-chinned Honeyeater
- Black-eared Cuckoo
- Brown Quail
- Brown Treecreeper
- Nankeen Night Heron and
- Bearded Dragon.

These species could be susceptible to significant impacts from the proposed development. A more detailed site inspection is required to determine if these species are likely to occur and assess potential impacts.

The three flora species that are considered likely to occur in the study area would be likely to be recorded during a detailed flora assessment. Targeted surveys may be required for these species if a detailed assessment of the study area did not record these species.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1. Conclusions

- The following implications would pertain to the current development proposal:
- A permit will be required under Clause 52.17 of the state and local planning provisions if any native vegetation is planned to be removed from the study area.
- The project will be referred to DSE if any of the criteria listed in Table 5 are met by the current proposal.
- The provisions of the EPBC Act may apply to the study area as two ecological communities and six listed fauna species have potential to occur.
- The provisions of the FFG Act may apply to the study area as five listed fauna species have potential to occur.
- Any removal of native vegetation located on road reserves, being public land, may require a licence under the FFG Act.
- When assessing a planning application the Responsible Authority will consider impacts on any species listed on the DSE Rare and Threatened Species Advisory List.

8.2. Recommendations

A detailed field flora and fauna survey, at an appropriate time of year, will be required to accurately determine the presence or otherwise of the species and communities listed in this report.

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Appendix 1 VicRoads Consultant Task Brief

VicRoads

FLORA AND FAUNA ASSESSMENT

CONSULTANT TASK BRIEF SHELL – STANDARD ASSESSMENT

FLORA AND FAUNA DESKTOP STUDY REPORT FOR OUTER METROPOLITAN RING LINK TO MELBOURNE AIRPORT AND BULLA BYPASS.

ASSIGNMENT

FAUNA AND FLORA ASSESSMENT TASK BRIEF – [PROJECT/PROPERTY NAME] STANDARD ASSESSMENT

1. BACKGROUND

1.1 Purpose

This investigation is to provide a desktop assessment of the ecological values for the Outer Metropolitan Ring link to Melbourne Airport and Bulla Bypass project with a view to making recommendations for managing identified flora and fauna issues that may be affected by the proposed project. This will assist VicRoads to ensure that the project is undertaken in a manner consistent with the principles of Ecologically Sustainable Development and relevant State and Commonwealth legislation.

1.2 Background

1.2.1 Project name and description

Outer Metropolitan Ring link to Melbourne Airport and Bulla Bypass

A major objective of the Outer Metropolitan Ring (OMR) /E6 Transport Corridor was to provide a high standard link to Melbourne Airport. A study area for the extension of the Tullamarine Freeway to the OMR was published in June 2009.

Sunbury / Bulla Road is already congested in peak periods through the township of Bulla and is constrained by steep grades and tight curves as the road crosses Deep Creek.

As a result of changes to the Metropolitan Sunbury's Urban Growth Boundary in August 2010, Sunbury's population will rapidly expand as development proceeds, resulting in increased traffic volumes on Sunbury Road as it is the main link to employment in the vicinity of Melbourne Airport and industrial areas to the north west. The current 2 lane, 2 way road will not be sufficient to cater for the anticipated growth in traffic demand.

The planning study will investigate options to link Melbourne Airport to the OMR / E6 Transport Corridor and Sunbury Township. Options include potential arterial road bypasses of Bulla Township to the south and north and a freeway to freeway link to the OMR /E6 Transport Corridor east of Oaklands Road and the north of Somerton Road. An option to upgrade the road through Bulla to arterial road standard is also considered.

1.2.2 Study area description

The study area lies in the City of Hume. Apart form Bulla township, zoned residential with a restructure overlay to the north of the town, the primary zoning is Green Wedge with PPRZ and PCRZ in the parkland/recreational facilities. Large areas of the surrounding countryside are covered by the Melbourne Airport Environs Overlay. Melbourne Airport is Commonwealth land. There is a wide Environment Significance Overlay along Jackson and Deep Creeks, with PPRZ along the banks of Deep Creek in the vicinity of Bulla township. There are a number of Heritage Overlays and a Public Acquisition Overlay for the Outer Metropolitan Ring (OMR) /E6 Transport Corridor and the widening of Oaklands Road.

The study area is bounded by the corridor options as shown on the attached plan. Melbourne Airport is to the south of the proposed options and west of Tullamarine Freeway, Woodlands Historic Park lies to the north of the freeway and east of Oaklands Road. Moonee Ponds Creek follows the park boundary.

The topography of the area is flat plains incised by deep gullies, including Deep Creek and Jacksons Creek. The confluence of Deep and Emu Creeks lies to the north of the study area. The township of Bulla is situated to the north of Deep Creek, centred about Bulla Road. However there is low density residential out to Somerton Road in the green wedge, with parkland and recreational facilities between Bulla and Somerton (Green Street) Roads.

Other activities include the Bulla Tip and Quarry on the north side of Sunbury Road to the west of Bulla and a proposed

quarry on the south side. The Outer Metropolitan Ring Transport Corridor (alignment shown in green on the attached study area) bisects both operations.

The initial assessment will be of the following road alignment corridors of approximately 240 m width between Melbourne Airport to Sunbury Road :

- Option A Bulla Bypass (most southerly)
- Option B Bulla Bypass (south lower down Deep Creek Gully)
- Option C Somerton Road (link to OMR interchange)
- Option D Somerton Road (variation to north of interchange and lower down Deep Creek gully)
- Option E Bulla Road realigned to south of Option F
- Option F Bulla Road realigned to south of residential area
- Option G Upgrade of Bulla Road through town and west of Trap Street
- Option F/G Combination of Option G west of Trap Street and Option F south of Bulla
- Option H Somerton Road (variation to north of interchange and under OMR bridge no direct connection to OMR)
- Option I Tullamarine Freeway Link (shown in purple)

All options are common from Tullamarine Airport to just east of Oaklands Road. All options to the south and through Bulla are common from just east of Oaklands Road and approximately Gate 4 on Sunbury Road (Melways map 177 E9).

The Tullamarine Freeway Link and Somerton Road options are common from just east of Oaklands Road to Somerton Road. Somerton Road is essentially one option : Option C with two variations Options D and H.

The Tullamarine Freeway Link assessment needs to include the freeway to freeway interchange and the OMR right of way between this interchange and the end of the Sunbury Road interchange as a possible shorter term option would be to build the southerly ramps and the south bound carriageways.

Some options include local access changes.

ADD PLAN

1.2.3 Summary of previous consultation

No previous consultation has occurred for this project

1.2.4 Other information

Minimal information is available for this project in regards to cultural heritage or flora and fauna. Work carried out for the Outer Metropolitan Ring / E6 Transport Corridor is available.

1.3 Assignment Scope

The investigation comprises two main stages of assessment. Details of this stage are outlined below:

Stage one – Data and literature review with drive by site visit

This stage of the assessment involves a detailed literature and databases review (desktop study) of the specified study area to locate information about flora and fauna (terrestrial and aquatic) that may be in the vicinity, previous studies, geological details, relevant legislation and policy, etc.

Desktop information may be verified by a drive by site visit but there will be no access to properties nor contact with local residents at this stage.

Stage two – Report completion

The final stage includes completion of the report which will detail the results of the desktop study, the presence and likely occurrence of flora and fauna species and relevant mitigation measures to either eliminate reduce and/or remediate impact on these species from the proposed project.

In addition the report shall include a copy of this Consultant Task Brief as an Appendix.

Detailed assessment requirements are outlined in Clause 4 of this task brief, while reporting requirements are specified in Clause 5.

2. CONTRACT OBJECTIVES

The objectives of this contract, by which its performance will be assessed, relate to the following details being provided including:

- Potentially occurring or extant flora and fauna.
- The conservation significance of potentially occurring or extant flora and fauna.
- The potential impacts of the proposed activity on ecological values.
- Options to avoid and / or mitigate any impacts.
- Relevant legislation and policies.

3. METHODOLOGY

3.1 Assessment Methodology

3.1.1 Surveys

It is not intended that the Consultant undertake field surveys at this stage of the study.

The consultant will:

Outline the methodologies used relevant to a search of the databases and drive by.

- Describe the area surveyed.
- Describe the type of survey and methodologies used. These may include:

  Flora

  - Flora (desktop) investigation surveys
  - quadrat surveys
  - flora inventory
  - scattered tree assessment (including how scattered trees were classified into EVC's and measured).

  Fauna

  - Fauna (desktop) investigation surveys
  - transect surveys
  - hair or scat analysis
  - spotlighting
  - stag observations
- Document the amount of time taken to complete survey.
- Document the dates, time and season of surveys.
- Document the weather conditions (fauna).
- List the names and qualifications of participants involved in the surveys.
- Describe any limitations of the study including issues such as inadequate time spent at sites, poor seasonal or weather conditions for surveys, inappropriate timing of surveys, problems with access, time constraints, lack of data and problems with equipment, land management or fire.

- Cite all relevant reference material including taxonomic references, personal communications and databases used

3.1.2 Databases

The Department of Sustainability and Environment maintains the following ecological databases:

- Protected Matters Search Tool (DEHWA)
- Atlas of Victorian Wildlife (AVW)
- Flora Information System (FIS)
- Victorian Fauna Database
- Victorian Fish Database
- Australian Platypus Conservancy Database
- Biosites and VROTPop (DSE).

Searches of these databases should be made for the study area. Other databases may be relevant to specific surveys and the consultant should search these where appropriate.

Flora and fauna field data shall be collected and presented in a manner compatible with existing databases maintained by DSE and must be provided to them within 6 months (or earlier if required). All data collected by the consultant for VicRoads remains the property of VicRoads and should be labelled as such on presentation to DSE for tracking purposes (unless specified otherwise).

Flora and Fauna field data should be collected in GIS format compatible with VicRoads existing database or protocol requirements for inclusion into GIS mapping / Environmental database.

3.1.3 Terminology / Nomenclature

Flora: Botanical nomenclature will follow the Flora Information System (DSE) or the latest version of the Census of Vascular Plants (Royal Botanic Gardens, Melbourne).

Fauna: Zoological nomenclature will follow the Atlas of Victorian Wildlife (DSE).

Conservation Status – Threatened Flora and Fauna species and communities will be recognised as being listed in the following acts and documents:

The following acts will be used to determine the conservation status of threatened species:

- *Environment Protection and Biodiversity Conservation* Act, 1999
- *Flora and Fauna Guarantee* Act, 1988
- The Advisory List of Rare and Threatened Plants (DSE)
- Advisory List of Threatened Vertebrate Fauna in Victoria (DSE)

The following sources will be used to assist in determining the presence of threatened species in the study area.

- Protected Matters Search Tool (DEWHA)
- The Flora Information System (DSE)
- Atlas of Victorian Wildlife (DSE)
- Biosites (DSE)
- VROTPop (DSE)
- Mapping of Bioregional Conservation Status of EVCs (DSE)
- Mapping of Ecological Vegetation Classes (DSE)
- Any other relevant sources.

3.1.4 Permits

No site visits or field work is required for this study. No permits required.

3.1.5 Meetings

The Consultant shall attend the following meetings:

Meeting	Location	Duration	Date
Draft report feedback meeting	Camberwell offices	2 Hour approx	TBA
After the receipt of draft final report (if required)	Camberwell offices	1 Hour approx	TBA

NB. This clause is not intended to refer to or include any meetings the Consultant may have with other stakeholders during the course of undertaking the assignment.

3.2 Information to be Provided by VicRoads to Consultant

VicRoads will provide copies of any previous relevant reports and other relevant information they hold to the Consultant at the commencement of the contract.

VicRoads will provide aerial photos and contour information (if required), and plans showing the proposed study and route(s).

VicRoads Native Vegetation Exemption Guidelines 2009, Cultural Heritage Guidelines 2007, Environment Strategy 2005-2015, Biodiversity Guidelines 2006 and Environmental Management Guidelines 2006 set the environmental policy framework that VicRoads operates within and consultants should be familiar with these documents. Copies are available on the VicRoads website – see www.vicroads.vic.gov.au/environment.

3.3 Access to Properties

No Properties to be accessed in the study area for this desktop study of Flora and Fauna.

4. ASSIGNMENT TASKS

- A clear description of the ecological values and biodiversity of the study area (Figure 1), based on collated existing data;
- An appraisal of any implications for the project arising from relevant State and Commonwealth biodiversity legislation or policy;
- Advice on the need to prepare an EPBC referral; and
- Any other information on ecological or biodiversity matters relevant to the project.
- Provide clear and concise description of all the existing flora and fauna species in the study area shown in Figure 1.
- Provide clear and concise list of key findings for flora and fauna issues for the study area shown in Figure 1.
- Provide clear and concise list of recommendations for the flora and flora issues for the study area shown in Figure 1.

4.1.1 Fauna and Flora (Desktop) Investigation and Initial Field Assessment

- Using information provided by VicRoads, describe the study area including:
    a. locational description and geographical reference (including datum used) of study site
    b. length and width of study site.
    c. location of works within the landscape
    d. adjacent land uses
    e. ownership of land in question

f. planning context (i.e. municipal zoning and overlays etc.)

g. additional uses of site in other than a road reserve

h. Provide a map providing an overview of the study area.

- Compile a list of any permits or approvals required and provide the contact details of the relevant authorities.
- Access the relevant databases and conduct a literature review on any relevant past reports in or within the vicinity of the study area. The report will include all data sources used and the study area examined.
- Write a brief statement of the ecological value of any wetlands in the study area to aquatic flora and fauna and recommend to VicRoads that an Aquatic Flora and Fauna Survey should be undertaken if necessary.
- Identify and describe the potential direct and indirect impacts of the proposed works on ecological values and regional biodiversity.
- Identify any implications for the project arising from State and Commonwealth environmental or biodiversity legislation and policy (including Victoria's Biodiversity Strategy 1997). In particular, the consultant is required to identify any matters of National significance and provide a statement as to whether the proposal is likely to have a significant impact on any matters of National significance in accordance with the Commonwealth *Environment Protection and Biodiversity Conservation* (EPBC) Act 1999.
- The report will also indicate whether a referral to the Commonwealth Environment Minister is required for this project under the EPBC Act.
- Determine potential and likely direct and indirect impacts of the proposed works of all the options shown in the study area provided by VicRoads on ecological values and regional biodiversity pending further investigation through flora and fauna surveys undertaken on site.
- Provide recommendations to protect significant flora and fauna species / values to ensure that activities undertaken in the study area are conducted in a manner consistent with the principles of Ecological Sustainable Development.
- Any recommendations for Targeted Field Surveys. This would include Targeted Field Surveys for threatened species to confirm their presence or the presence of their potential habitat. An indication of the proposed scope, time involved and appropriate timing (e.g. season, time prior to construction) of such work should be provided in the report.
- Identify any information gaps and provide an analysis of their significance and any recommendations for a more detailed survey.
- Compile a list of any permits or approvals required and provide the contact details of the relevant authorities.
- Complete all tables in **Appendix 1.**

Terrestrial Flora

Defining Vegetation:

- Describe the native and exotic flora taxa present within the study area including a species list of the indigenous and exotic taxa found through Flora and Fauna (Desktop) Investigation and field surveys.
- Describe the EVCs present.

Threatened species and communities (known and potential):

- List any plant, cryptogam taxa or community occurring or likely to occur within the study area listed under the aforementioned legislation and threatened species documentation (see Methodology). Map their distribution within the study area.

Assessing Vegetation Quality:

- Assess the general condition of the vegetation, including major weed species/invasion areas or other threatening processes.

Terrestrial Fauna

- Describe the exotic and native fauna taxa present within the study area including a species list of the indigenous and exotic taxa found during Flora and Fauna (Desktop) Investigations and field surveys.

Threatened Species and communities (known and potential):

- List any vertebrate or invertebrate fauna taxa or community occurring or likely to occur within the study area listed under the aforementioned legislation and threatened species documentation (see Methodology). Map their distribution within the study area.

Habitat Values:

- Describe the extent of existing fauna habitat within the specified study area and whether suitable conditions exist to support threatened species.
- Determine the potential as a wildlife corridor.

Impact of Project on Terrestrial Flora and Fauna:

- Assess the potential impacts of the proposed works during the construction and operational phases. Identify any opportunities to avoid or mitigate these potential impacts through design or management and provide recommendations.
- Provide an assessment of the likely resultant level of impacts if mitigation measures are adopted.

21.

4.1.2 Aquatic Flora and Fauna Investigation

Aquatic Flora

Defining Vegetation:

- List the exotic and native aquatic and semi aquatic flora taxa present within the wetlands at the study site. Data to be collected from existing datasets and field investigations.
- Describe the EVCs present within the wetlands or water ways at the study site.

Threatened species and communities (known and potential):

- List any plant taxa or community occurring or likely to occur within the wetlands of the study area listed under the aforementioned legislation and threatened species documentation (see Methodology).

Assessing Vegetation Quality:

- Assess the general condition of the vegetation, including major weed species/invasion areas or other threatening processes.
- Determine and comment on habitat quality as it relates to aquatic flora including salinity, eutrophication, turbidity, hydrological regime and level of weed invasion. Data will be collected from existing datasets and field investigations.

Aquatic Fauna

- Describe the exotic and native aquatic fauna taxa present within the study area. Data to be taken from existing recent records and field surveys.

Threatened Species and communities (known and potential):

- List any fauna taxa or community occurring or likely to occur within the study area listed under the aforementioned legislation and threatened species documentation (see Methodology).

Habitat Values:

- Determine the extent of existing fauna habitat within the specified study area and whether suitable conditions exist to support threatened species.
- Assess and comment on habitat quality as it relates to aquatic fauna. This includes water temperature, flow regimes, presence of in stream barriers and level of weed invasion. Data will be collected from existing datasets and field investigations

Impact of Project on Aquatic Biodiversity Values (both flora and fauna):

- Assess the potential impacts of the proposed works (eg. waterway crossings) during the construction and operational phases on aquatic fauna, fish movements and habitat, taking into account possible changes to hydrology, water velocities and affluxes introduced by the new roadway / development and cumulative impacts of existing and new river crossings.
- Identify any opportunities to avoid or mitigate these potential impacts through design or management. Recommendations should specifically refer to impacts to aquatic ecology.
- Provide an assessment of the likely resultant level of impacts if mitigation measures are adopted.

5. REPORTING

5.1 Format of Report

All reports shall conform to the following requirements:

- Margins:
  - Binding margin: 25mm
  - Open margin: 10mm (NB. In practical terms, provide the 25mm margin on both sides of each page so that VicRoads can produce double-sided documents.)
  - Top margin: 10mm
  - Bottom margin: 10mm
- Fonts:
  - Fonts to be generally no smaller than 12 point.
- Layout:
  - Start each section on the right hand page.
  - Start Chapter 1 on the right hand page. Start all other chapters as they occur.
  - First page of Chapter 1 is Page 1.
  - All preceding pages to be in Roman numerals.
  - Odd numbered pages to be right hand pages.
- Content:
  - Colour figures (including plans) should be capable of being reproduced in black and white.
  - Supply clean artwork (not photography).
  - Supply unfolded plans if greater than A4 size.
  - Supply loose photographic prints.
  - Where continuous alignment drawings are broken down to A3 size drawings, all annotation and text shown on the continuous alignment drawings must be self-contained within each A3 drawing.

- Maps should be provided in ArcGIS format as well as hard copy
- All reports shall contain an executive summary which includes the key findings and recommendations
- All reports shall contain a copy of the Consultant Task Brief as an Appendix

5.2 Process for Finalising Report

5.2.1 Draft report

A draft report will be required for VicRoads' review by 26 November 2010. This report must be in the form specified by Task 4.

One bound and one unbound copy of the draft report shall be presented to VicRoads for comment. An electronic copy of the draft report should also be provided to VicRoads on a disc in Microsoft Word (doc) format, along with a digital copy of all figures in a format agreed with VicRoads.

The draft report will be reviewed by VicRoads. The consultant may be asked to make changes based on the reviewer's comments before the report is finalised. Where the consultant has concerns about any of the review comments these are to be resolved with the Project Manager prior to the completion of the report.

5.2.2 Final report

A final report will be submitted 2 weeks after receipt of comments on the draft report.

One unbound and three bound copies of the final report (including colour figures and plates) should be presented to VicRoads. An electronic copy of the final report should also be provided to VicRoads on a disc in Microsoft Word (doc) and Adobe Portable Document File (pdf) formats, along with a digital copy of all figures in a format agreed with VicRoads.

APPENDIX 1: FLORA AND FAUNA SUMMARY TABLES

22. Table 1.1: Flora species recorded in the study area

Common Name	Scientific Name

# denotes Australian natives found outside of their natural range

* denotes exotic species

23. Table 1.2: Fauna species recorded in the study area

Common Name	Scientific Name

# denotes Australian natives found outside of their natural range

* denotes exotic species

24. Table 1.3 Summary of flora and fauna assessment results, including mitigation and management recommendations.

Location/Route Alignment	Site	Significance	Legislation	Potential Impact	Avoidance or Mitigation Recommendation or Further Work Action Required	Proposed Timing
25.						
26.						
27.						
28.						
29.						
30.						
31.						

32. Table 1.4. Flora of national and of state significance recorded, or predicted to occur within 5 kilometres of the study area.

Include in this list the following column headings:
-Last Record
-No. of Records
-List either in alphabetical order or with the most recent and significant records at the top

Common Name	Scientific Name	Ecological Significance			Last Recorded	No. of records
		EPBC	DSE	FFG		
NATIONAL (listed under the EPBC Act)						
Lemon-scented Gum	*#Corymbia citriodora*					
Matted Flax-lily	*Dianella amoena*	E	E	L	1990	5
Cat's Ear	**Hypochoeris radicata*					
NATIONAL (listed under a National Action Plan)						
STATE						
REGIONAL						

33. Table 1.5 List of threatened fauna species recorded or likely to occur in the study area

List all these under the following categories:

- Mammals
- Birds
- Reptiles
- Frogs
- Fish
- Invertebrates (Butterflies)

Include in this list the following column headings:

- Last Record
- No. of Records
- Type of Record – whether heard, seen, incidental, trapped

Items all listed alphabetically by scientific name
Identify introduced species with an asterix

Common Name	Scientific Name	Type of Record	Conservation Status				Last Recorded	No. of records
			Recorded	EPBC	DSE	FFG		
Australian King-Parrot	*Alisterus scapularis*	Heard	R					
Common Blackbird	*Turdus merula*	seen	*R					

Appendix 2: List of fauna species recorded or likely to occur in the study area

Common Name	Scientific Name	EPBC	FFG	DSE	Recorded 23rd November 2010	Recorded 15th February 2011
Birds						
Australasian Grebe	*Tachybaptus novaehollandiae*					X
Australasian Pipit	*Anthus novaeseelandiae*				X	
Australasian Shoveler	*Anas rhynchotis*			VU		
Australian Hobby	*Falco longipennis*					
Australian Magpie	*Gymnorhina tibicen*				X	X
Australian Owlet-nightjar	*Aegotheles cristatus*					
Australian Pelican	*Pelecanus conspicillatus*					
Australian Raven	*Corvus coronoides*					
Australian Shelduck	*Tadorna tadornoides*					
Australian Spotted Crake	*Porzana fluminea*					
Australian White Ibis	*Threskiornis molucca*					
Australian Wood Duck	*Chenonetta jubata*				X	X
Banded Lapwing	*Vanellus tricolor*					
Bell Miner	*Manorina melanophrys*					
Black Falcon	*Falco subniger*			VU		
Black Kite	*Milvus migrans*					
Black-chinned Honeyeater	*Melithreptus gularis*			NT		
Black-eared Cuckoo	*Chrysococcyx osculans*			NT		
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*					X
Black-fronted Dotterel	*Elseyornis melanops*					
Black-shouldered Kite	*Elanus axillaris*					
Brown Falcon	*Falco berigora*					

Common Name	Scientific Name	EPBC	FFG	DSE	Recorded 23rd November 2010	Recorded 15th February 2011
Brown Goshawk	*Accipiter fasciatus*				X	
Brown Quail	*Coturnix ypsilophora*			NT		
Brown Songlark	*Cincloramphus cruralis*					
Brown Thornbill	*Acanthiza pusilla*					
Brown Treecreeper	*Climacteris picumnus victoriae*			NT		
Brown-headed Honeyeater	*Melithreptus brevirostris*					
Buff-banded Rail	*Gallirallus philippensis*					
Buff-rumped Thornbill	*Acanthiza reguloides*					
Cattle Egret	*Ardea ibis*					
Chestnut Teal	*Anas castanea*					
Clamorous Reed Warbler	*Acrocephalus stentoreus*				X	
Cockatiel	*Nymphicus hollandicus*					
Collared Sparrowhawk	*Accipiter cirrhocephalus*					
Common Blackbird	*Turdus merula*			*	X	
Common Bronzewing	*Phaps chalcoptera*					
Common Myna	*Acridotheres tristis*			*	X	X
Common Starling	*Sturnus vulgaris*			*	X	X
Crested Pigeon	*Ocyphaps lophotes*					X
Crimson Rosella	*Platycercus elegans elegans*				X	X
Diamond Firetail	*Stagonopleura guttata*		L	VU		
Dusky Moorhen	*Gallinula tenebrosa*				X	
Dusky Woodswallow	*Artamus cyanopterus*					X
Eastern Great Egret	*Ardea modesta*		L	VU		
Eastern Rosella	*Platycercus eximius*					X
Eastern Spinebill	*Acanthorhynchus tenuirostris*					

Common Name	Scientific Name	EPBC	FFG	DSE	Recorded 23rd November 2010	Recorded 15th February 2011
Eurasian Coot	*Fulica atra*					
Eurasian Tree Sparrow	*Passer montanus*			*		
European Goldfinch	*Carduelis carduelis*			*	X	
European Greenfinch	*Carduelis chloris*			*	X	
European Skylark	*Alauda arvensis*			*		
Fairy Martin	*Hirundo ariel*					
Fan-tailed Cuckoo	*Cacomantis flabelliformis*					
Flame Robin	*Petroica phoenicea*					
Galah	*Eolophus roseicapilla*				X	X
Golden Whistler	*Pachycephala pectoralis*					
Golden-headed Cisticola	*Cisticola exilis*					
Great Cormorant	*Phalacrocorax carbo*					X
Grey Butcherbird	*Cracticus torquatus*					
Grey Currawong	*Strepera versicolor*					
Grey Fantail	*Rhipidura albiscarpa*				X	
Grey Shrike-thrush	*Colluricincla harmonica*					X
Grey Teal	*Anas gracilis*					
Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*					
Horsfield's Bushlark	*Mirafra javanica*					
House Sparrow	*Passer domesticus*			*	X	X
Jacky Winter	*Microeca fascinans*					
Laughing Kookaburra	*Dacelo novaeguineae*					X
Lewin's Rail	*Lewinia pectoralis*		L	VU		
Little Black Cormorant	*Phalacrocorax sulcirostris*					
Little Corella	*Cacatua sanguinea*					

Common Name	Scientific Name	EPBC	FFG	DSE	Recorded 23rd November 2010	Recorded 15th February 2011
Little Eagle	*Hieraaetus morphnoides*					
Little Grassbird	*Megalurus gramineus*					
Little Lorikeet	*Glossopsitta pusilla*					X
Little Pied Cormorant	*Microcarbo melanoleucos*					
Little Raven	*Corvus mellori*				X	X
Little Wattlebird	*Anthochaera chrysoptera*					
Long-billed Corella	*Cacatua tenuirostris*					
Magpie-lark	*Grallina cyanoleuca*				X	X
Masked Lapwing	*Vanellus miles*					
Masked Woodswallow	*Artamus personatus*					
Mistletoebird	*Dicaeum hirundinaceum*					
Musk Lorikeet	*Glossopsitta concinna*					X
Nankeen Kestrel	*Falco cenchroides*					
Nankeen Night Heron	*Nycticorax caledonicus*			NT		
New Holland Honeyeater	*Phylidonyris novaehollandiae*					
Noisy Friarbird	*Philemon corniculatus*					
Noisy Miner	*Manorina melanocephala*					
Olive-backed Oriole	*Oriolus sagittatus*					
Pacific Barn Owl	*Tyto javanica*					
Pacific Black Duck	*Anas superciliosa*				X	
Pallid Cuckoo	*Cuculus pallidus*					
Peregrine Falcon	*Falco peregrinus*					
Pied Currawong	*Strepera graculina*					
Purple Swamphen	*Porphyrio porphyrio*					
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*					

Common Name	Scientific Name	EPBC	FFG	DSE	Recorded 23rd November 2010	Recorded 15th February 2011
Rainbow Bee-eater	*Merops ornatus*					
Rainbow Lorikeet	*Trichoglossus haematodus*					
Red Wattlebird	*Anthochaera carunculata*				X	X
Red-browed Finch	*Neochmia temporalis*				X	X
Red-rumped Parrot	*Psephotus haematonotus*				X	X
Restless Flycatcher	*Myiagra inquieta*					
Rock Dove	*Columba livia*			*		
Rufous Songlark	*Cincloramphus mathewsi*					X
Rufous Whistler	*Pachycephala rufiventris*					
Sacred Kingfisher	*Todiramphus sanctus*					
Scarlet Robin	*Petroica boodang*					
Shining Bronze-Cuckoo	*Chrysococcyx lucidus*					
Silver Gull	*Chroicocephalus novaehollandiae*					
Silvereye	*Zosterops lateralis*				X	
Song Thrush	*Turdus philomelos*			*		
Southern Boobook	*Ninox novaeseelandiae*					
Southern Whiteface	*Aphelocephala leucopsis*					
Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*					
Spotless Crake	*Porzana tabuensis*					
Spotted Harrier	*Circus assimilis*			NT		
Spotted Pardalote	*Pardalotus punctatus*					X
Spotted Turtle-Dove	*Streptopelia chinensis*			*		
Straw-necked Ibis	*Threskiornis spinicollis*					
Striated Fieldwren	*Calamanthus fuliginosus*					
Striated Pardalote	*Pardalotus striatus*				X	X

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Striated Thornbill	*Acanthiza lineata*					
Stubble Quail	*Coturnix pectoralis*					
Sulphur-crested Cockatoo	*Cacatua galerita*				X	X
Superb Fairy-wren	*Malurus cyaneus*				X	X
Swamp Harrier	*Circus approximans*					
Swift Parrot	*Lathamus discolor*	EN	L	EN		
Tawny Frogmouth	*Podargus strigoides*					
Tree Martin	*Hirundo nigricans*					X
Varied Sittella	*Daphoenositta chrysoptera*					
Wedge-tailed Eagle	*Aquila audax*				X	
Weebill	*Smicrornis brevirostris*					
Welcome Swallow	*Hirundo neoxena*				X	X
Whistling Kite	*Haliastur sphenurus*					
White-browed Scrubwren	*Sericornis frontalis*					
White-browed Woodswallow	*Artamus superciliosus*					
White-eared Honeyeater	*Lichenostomus leucotis*					
White-faced Heron	*Egretta novaehollandiae*					
White-fronted Chat	*Epthianura albifrons*					
White-naped Honeyeater	*Melithreptus lunatus*					X
White-necked Heron	*Ardea pacifica*					
White-plumed Honeyeater	*Lichenostomus penicillatus*				X	X
White-throated Needletail	*Hirundapus caudacutus*					
White-throated Treecreeper	*Cormobates leucophaeus*					
White-winged Triller	*Lalage sueurii*					
Willie Wagtail	*Rhipidura leucophrys*				X	X

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Yellow Thornbill	*Acanthiza nana*					
Yellow-billed Spoonbill	*Platalea flavipes*					
Yellow-faced Honeyeater	*Lichenostomus chrysops*					
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*					
Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*					
Zebra Finch	*Taeniopygia guttata*					
Mammals						
Black Rat	*Rattus rattus*			*		
Black Wallaby	*Wallabia bicolor*					
Brown Rat	*Rattus norvegicus*			*		
Cat	*Felis catus*			*		
Chocolate Wattled Bat	*Chalinolobus morio*					
Common Brushtail Possum	*Trichosurus vulpecula*					
Common Ringtail Possum	*Pseudocheirus peregrinus*					
Eastern Grey Kangaroo	*Macropus giganteus*					X
European Hare	*Lepus europeaus*			*		
European Rabbit	*Oryctolagus cuniculus*			*	X	X
Freetail Bat (eastern form)	*Mormopterus sp. EG*					
Gould's Long-eared Bat	*Nyctophilus gouldi*					
Gould's Wattled Bat	*Chalinolobus gouldii*					
House Mouse	*Mus musculus*			*		
Inland Broad-nosed Bat	*Scotorepens balstoni*					
Large Forest Bat	*Vespadelus darlingtoni*					
Lesser Long-eared Bat	*Nyctophilus geoffroyi*					
Little Forest Bat	*Vespadelus vulturnus*					

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Platypus	*Ornithorhynchus anatinus*					
Red Fox	*Vulpes vulpes*			*		
Short-beaked Echidna	*Tachyglossus aculeatus*					X
Southern Forest Bat	*Vespadelus regulus*					
Southern Freetail Bat (long penis)	*Mormopterus sp. 1*					
Sugar Glider	*Petaurus breviceps*					
Swamp Rat	*Rattus lutreolus*					
Water Rat	*Hydromys chrysogaster*					
White-striped Freetail Bat	*Tadarida australis*					
Reptiles						
Bearded Dragon	*Pogona barbata*			DD		
Bougainville's Skink	*Lerista bougainvillii*					
Common Blue-tongued Lizard	*Tiliqua scincoides*					
Common Long-necked Turtle	*Chelodina longicollis*					
Cunningham's Skink	*Egernia cunninghami*					
Eastern Brown Snake	*Pseudonaja textilis*					
Eastern Small-eyed Snake	*Rhinoplocephalus nigrescens*					
Eastern Three-lined Skink	*Bassiana duperreyi*					
Garden Skink	*Lampropholis guichenoti*				X	
Large Striped Skink	*Ctenotus robustus*					
Little Whip Snake	*Suta flagellum*					
Lowland Copperhead	*Austrelaps superbus*					
Marbled Gecko	*Christinus marmoratus*					
Red-bellied Black Snake	*Pseudechis porphyriacus*					
Southern Water Skink	*Eulamprus tympanum tympanum*					

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Tiger Snake	*Notechis scutatus*					
Tree Dragon	*Amphibolurus muricatus*					X
Tussock Skink	*Pseudemoia pagenstecheri*					
White's Skink	*Egernia whitii*					
Frogs						
Southern Bullfrog	*Limnodynastes dumerilii*					X
Striped Marsh Frog	*Limnodynastes peronii*					
Spotted Marsh Frog	*Limnodynastes tasmaniensis*					
Common Spadefoot Toad	*Neobatrachus sudelli*					
Brown Toadlet	*Pseudophryne bibronii*		L	EN		
Common Froglet	*Crinia signifera*					
Southern Brown Tree Frog	*Litoria ewingii*					
Lesueur's Frog	*Litoria lesueuri*					
Growling Grass Frog	*Litoria raniformis*	VU	L	EN		
Verreaux's Tree Frog	*Litoria verreauxii*					
WhistlingTree Frog	*Litoria verreauxii verreauxii*					
Fish						
Short-finned Eel	*Anguilla australis*					
Rainbow Trout	*Oncorhynchus mykiss*			*		
Brown Trout	*Salmo trutta*			*		
Australian Smelt	*Retropinna semoni*					
Common Galaxias	*Galaxias maculatus*					
Mountain Galaxias	*Galaxias olidus*					
Goldfish	*Carassius auratus*			*		
Common Carp	*Cyprinus carpio*			*		

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Roach	*Rutilus rutilus*			*		
Tench	*Tinca tinca*			*		
Eastern Gambusia	*Gambusia holbrooki*			*		
Southern Pigmy Perch	*Nannoperca australis*					
Redfin Perch	*Perca fluviatilis*			*		
Tupong	*Pseudaphritis urvillii*					
Invertebrates						
Golden Sun Moth	*Synemon plana*	CE	L	EN		

EPBC – Status under EPBC Act; **FFG** – Status under FFG Act; **DSE** – Status from DSE Advisory List; **CE** – Critically endangered; **EN** – Endangered; **VU**– Vulnerable; **NT** – Lower risk near threatened; **DD** = data deficient; **L** – Listed under FFG Act; ***** = introduced species; **X** = recorded