Threatened Fauna Species

- Golden Sun Moth
- Proposed Alignment
- Confirmed GSM Habitat
- Potential GSM Habitat

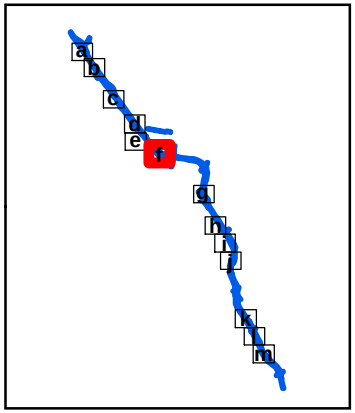


Figure 4f

Matters of National Environmental Significant

Western Highway, Ararat to Stawell

N

0 50 100

Metres

ecology & heritage partners

Threatened Fauna Species

- Golden Sun Moth
- Proposed Alignment
- Confirmed GSM Habitat
- Potential GSM Habitat

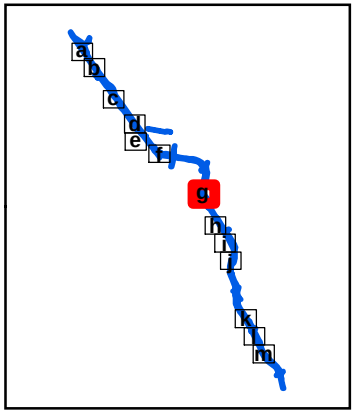


Figure 4g

Matters of National Environmental Significant

Western Highway, Ararat to Stawell

N

0 50 100

Metres

ecology & heritage partners

Threatened Fauna Species

- Golden Sun Moth
- Proposed Alignment
- Potential GSM Habitat

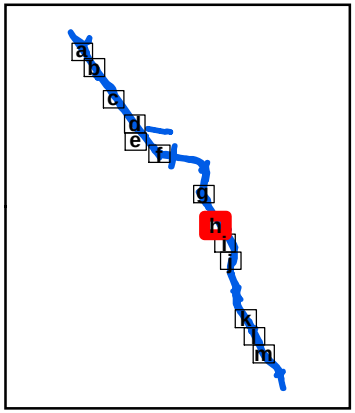


Figure 4h

Matters of National Environmental Significant

Western Highway, Ararat to Stawell

N

0 50 100

Metres

ecology & heritage partners

Threatened Fauna Species

- Golden Sun Moth
- Proposed Alignment
- Confirmed GSM Habitat
- Potential GSM Habitat

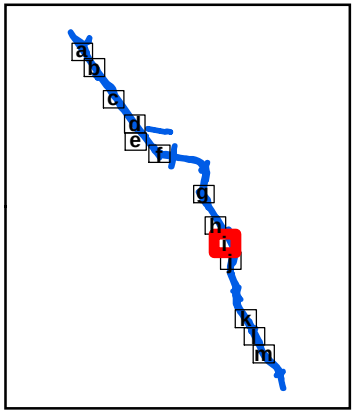


Figure 4i

Matters of National Environmental Significant

Western Highway, Ararat to Stawell

N

0 50 100

Metres

ecology & heritage partners

Threatened Fauna Species

- Golden Sun Moth
- Proposed Alignment
- Confirmed GSM Habitat
- Potential GSM Habitat

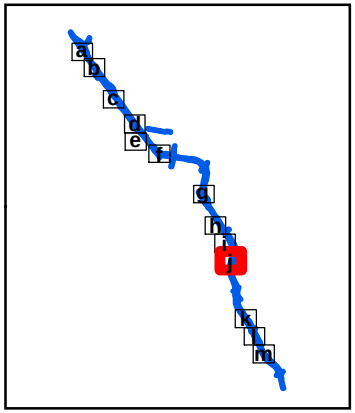


Figure 4j

Matters of National Environmental Significant

Western Highway, Ararat to Stawell

N

0 50 100

Metres

ecology & heritage partners

Threatened Fauna Species

- Golden Sun Moth
- Proposed Alignment
- Confirmed GSM Habitat
- Potential GSM Habitat

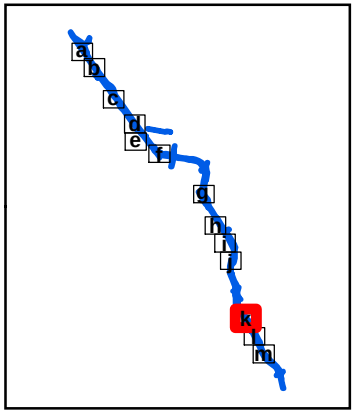


Figure 4k

Matters of National Environmental Significant

Western Highway, Ararat to Stawell

N

0 50 100

Metres

ecology & heritage partners

Threatened Fauna Species

- Golden Sun Moth
- Proposed Alignment
- Confirmed GSM Habitat
- Potential GSM Habitat

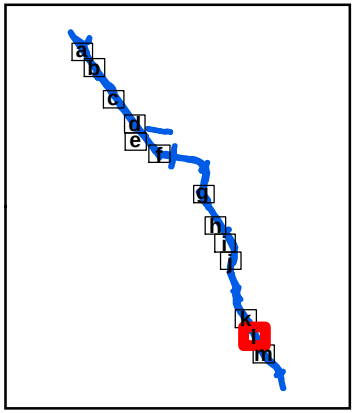


Figure 4l

Matters of National Environmental Significant

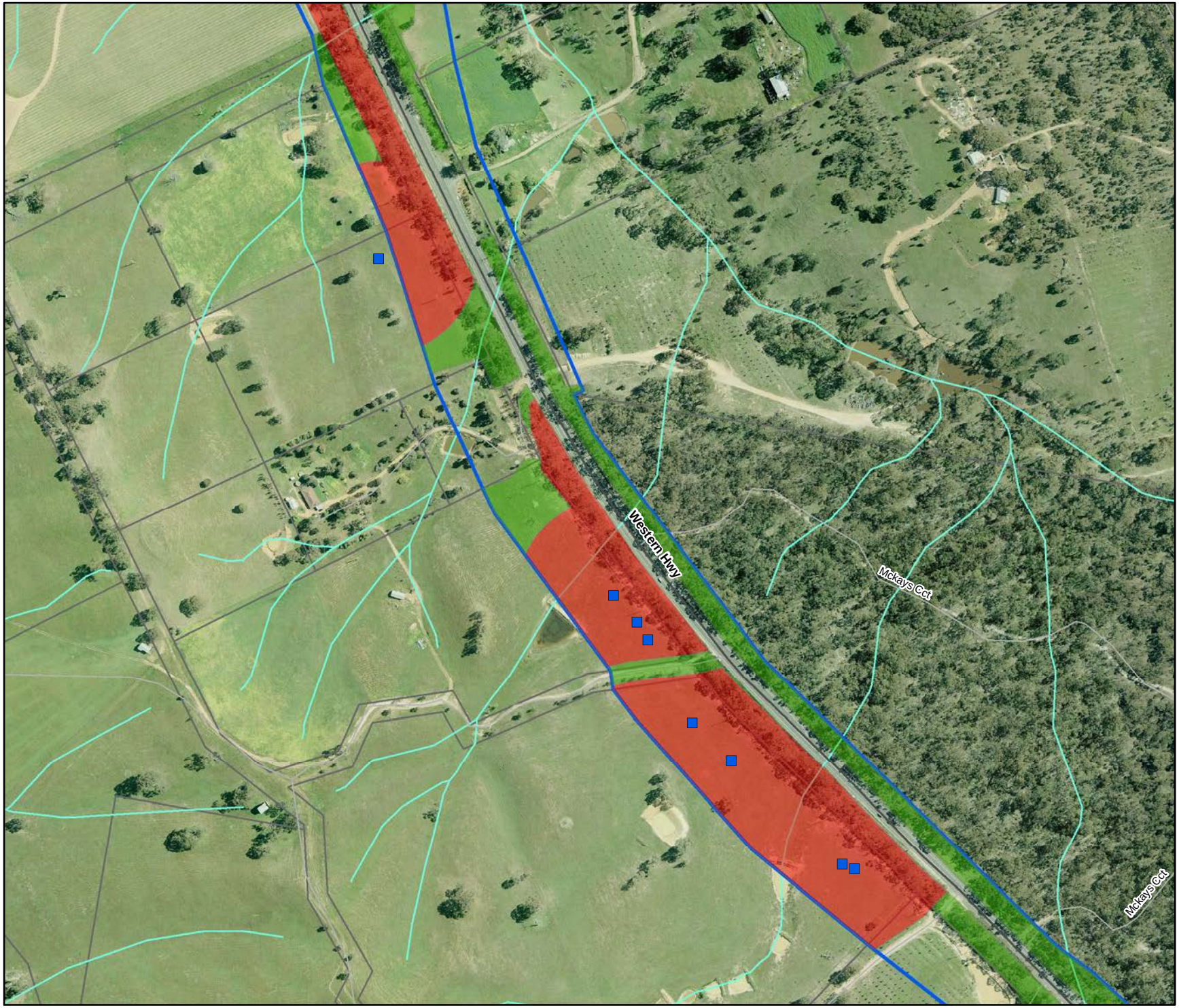
Western Highway, Ararat to Stawell

N

0 50 100

Metres

ecology & heritage partners



Threatened Fauna Species

- Golden Sun Moth
- Proposed Alignment
- Confirmed GSM Habitat
- Potential GSM Habitat

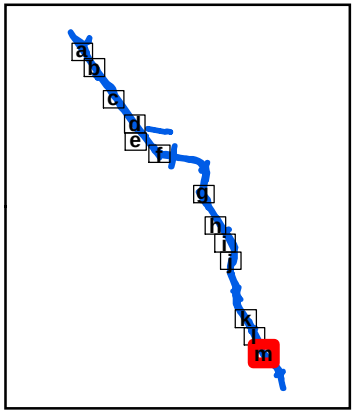


Figure 4m

Matters of National Environmental Significant

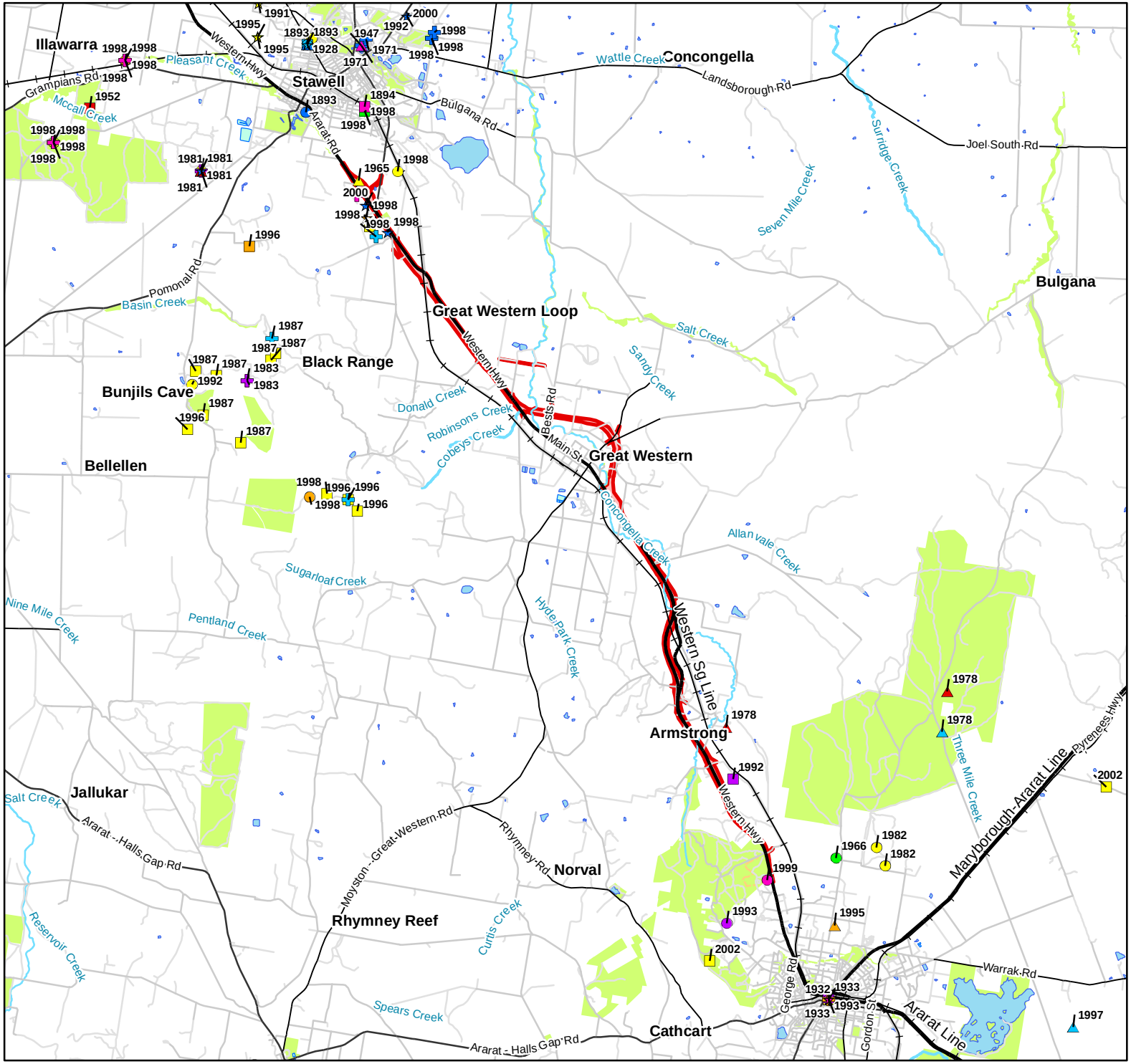
Western Highway, Ararat to Stawell

N

0 50 100

Metres

ecology & heritage partners



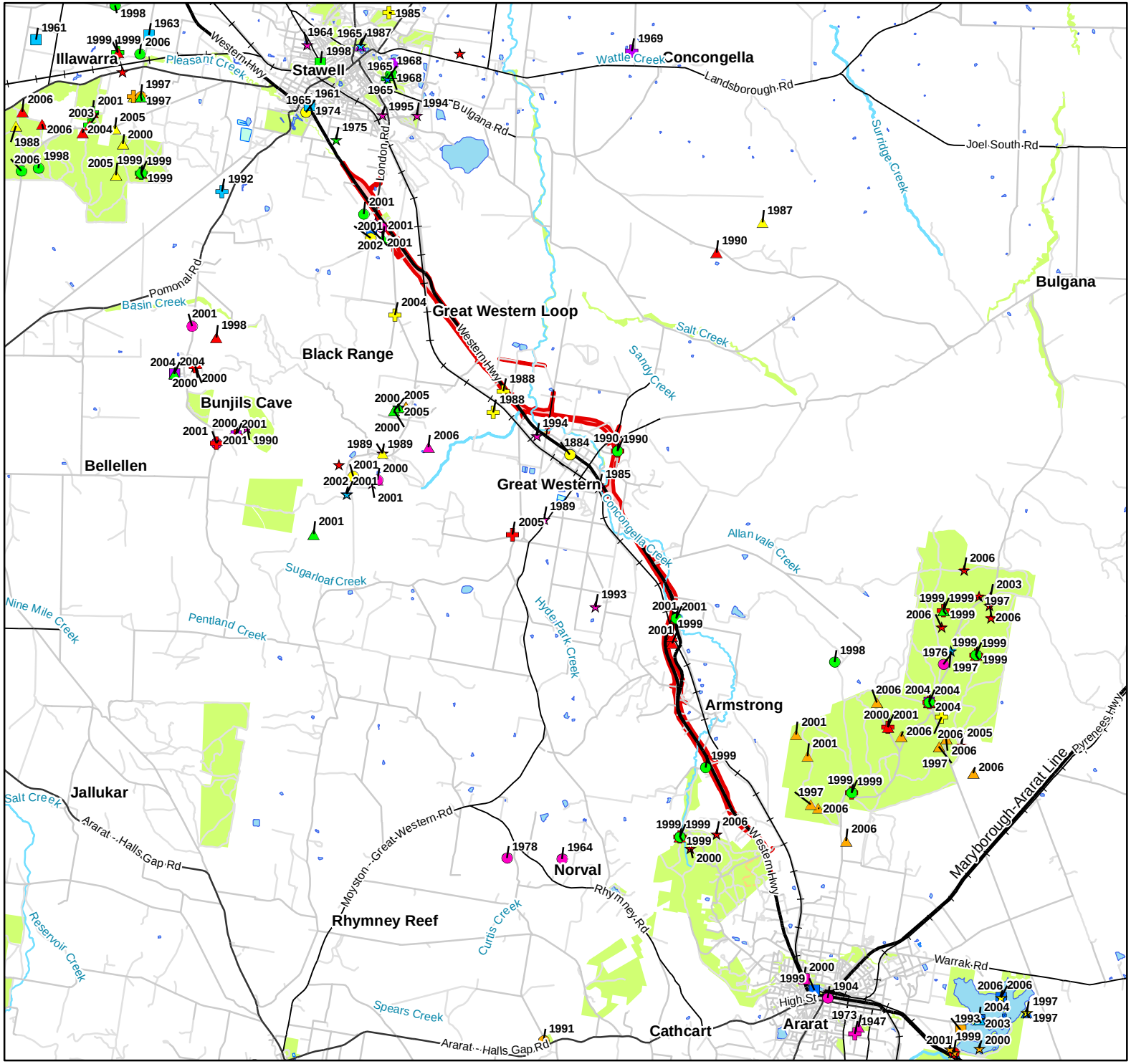
- Annual Buttons
- Bent-grass
- Buloke
- Button Wrinklewort
- Crimson Sun-orchid
- Downy Swainson-pea
- Emerald-lip Greenhood
- Flame Grevillea
- Foot Triggerplant
- Fringed Midge-orchid
- Fringed Sun-orchid
- Globe-hood Sun-orchid
- Golden Cowslips
- Grampians Bitter-pea
- Grampians Correa
- Green Leek-orchid
- Hairy Correa
- Hairy Hop-bush
- Half-bearded Spear-grass
- Kamarooka Mallee
- Lanky Buttons
- Large White Spider-orchid
- Large-headed Fireweed
- Maple-fruited Hop-bush
- Metallic Sun-orchid
- Pale-flower Crane's-bill
- Pink-lip Leek-orchid
- Pomonal Leek-orchid
- Prickly Beauty
- Rising Star Guinea-flower
- Rosemary Grevillea
- Silurian Leek-orchid
- Slender Club-sedge
- Slender Ruddyhood
- Small Milkwort
- Small-flower Wallaby-grass
- Spear-grass
- Swamp Diuris
- Tiny Bog-sedge
- Trailing Hop-bush
- Umbrella Grass
- Veined Spider-orchid
- Wine-lipped Spider-orchid
- Wiry Bossiaea
- Proposed Alignment

Figure 5

Significant flora records within 10km radius of the study area

Western Highway, Ararat to Stawell

ecology & heritage partners



- Australasian Shoveler
- Barking Owl
- Bearded Dragon
- Black-chinned Honeyeater
- Black-eared Cuckoo
- Blue-billed Duck
- Brown Quail
- Brown Toadlet
- Brown Treecreeper (south-eastern ssp.)
- Brush-tailed Phascogale
- Bush Stone-curlew
- Diamond Firetail
- Domestic Goose
- Eastern Great Egret
- Eastern Pygmy-possum
- Fat-tailed Dunnart
- Freckled Duck
- Golden Perch
- Golden Sun Moth
- Grey-crowned Babbler
- Growling Grass Frog
- Hardhead
- Hooded Robin
- Java Sparrow
- Lace Goanna
- Musk Duck
- Pied Cormorant
- Plains-wanderer
- Powerful Owl
- Regent Honeyeater
- Royal Spoonbill
- Southern Brown Bandicoot
- Speckled Warbler
- Spotted Harrier
- Squirrel Glider
- Swift Parrot
- Tammar Wallaby
- Whiskered Tern
- Woodland Blind Snake
- Yellow Sedge Skipper
- Proposed Alignment

Figure 6

Significant fauna records within 10km radius of the study area

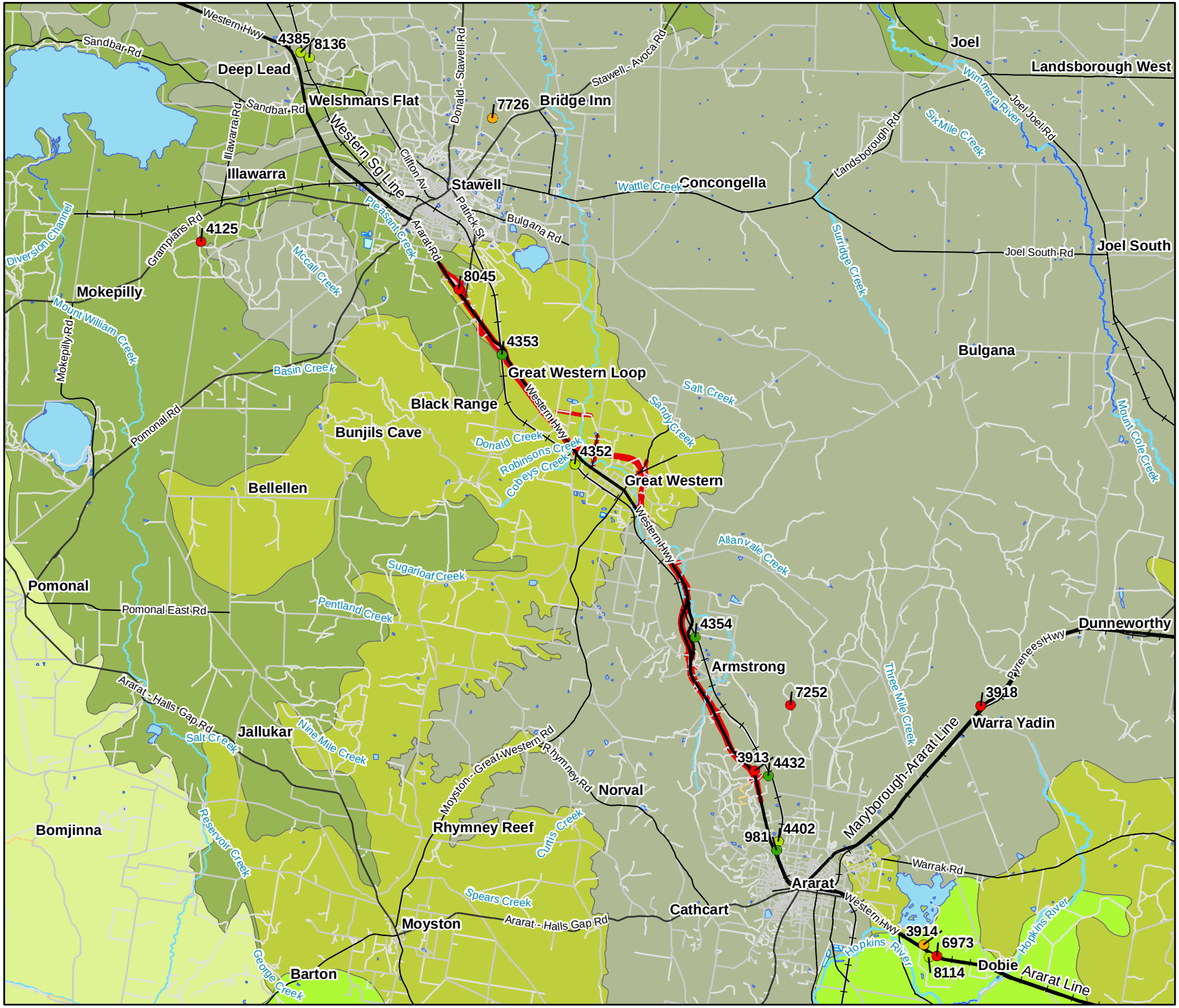
Western Highway,
Ararat to Stawell

N

0 1,750 3,500

Metres

ecology & heritage partners



Proposed Alignment

Significance Level

- Local
- Regional
- State
- Yet to be determined

Bioregions

- Central Victorian Uplands
- Goldfields
- Greater Grampians
- Victorian Volcanic Plain
- Wimmera

Figure 7

Location of BioSites

Western Highway, Ararat to Stawell

N

0 2,200 4,400

Metres

ecology & heritage partners

REFERENCES

References

Allen, G.R., Midgley, S.H. & Allen, M. 2002. *Field Guide to the Freshwater Fishes of Australia*. Western Australian Museum.

Animal Health Australia 2009. Bovine Johne's Disease in Australia, Animal Health Australia.

Australian Museum Business Services 2001. An investigation of the use of road overpass structures by arboreal marsupials. Australian Museum Business Services, Sydney, NSW.

AVW 2009. *Atlas of Victorian Wildlife*. Viridians Biological Databases Pty Ltd, Melbourne.

Ball, T. and Goldingay, R. 2008. Can wooden poles be used to reconnect habitat for a gliding mammal? *Landscape and Urban Planning* 87: 140-146.

Biosis Research Pty. Ltd. 2008. Targeted Survey of Golden Sun Moth in the Melbourne Area. Unpublished report prepared for FKP Property Group.

Braby, M.F. 2005. *The Complete Guide to Butterflies of Australia*. CSIRO Australia.

Briggs, J.D. & Leigh, J.H. 1996. *Rare or Threatened Australian Plants.* CSIRO Australia & Australian Nature Conservation Agency.

Carter, O. 2010. *National Recovery Plan for the Trailing Hop-bush Dodonea procumbens*. Department of Sustainability and Environment, Melbourne, Victoria.

Clarke, G.M. & O'Dwyer, C. 2000. Genetic variability and population structure of the endangered Golden Sun Moth, *Synemon plana*. Biological Conservation, 92 371–381.

Coates, T. 2006. *Ecology and management of the Southern Brown Bandicoot*. Part of the a report on the public meeting, 14 November 2006 for the Recovery of the Southern Brown Bandicoot in the Mornington Peninsula and Western Port Biosphere Reserve and Surrounding Districts. Mornington Peninsula and Western Port Biosphere Reserve Foundation Ltd, Hastings, Victoria

Cogger, H.G. 1996. *Reptiles and Amphibians of Australia*. 5th Edition. Reed Books Australia, Melbourne.

Cogger, H.G., Cameron, E.E., Sadlier, R.A. & Eggler, P. 1993. *The Action Plan for Australian Reptiles*. Australia Nature Conservation Age.

Coulson, G. 1990. *Conservation Biology of the Striped Legless Lizard (Delma impar): an initial investigation.* Arthur Rylah Institute for Environmental Research Technical Report Series No. 106, Department of Conservation and Environment, Melbourne.

Dear, C. 1996. Distribution of Synemon plana: a new encounter. *Victorian Entomologist*, 26 26–28.

DEWHA 1999. Matters of National Environmental Significance: Significant Impact Guidelines 1.1. Department of Environment, Water, Heritage and the Arts, Canberra.

DEWHA 2009. Significant Impact Guidelines for the critically endangered Golden Sun Moth, EPBC Act Policy Statement 3.12. Department of Environment, Water, Heritage and the Arts, Canberra.

DNRE 2001. Bovine Johne's Disease: a review bearing on "the science behind the policy". A report to the Secretary by the Chief Scientists of Department of Natural Resources and Environment, Melbourne.

DPI 2006, *Landcare Notes – Declared noxious weeds – Listed by scientific name*, Department of Primary Industries, Victoria

DPI 2007. Zoning for Bovine Johne's Disease. Agriculture Notes 0918: Jeff Cave, Department of Primary Industries, Wodonga.

DPI 2009. What is Ovine Johne's Disease? Agriculture Notes 1126: Mike Jeffers, Department of Primary Industries, Melbourne, Victoria.

DPI 2008a. What is Bovine Johne's Disease?. Agriculture Notes 0913: Michael Jeffers, Department of Primary Industries, Geelong.

DPI 2008b. Biosecurity Guidelines for Movement of Equipment Contractors between Farms. Agriculture Notes 1171: High Millar, Department of Primary Industries, Attwood.

DPI 2010. Ovine Johne's Disease prevalence areas. Agriculture Notes 1125: Martin Roche, Department of Primary Industries, Melbourne, Victoria.

DPI 2011a. Potato Cyst Nematode: Management Zones in Victoria. http://www.dpi.vic.gov.au/agriculture/pests-diseases-and-weeds/pest-insects/potato-cyst-nematode. Department of Primary Industries, Victoria

DPI 2011b. Viticulture Biosecurity. http://www.dpi.vic.gov.au/agriculture/horticulture/wine-and-grapes/Viticulture-biosecurity. Department of Primary Industries, Victoria

DPI 2011c. Bovine Johnes Disease. http://www.dpi.vic.gov.au/agriculture/pests-diseases-and-weeds/animal-diseases/beef-and-dairy-cows/bovine-johnes-disease. Department of Primary Industries, Victoria

DPIW 2006. Threatened Species Section. Recovery Plan: Tasmanian Galaxiidae 2006-2010. Department of Primary Industries and Water, Hobart, Tasmania.

DSE 2004. *Vegetation Quality Assessment Manual: Guidelines for Applying the Habitat Hectares Scoring Method*. Biodiversity and Natural Resources Division, Department of Sustainability & Environment, Victoria.

DSE 2005. *Advisory List of Rare or Threatened Plants in Victoria - 2005*. Department of Sustainability and Environment, Victoria, East Melbourne, Victoria.

DSE 2006. Revegetation Planting Standards - Guidelines for establishing native vegetation for net gain accounting. Victorian Government, Department of Sustainability and Environment, East Melbourne.

DSE 2007a. *Native Vegetation. Guide for assessment of referred planning permit applications, May 2007.* Department of Sustainability and Environment, Victoria, East Melbourne, Victoria.

DSE 2007b. *Advisory List of Threatened Vertebrate Fauna in Victoria*. Department of Sustainability and Environment, Victoria

DSE 2009. *Advisory list of Threatened Invertebrate Fauna in Victoria – 2009*. Department of Sustainability and Environment, Victoria.

DSE 2010a. Biodiversity Interactive Map 3.1. Viewed online: www.dse.vic.gov.au/about-dse/interactive-maps

DSE 2010b, Department of Sustainability and Environment website:www.dse.vic.gov.au.

DSE 2010c. Victorian Biodiversity Atlas (VBA). Sourced from: 'VBA_FAUNA25' and 'VBA_FAUNA100', August 2010. Department of Sustainability and Environment, Victoria.

DSE. 2004. Flora and Fauna Guarantee Act Action Statement No. 106. Golden Sun Moth Synemon plana. Department of Sustainability & Environment, Victoria

Duncan, A., Baker, G.B. & Montgomery, N. 1999. *The Action Plan for Australian Bats*. Environment Australia, Canberra.

Ecology Partners 2008. Desktop Flora & Fauna Assessment, of the Western Highway, Burrumbeet to Stawell, Victoria. A report prepared for VicRoads.

Edwards, E.D. 1991. *Synemon plana* - A grassland case history. In: The ACT's Native Grasslands. Proceedings of a workshop held at the National Museum of Australia, Canberra. 17 February 1991. Pp 20–33. Canberra: Conservation Council of South East Region and Canberra.

Endersby, I. & Koehler, S. 2006. Golden Sun Moth *Synemon plana*: discovery of new populations around Melbourne. *Victorian Naturalist*, 123 362–365.

EPA 2003. *State Environment Protection Policy: Waters of Victoria*. Environment Protection Authority Victoria. Melbourne.

FIS 2009. Flora Information System (Department of Sustainability and Environment), Viridans Pty Ltd. Bentleigh East, Victoria.

Garnett, S. & Crowley, G. 2000. *The Action Plan for Australian Birds*. Environment Australia, Canberra.

GHCMA 2006. *Glenelg Hopkins Native Vegetation Plan*. Glenelg Hopkins Catchment Management Authority.

Gilmore, D., Koehler, S. O'Dwyer, C. & Moore, W. 2008. Golden Sun Moth *Synemon plana* (Lepidoptera: Castniidae): results of a broad survey of populations around Melbourne. Victorian Naturalist Vol. **125** (2).

Goosem, M. 2005. Effectiveness of rope bridge arboreal overpasses and faunal underpasses in providing connectivity for rainforest fauna. *International Conference on Ecology and Transportation 2005 Proceedings* pp. 304-322.

Humphries, P. 1986. *Observations on the ecology of Galaxiella pusilla (Mack) (Salmoniformes: Galaxiidae) in Diamond Creek, Victoria*. Proceedings of the Royal Society of Victoria. **98(3)**:133-137.

Hunt, A., Dickens, H. J. and Whelan, R. J. 1987. Movement of mammals through tunnels under railway lines. *Australian Zoologist* 24(2): 89-93.

IUCN 2008. *2008 IUCN Red List of Threatened Animals*. International Union for the Conservation of Nature & Natural Resources, Geneva.

Jansen, A., Robertson, A., Thompson, L., Wilson, A. & Nicholls, K. 2006, 'Rapid Appraisal of Riparian Condition, Technical Guideline for the mid north of South Australia', Land & Water Australia, Canberra.

Keane, P.J., Kile, G.A., Podger, F.D. and Brown, B.N. (2000). Diseases and Pathogens of Eucalypts. La Trobe University, CSIRO Forestry and Forest Products. CSIRO Publishing.

Lee, A. K. 1995. *Action Plan for Australian Rodents*. Australian Nature Conservation Agency, Canberra.

Mansergh, I. M. and Scotts, D. J. 1989. Habitat continuity and social organisation of the mountain pygmy-possum restored by tunnel. *Journal of Wildlife Management*. 53(3): 701-707.

Marks, G.C. & Smith, I.W. (1991). The Cinnamon Fungus in Victorian Forests. Lands and Forests Bulletin No. 31. Department of Conservation and Environment

Maxwell, S., Burbidge, A. & Morris, K. 1996. *Action Plan for Australian Marsupials and Monotremes*. IUCN Species Survival Commission.

McDowall, R.M. 1996 (Ed.) Freshwater Fishes of South-eastern Australia. Reed Pty. Ltd, Sydney.

Menkhorst P. and Knight F. 2004. A Field Guide to the Mammals of Victoria. Second edition. Oxford University Press, Melbourne.

Menkhorst, P.W. 1995. Mammals of Victoria – Distribution, Ecology and Conservation. Oxford University Press, Melbourne.

NRE 2002. *Victoria's Native Vegetation Management: A Framework for Action.* Department of Natural Resources & Environment, Victoria.

O'Dwyer, C. & Attiwill, P.M. 1999. A comparative study of habitats of the Golden Sun Moth *Synemon plana* Walker (Lepidoptera: Castniidae): implications for restoration. Biological Conservation, 89 131–141.

Parkes, D., Newell, G. & Cheal, D. 2003. Assessing the quality of native vegetation: The habitat hectares approach. *Ecological Management & Restoration* Volume 4 Supplement 29–38.

Sands, D.P.A. & New, T.R. 2002. *The Action Plan for Australian Butterflies*. Environment Australia, Canberra.

SEWPaC. 2010. *Environment Protection and Biodiversity Conservation Act 1999* Protected Matters Search Tool http://www.environment.gov.au/erin/ert/epbc/index.html. Department of Sustainability, Environment, Water, Population and Communities, Canberra.

SEWPaC. 2012. *Environment Protection and Biodiversity Conservation Act 1999* Environmental Offsets Policy. Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Strahan R. 1995. The mammals of Australia. Reed Books, Chatswood, NSW, Australia.

Taylor, B. D. and Goldingay, R. L. 2003. Cutting the carnage: wildlife usage of road culverts in north-eastern New South Wales. *Wildlife Research* 30: 529-537.

Tregonning, K. C. & Fagg, P.C. (1985). Seasonal rainfall and Eucalyptus dieback epidemics associated with *Phytophthora cinnamomi* in Gippsland, Victoria. Australian Forest Research 14:219–234.

Tyler, M.J. 1997. *The Action Plan for Australian Frogs*. Environment Australia, Canberra.

VicRoads 2005. *Environmental Strategy 2005-2015*. VicRoads, Melbourne, Victoria.

Walsh, N. G. and Entwistle, T. J. 1994. *Flora of Victoria.* Inkata Press, Melbourne.

Walsh, N.G. and Stajsic, V. 2007. *A Census of the Vascular Plants of Victoria.* Royal Botanic Gardens, South Yarra.

Webster, A., Fallu, R. & Preece, K. 2003. Flora and Fauna Guarantee Action Statement No. 17. Striped Legless Lizard Delma impar (updated website edition). Department of Conservation & Environment, Victoria.

Weste, G. & Taylor, P. (1971). The invasion of native forest by *Phytophthora cinnamomi* 1. Brisbane Ranges, Victoria. Australian Journal of Botany 19, 281-294.

WCMA (2008). *Wimmera Native Vegetation Plan (draft).* Wimmera Catchment Management Authority.

APPENDICES

Appendix 1 – Significance Assessment

Criteria used by Ecology Partners Pty Ltd to define conservation significance, vegetation condition and habitat quality is provided below.

A1.1. Rare or Threatened Categories for listed Victorian taxa

Table A1.1. Rare or Threatened categories for listed Victorian taxa.

Rare or Threatened Categories
CONSERVATION STATUS IN AUSTRALIA **(Based on the EPBC Act 1999, Briggs and Leigh 1996*)**
EX - Extinct: Extinct is when there is no reasonable doubt that the last individual of the species has died.
CR - Critically Endangered: A species is critically endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.
EN - Endangered: A species is endangered when it is not critically endangered but is facing a very high risk of extinction in the wild in the near future.
VU - Vulnerable: A species is vulnerable when it is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future.
R* - Rare: A species is rare but overall is not currently considered critically endangered, endangered or vulnerable.
K* - Poorly Known: A species is suspected, but not definitely known, to belong to any of the categories extinct, critically endangered, endangered, vulnerable or rare.
CONSERVATION STATUS IN VICTORIA **(Based on DSE 2005, DSE 2007b, FIS)**
x - Presumed Extinct in Victoria: not recorded from Victoria during the past 50 years despite field searches specifically for the plant, or, alternatively, intensive field searches (since 1950) at all previously known sites have failed to record the plant.
e - Endangered in Victoria: at risk of disappearing from the wild state if present land use and other causal factors continue to operate.
v - Vulnerable in Victoria: not presently endangered but likely to become so soon due to continued depletion; occurring mainly on sites likely to experience changes in land-use which would threaten the survival of the plant in the wild; or, taxa whose total population is so small that the likelihood of recovery from disturbance, including localised natural events such as drought, fire or landslip, is doubtful.
r - Rare in Victoria: rare but not considered otherwise threatened - there are relatively few known populations or the taxon is restricted to a relatively small area.
k - Poorly Known in Victoria: poorly known and suspected, but not definitely known, to belong to one of the above categories (x, e, v or r) within Victoria. At present, accurate distribution information is inadequate.

A1.2. Defining Ecological Significance

Table A1.2. Defining Ecological Significance.

Criteria for defining Ecological Significance	
NATIONAL SIGNIFICANCE	
Flora	National conservation status is based on the EPBC Act list of taxa considered threatened in Australia (i.e. extinct, critically endangered, endangered, vulnerable).
	Flora listed as rare in Australia in *Rare or Threatened Australian Plants* (Briggs and Leigh 1996).
Fauna	National conservation status is based on the EPBC Act list of taxa considered threatened in Australia (i.e. extinct, critically endangered, endangered, vulnerable).
	Fauna listed as extinct, critically endangered, endangered, vulnerable or Rare under National Action Plans for terrestrial taxon prepared for the Department of the Environment, Water, Heritage and the Arts: threatened marsupials and monotremes (Maxwell *et al.* 1996), bats (Duncan *et al.* 1999), birds (Garnett and Crowley 2000), reptiles (Cogger *et al.* 1993), and amphibians (Tyler 1997).
	Species that have not been included on the EBPC Act but listed as significance according to the *IUCN 2006 Red List of Threatened Species* (IUCN 2006).
Communities	Vegetation communities considered critically endangered, endangered or vulnerable under the EPBC Act and considering vegetation condition.
STATE SIGNIFICANCE	
Flora	Threatened taxa listed under the provisions of the FFG Act.
	Flora listed as extinct, endangered, vulnerable or rare in Victoria in the DSE Flora Information System (most recent Version).
	Flora listed in the State Government's *Advisory List of Rare or Threatened Plants in Victoria*, 2007 (DSE 2007b).
	Flora listed as poorly known in Australia in *Rare or Threatened Australian Plants* (Briggs and Leigh 1996).
Fauna	Threatened taxon listed under Schedule 2 of the FFG Act.
	Fauna listed as extinct, critically endangered, endangered and vulnerable on the State Government's *Advisory List of Threatened Vertebrate Fauna in Victoria - 2007* (DSE 2007b).
	Listed as Lower Risk (Near Threatened, Conservation Dependent or Least Concern), Data Deficient or Insufficiently Known under National Action Plans for terrestrial species prepared for the Department of the Environment, Water, Heritage and the Arts: threatened marsupials and monotremes (Maxwell *et al.* 1996), bats (Duncan *et al.* 1999), birds (Garnett and Crowley 2000), reptiles (Cogger *et. al.* 1993), and amphibians (Tyler 1997).

Criteria for defining Ecological Significance	
Communities	Ecological communities listed as threatened under the FFG Act.
	Ecological Vegetation Class listed as threatened (i.e. endangered, vulnerable) or rare in a Native Vegetation Plan for a particular bioregion (DSE Website) and considering vegetation condition.
REGIONAL SIGNIFICANCE	
Flora	Flora considered rare in any regional native vegetation plan for a particular bioregion.
	Flora considered rare by the author for a particular bioregion.
Fauna	Fauna with a disjunct distribution, or a small number of documented recorded or naturally rare in the bioregion.
	A particular taxon that is has an unusual ecological or biogeographical occurrence or listed as Lower Risk – Near Threatened, Data Deficient or Insufficiently Known on the State Government's Advisory List of *Threatened Vertebrate Fauna in Victoria* - 2007 (DSE 2007b).
Communities	Ecological Vegetation Class listed as depleted or least concern in a Native Vegetation Plan for a particular bioregion (DSE Website) and considering vegetation condition.
	Ecological Vegetation Class considered rare by the author for a particular bioregion.
LOCAL SIGNIFICANCE	
Local significance is defined as flora, fauna and ecological communities indigenous to a particular area, which are not considered rare or threatened on a national, state or regional level.	

A1.3 Defining Site Significance

The following geographical areas apply to the overall level of significance with respect to the current survey.

National: Australia

State: Victoria

Regional: Victorian Volcanic Plain bioregion and Central Victorian Uplands bioregion.

Local: Within 10 km surrounding the study area

Table A1.3. Defining Site Significance.

Criteria for defining Site Significance
NATIONAL SIGNIFICANCE
A site is of National significance if: - it regularly supports, or has a high probability of regularly supporting individuals of a taxon listed as 'Critically Endangered' or 'Endangered' under the EPBC Act and/or under National Action Plans for terrestrial taxon prepared for SEWPaC. - it regularly supports, or has a high probability of supporting, an 'important population' as defined under the EPBC Act of one or more nationally 'vulnerable' flora and fauna taxon. - it is known to support, or has a high probability of supporting taxon listed as 'Vulnerable' under National Action Plans. - it is known to regularly support a large proportion (i.e. greater than 1%) of a population of a taxon listed as 'Conservation Dependent' under the EPBC Act and/or listed as Rare or Lower Risk (near threatened, conservation dependent or least concern) under National Action Plans. - it contains an area, or part thereof designated as 'critical habitat' under the EPBC Act, or if the site is listed under the Register of National Estate compiled by the Australian Heritage Commission. - it is a site which forms part of, or is connected to a larger area(s) of remnant native vegetation or habitat of national conservation significance such as most National Park, and/or a Ramsar Wetland(s).
STATE SIGNIFICANCE
A site is of State significance if: - it occasionally (i.e. every 1 to 5 years) supports, or has suitable habitat to support taxon listed as 'Critically Endangered' or 'Endangered' under the EPBC Act and/or under National Action Plans. - it regularly supports, or has a high probability of regularly supporting (i.e. high habitat quality) taxon listed as 'Vulnerable', 'Near threatened', 'Data Deficient' or 'Insufficiently Known' in Victoria (DSE 2005, 2007), or species listed as 'Data Deficient' or 'Insufficiently Known' under National Action Plans. - it contains an area, or part thereof designated as 'critical habitat' under the FFG Act. - it supports, or likely to support a high proportion of any Victorian flora and fauna taxa. - it contains high quality, intact vegetation/habitat supporting a high species richness and diversity in a particular Bioregion. - it is a site which forms part of, or connected to a larger area(s) of remnant native vegetation or habitat of state conservation significance such as most State Parks and/or Flora and Fauna Reserves.

Criteria for defining Site Significance
REGIONAL SIGNIFICANCE
A site is of Regional significance if: - it regularly supports, or has a high probability of regularly supporting regionally significant fauna as defined in Table 1.2. - is contains a large population (i.e. greater than 1%) of flora considered rare in any regional native vegetation plan for a particular bioregion. - it supports a fauna population with a disjunct distribution, or a particular taxon that has an unusual ecological or biogeographical occurrence. - it is a site which forms part of, or is connected to a larger area(s) of remnant native vegetation or habitat of regional conservation significance such as most Regional Parks and/or Flora and Fauna Reserves.
LOCAL SIGNIFICANCE
Most sites are considered to be of at least local significant for conservation, and in general a site of local significance can be defined as: - an area which supports indigenous flora species and/or a remnant Ecological Vegetation Class, and habitats used by locally significant fauna species. - an area which currently acts, or has the potential to act as a wildlife corridor linking other areas of higher conservation significance and facilitating fauna movement throughout the landscape.

A1.4. Defining Vegetation Condition

Table A1.4. Defining Vegetation Condition.

Criteria for defining Vegetation Condition
Good condition - Vegetation dominated by a diversity of indigenous species, with defined structures (where appropriate), such as canopy layer, shrub layer, and ground cover, with little or few introduced species present.
Moderate condition - Vegetation dominated by a diversity of indigenous species, but is lacking some structures, such as canopy layer, shrub layer or ground cover, and/or there is a greater level of introduced flora species present.
Poor condition - Vegetation dominated by introduced species, but supports low levels of indigenous species present, in the canopy, shrub layer or ground cover.

A1.5. Defining Habitat Quality

Several factors are taken into account when determining the value of habitat. Habitat quality varies on both spatial and temporal scales, with the habitat value varying depending upon a particular fauna species.

Table A1.5. Defining Habitat Quality.

Criteria for defining Habitat Quality
HIGH QUALITY
High degree of intactness (i.e. floristically and structurally diverse), containing several important habitat features such as ground debris (logs, rocks, vegetation), mature hollow-bearing trees, and a dense understorey component.
High species richness and diversity (i.e. represented by a large number of species from a range of fauna groups).
High level of foraging and breeding activity, with the site regularly used by native fauna for refuge and cover.
Habitat that has experienced, or is experiencing low levels of disturbance and/or threatening processes (i.e. weed invasion, introduced animals, soil erosion, salinity).
High contribution to a wildlife corridor, and/or connected to a larger area(s) of high quality habitat.
Provides known, or likely habitat for one or more rare or threatened species listed under the EPBC Act, FFG Act, or species considered rare or threatened according to DSE 2005.
MODERATE QUALITY
Moderate degree of intactness, containing one or more important habitat features such as ground debris (logs, rocks, vegetation), mature hollow-bearing trees, and a dense understorey component.
Moderate species richness and diversity - represented by a moderate number of species from a range of fauna groups.
Moderate levels of foraging and breeding activity, with the site used by native fauna for refuge and cover.
Habitat that has experienced, or is experiencing moderate levels of disturbance and/or threatening processes.
Moderate contribution to a wildlife corridor, or is connected to area(s) of moderate quality habitat.
Provides potential habitat for a small number of threatened species listed under the EPBC Act, FFG Act, or species considered rare or threatened according to DSE 2005.
LOW QUALITY
Low degree of intactness, containing few important habitat features such as ground debris (logs, rocks, vegetation), mature hollow-bearing trees, and a dense understorey component.
Low species richness and diversity (i.e. represented by a small number of species from a range of fauna groups).
Low levels of foraging and breeding activity, with the site used by native fauna for refuge and cover.
Habitat that has experienced, or is experiencing high levels of disturbance and/or threatening processes.
Unlikely to form part of a wildlife corridor, and is not connected to another area(s) of habitat.
Unlikely to provide habitat for rare or threatened species listed under the EPBC Act, FFG Act, or considered rare or threatened according to DSE 2005.

Appendix 2.1 – Flora results

Table A2.1. Flora recorded from the study area during the preliminary survey.

Species marked with ^, * and # are considered regionally significant in the Central Victorian Uplands, Goldfields and Wimmera bioregion respectively.

** Noxious weeds recorded within the study area and there classification in the Wimmera and Glenelg Hopkins CMA, respectively, C = Regionally Controlled Weeds, R = Restricted (DPI 2006).

Scientific Name	Common Name
INDIGENOUS SPECIES	
*Acacia acinacea^ *#*	Gold-dust Wattle
Acacia aculeatissima^*#	Thin-leaf Wattle
Acacia implexa#*	Lightwood
Acacia mucronata	Variable Sallow Wattle
Acacia myrtifolia#*	Myrtle Wattle
Acacia paradoxa	Hedge Wattle
Acacia pycnantha	Golden Wattle
Acaena echinata	Sheep's Burr
Acrotriche serrulata#	Honey-pots
Allocasuarina verticillata^*#	Drooping Sheoak
Amyema miquelii^#	Box Mistletoe
Arthropodium strictum^*#	Chocolate Lilly
*Asperula conferta^**	Common Woodruff
*Astroloma conostephioides^*	Flame Heath
Astroloma humifusum	Cranberry Heath
Rytidosperma caespitosa	Common Wallaby-grass
Rytidosperma setacea	Bristly Wallaby-grass
Austrostipa mollis	Supple Spear-grass
Austrostipa semibarbata^*#	Fibrous Spear-grass
Billardiera cymosa^*#	Sweet Apple Berry
*Brachyloma daphnoides^*	Daphne Heath
Bursaria spinosa#*	Sweet Bursaria
Calocephalus lacteus^*#	Milky Beauty-heads
*Calytrix tetragona^*	Common Fringe-myrtle
Carex appressa^*#	Tall Sedge
Cassinia arcuata^#	Common Cassinia
Cassytha glabella^*#	Slender Dodder-laurel
Centrolepis spp^#	Centrolepis
*Chloris truncata^**	Windmill Grass
Chrysocephalum apiculatum^*#	Common Everlasting
Chrysocephalum semipapposum^#	Clustered Everlasting
Correa reflexa#*	Common Correa
Dianella admixta#	Black-anther Flax-lily
Dillwynia cinerascens^*#	Grey parrot-pea
*Dodonaea viscosa**	Sticky Hop-bush
Drosera peltata^*#	Pale Sundew
Drosera whittakeri	Scented Sundew

Scientific Name	Common Name
Elymus scaber var. *scaber*	Common Wheat-grass
Eucalyptus polyanthemos#	Red Box
Eucalyptus camaldulensis	River Red-gum
Eucalyptus goniocalyx^#	Bundy
Eucalyptus leucoxylon#	Yellow Gum
Eucalyptus macrorhyncha#	Red Stringybark
Eucalyptus microcarpa^	Grey Box
Eucalyptus obliqua#	Messmate Stringybark
Eucalyptus melliodora	Yellow Box
Exocarpos cupressiformis^#	Cherry Ballart
Geranium spp. ^*#	Crane's Bill
Geranium retrorsum^*#	Grassland Crane's-bill
Gonocarpus tetragynus	Common Raspwort
Grevillea lavandulacea#	Lavender Grevillea
r - Grevillea rosmarinifolia subsp. rosmarinifolia	Rosemary Grevillea
*Helichrysum scorpioides**#	Button Everlasting
Hibbertia riparia^*	Erect Guinea-flower
Hydrocotyle laxiflora	Stinking Pennywort
Hypoxis vaginata^*#	Yellow Star
*Isolepis cernua**#	Nodding Club-sedge
*Isopogon ceratophyllus**#	Horny cone-bush
Joycea pallida	Silvertop Wallaby-grass
Lepidosperma laterale^*#	Variable Sword-sedge
Leptospermum lanigerum^#	Woolly Tea-tree
*Leptospermum myrsinoides**#	Heath Tea-tree
Leptospermum scoparium^#	Manuka
Leucopogon virgatus^*#	Common Beard-heath
Lissanthe strigosa^#	Peach Heath
*Lomandra filiformis**#	Wattle Mat-rush
Lomandra nana^*	Dwarf Mat-rush
Microlaena stipoides#	Weeping Grass
Micromyrtus ciliata^*#	Heath Myrtle
*Monotoca scoparia **#	Prickly Broom-heath
Oxalis perennans^	Grassland Wood-sorrel
Ozothamnus obcordatus^#	Grey Everlasting
Pelargonium rodneyanum^#	Magenta Stork's-bill
Pimelea humilis	Common Rice-flower
Pimelea curviflora^*#	Curved Rice-flower
Plantago gaudichaudii^*#	Narrow Plantain
*Platylobium obtusangulum**#	Common Flat-pea
Poa sieberiana#	Grey Tussock-grass
Pultenaea mollis^*#	Narrow-leaf Bush Pea
Pterostylis spp. ^*#	Greenhood
Rumex brownii	Slender Dock
Senecio quadridentatus	Cotton Fireweed
Senecio tenuiflorus#	Slender Fireweed
Solenogyne gunnii ^*#	Hairy Solenogyne
Tetratheca ciliata^#	Pink Bells

Scientific Name	Common Name
Themeda triandra	Kangaroo Grass
Thysanotus patersonii	Twining Fringe-lily
Veronica plebeia^#	Trailing Speedwell
Wahlenbergia stricta#	Tall Bluebell
INTRODUCED SPECIES	
Acacia baileyana	Cootamundra Wattle
Acacia longifolia	Sallow Wattle
Acetosella vulgaris	Sheep Sorrel
Agapanthus praecox	Agapanthus
Agave americana	Century Plant
Agrostis capillaris	Brown-top Bent
Aira elegantissima	Delicate Hair-grass
Anthoxanthum odoratum	Sweet Vernal-grass
Arctotheca radula	Cape Weed
*Asparagus asparagoides**R, R*	Bridal Creeper
Avena barbata	Bearded Oat
Brassica spp	Turnip
Briza maxima	Large Quaking-grass
Briza minor	Lesser Quaking-grass
Bromus catharticus	Prairie Grass
Cerastium fontanum	Common Mouse-ear Chickweed
Chamaecytisus palmensis	Tree Lucerne
*Chrysanthemoides monilifera** C, C*	Boneseed
*Cirsium vulgare**R, R*	Perennial Thistle
*Conium maculatum**R, R*	Hemlock
Cordyline australis	New Zealand Cabbage-tree
Cotoneaster glaucophyllus	Large-leaf Cotoneaster
*Crataegus monogyna**C, R*	Hawthorn
Cupressus macrocarpa	Monterey Cypress
Cynodon dactylon	Couch
Cyperus eragrostis	Drain Flat-sedge
Dactylis glomerata	Cocksfoot
Erica lusitanica	Spanish Heath
Erodium spp.	Heron's Bill
Gazania linearis	Gazania
*Genista monspessulana**C , R*	Montpellier Broom
Geranium dissectum	Cut-leaf Crane's-bill
Helminthotheca echioides	Ox-tongue
Holcus lanatus	Yorkshire Fog
Hordeum leporinum	Barley-grass
Hypochoeris radicata	Flatweed
*Juncus acutus**C, C*	Spiny Rush
Leontodon taraxacoides	Hairy Hawkbit
Lepidium spp.	Peppercress
Malva parviflora	Small-flower Mallow
*Oxalis pes-caprae**R, R*	Soursob
Oxalis purpurea	Large-flower Wood-sorrel
Paspalum dilatatum	Paspalum
Phalaris aquatica	Toowoomba Canary-grass

Scientific Name	Common Name
Pinus radiata	Radiata Pine
Pittosporum undulatum	Sweet Pittosporum
Plantago lanceolata	Ribwort
Populus alba	White Poplar
Prunus spp.	Prunus
Romulea rosea	Onion Grass
*Rosa rubiginosa***C, C*	Sweet Briar
*Rubus fruticosus***C, C*	Blackberry
*Salix fragilis***R, R*	Crack Willow
Schinus molle	Pepper Tree
Solanum nigrum	Black Nightshade
Sonchus oleracea	Common Sow-thistle
Sporobolus africanus	Rat-tail Grass
*Ulex europaeus***C, C*	Gorse
Vinca major	Blue Periwinkle
*Watsonia bulbillifera***R, R*	Bulbil Watsonia

Appendix 2.2 – Flora database results

Table A2.2. Significant flora recorded within 10 kilometres of the study area.

Sources used to determine species status:

EPBC	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
DSE	Advisory List of Threatened Flora in Victoria (DSE 2005)
FFG	Flora and Fauna Guarantee Act 1988 (Victoria)

National status of species is designated by:

X	Extinct
CR	Critically endangered
EN	Endangered
VU	Vulnerable
K	Poorly Known (Briggs and Leigh 1996)
#	Records identified from EPBC Act Protected Matters Search Tool.
*	Native non-indigenous species

State status of species is designated by:

X	Extinct
e	Endangered
v	Vulnerable
r	Rare
k	Poorly Known
L	Listed

Likelihood of occurrence:

1	known occurrence
2	habitat present
3	habitat present, but low likelihood
4	unlikely
5	no suitable habitat

Scientific Name	Common Name	Last Documented Record (FIS)	Total number of documented records (FIS)	EPBC	VROTS	FFG	Likely occurrence within the study area
NATIONAL SIGNIFICANCE							
# Dodonaea procumbens	Trailing Hop-bush	1998	4	VU	v	-	1
Prasophyllum subbisectum	Pomonal Leek-orchid	1995	9	EN	e	L	3
Rutidosis leptorhynchoides	Button Wrinklewort	2003	7	EN	e	L	3
# Senecio macrocarpus	Large-fruit Fireweed	2000	13	VU	e	L	2
Thelymitra epipactoides	Metallic Sun-orchid	1932	3	EN	e	L	3
Caladenia audasii	McIvor Spider-orchid	1999	3	EN	e	L	5
Caladenia ornata	Ornate Pink-fingers	1995	1	VU	v	L	3
Daviesia laevis	Grampians Bitter-pea	1893	1	VU	v	L	4

Scientific Name	Common Name	Last Documented Record (FIS)	Total number of documented records (FIS)	EPBC	VROTS	FFG	Likely occurrence within the study area
Euphrasia collina subsp. *muelleri*	Purple Eyebright	1998	5	EN	e	L	4
Caladenia fulva	Tawny Spider-orchid	1992	27	EN	e	L	3
# *Pimelea spinescens* subsp. *spinescens*	Spiny Rice-flower	2001	3	CR	e	-	4
# *Glycine latrobeana*	Clover Glycine	-	-	VU	v	L	5
#*Thelymitra matthewsii*	Spiral Sun-orchid	-	-	VU	V	L	4
STATE SIGNIFICANCE							
Bossiaea cordigera	Wiry Bossiaea	-	1	-	r	-	3
Caladenia venusta	Large White Spider-orchid	-	1	-	r	-	4
Allocasuarina luehmannii	Buloke	1998	11	-	-	L	3
Comesperma polygaloides	Small Milkwort	2003	16	-	v	L	4
Correa aemula	Hairy Correa	1952	2	-	r	-	4
Correa reflexa var. *angustifolia*	Grampians Correa	1911	1	-	r	-	4
Rytidosperma monticola	Small-flower Wallaby-grass	1998	2	-	r	-	3
Deyeuxia imbricata	Bent-grass	1991	3	-	v	-	4
Digitaria divaricatissima	Umbrella Grass	1998	1	-	v	-	4
Diuris behrii	Golden Cowslips	1978	5	-	v	-	3
Diuris palustris	Swamp Diuris	1971	9	-	v	L	3
Dodonaea boroniifolia	Hairy Hop-bush	1996	1	-	r	-	3
Eucalyptus froggattii	Kamarooka Mallee	1998	1	-	r	L	4
Grevillea dimorpha	Flame Grevillea	1893	2	-	r	-	3
Grevillea dryophylla	Goldfields Grevillea	1995	4	-	r	-	3
Hibbertia humifusa	Rising Star Guinea-flower	1998	9	-	r	-	1
Isolepis congrua	Slender Club-sedge	1988	5	-	v	L	3
Leptorhynchos elongatus	Lanky Buttons	1899	2	-	e	-	4
Leptorhynchos orientalis	Annual Buttons	1893	1	-	e	L	4
Corunastylis ciliata	Fringed Midge-orchid	1995	2	-	k	-	5

Scientific Name	Common Name	Last Documented Record (FIS)	Total number of documented records (FIS)	EPBC	VROTS	FFG	Likely occurrence within the study area
Prasophyllum lindleyanum	Green Leek-orchid	1947	4	-	v	-	3
Schoenus nanus	Tiny Bog-sedge	1988	3	-	r	-	3
Swainsona swainsonioides	Downy Swainson-pea	1893	2	-	e	L	4
Thelymitra X *chasmogama*	Globe-hood Sun-orchid	1945	2	-	v	-	4
Thelymitra luteocilium	Fringed Sun-orchid	1999	19	-	r	-	2
Thelymitra X *macmillanii*	Crimson Sun-orchid	1999	9	-	v	-	2
Dodonaea heteromorpha	Maple-fruited Hop-bush	1894	1	-	x	-	4
Caladenia oenochila	Wine-lipped Spider-orchid	1933	1	-	v	-	4
Pimelea spinescens	Spiny Rice-flower	2003	2	-	e	L	5
Pterostylis diminuta	Crowded Greenhood	1992	2	-	k	-	4
Pterostylis smaragdyna	Emerald-lip Greenhood	1993	2	-	r	-	1
Pterostylis aciculiformis	Slender Ruddyhood	-	1	-	k	-	5
Austrostipa hemipogon	Half-bearded Spear-grass	2002	12	-	r	-	2
Grevillea rosmarinifolia subsp. *rosmarinifolia*	Rosemary Grevillea	1998	1	-	r	-	1
Caladenia reticulata s.s.	Veined Spider-orchid	1991	12	-	v	-	5
Austrostipa trichophylla	Spear-grass	1998	3	-	r	-	4
Prasophyllum sp. aff. *fitzgeraldii A*	Pink-lip Leek-orchid	1991	5	-	e	L	3
Pultenaea juniperina s.s.	Prickly Beauty	1893	1	-	r	-	4
Prasophyllum pyriforme s.s.	Silurian Leek-orchid	1999	4	-	e	-	3
Stylidium calcaratum var. *ecorne*	Foot Triggerplant	1981	4	-	k	-	3
Cardamine gunnii s.s.	Tuberous Bitter-cress	1871	1	-	x	L	4
Hibbertia humifusa subsp. *humifusa*	Rising Star Guinea-flower	2000	34	-	r	-	1
Geranium sp. 3	Pale-flower Crane's-bill	1998	1	-	r	-	2
Bartramia nothostricta	Apple Moss	1882	1	-	k	-	4
Prasophyllum aff. *fitzgeraldii B*	Elfin Leek-orchid	1995	3	-	e	-	5

Source: DSE Flora Information System (FIS 2009); SEWPaC Protected Matters Search Tool (http://www.environment.gov.au/erin/ert/epbc/index.html)

Appendix 2.3 – Net Gain Tables

Table A2.3. Habitat hectare losses for all vegetation within the study area

Study Area Option			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Habitat Zone			CGW*a	CGW*b	CGW1	CGW2a	CGW2b	GDF1	GDF2	GDF3	GDF4	GDF5	GW*a	GW*b	GW1	GW2	GW3	GW5	GW6
Bioregion			VVP	CVU	VVP	VVP	CVU	VVP	VVP	VVP	VVP	VVP	VVP	CVU	VVP	VVP	VVP	VVP	VVP
EVC Name			CGW	CGW	CGW	CGW	CGW	GDF	GDF	GDF	GDF	GDF	GW	GW	GW	GW	GW	GW	GW
EVC Number			68	68	68	68	68	22	22	22	22	22	175	175	175	175	175	175	175
		Max Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Site Condition	Large Old Trees	10	6	6	6	6	6	4	4	4	4	4	5.75	5.75	6	5	6	5	6
	Canopy Cover	5	4	4	5	3	3	5	5	5	5	5	4	4	5	3	5	3	5
	Under storey	25	10	10	10	10	10	15	15	5	15	15	11.88	11.88	15	15	10	15	15
	Lack of Weeds	15	4	4	6	2	2	2	6	2	2	6	4	4	6	2	6	2	6
	Recruitment	10	3	3	3	3	3	5	5	5	5	5	3.63	3.63	5	5	3	5	5
	Organic Matter	5	4	4	5	3	3	5	5	5	5	5	4.75	4.75	5	5	5	5	5
	Logs	5	4	4	4	4	4	2	4	2	2	4	3.25	3.25	4	4	4	4	4
Treeless EVC Multiplier		Multiplier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		Subtotal =	35	35	39	31	31	38	44	28	38	44	37.26	37.26	46	39	39	39	46
Landscape value	Patch Size	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Neighbourhood	10	8	8	8	8	8	15	15	7	7	7	10	10	15	15	15	7	7
	Distance to Core	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Habitat points out of 100		100	43	43	47	39	39	53	59	35	45	51	47.26	47.26	61	54	54	46	53
Habitat Score (habitat points/100)			0.43	0.43	0.47	0.39	0.39	0.53	0.59	0.35	0.45	0.51	0.47	0.47	0.61	0.54	0.54	0.46	0.53
Total Area of Habitat Zone within the Study Area (ha)			0.34	1.04	6.15	2.55	3.32	1.44	0.03	0.47	0.82	0.25	1.08	0.19	12.44	6.36	0.43	6.58	7.83
Area (ha) proposed to be removed			0.34	1.04	6.15	2.55	3.32	1.44	0.03	0.47	0.82	0.25	1.08	0.19	12.44	6.36	0.43	6.58	7.83
Area (ha) proposed to be retained			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total habitat hectares within the Study Area			0.15	0.45	2.89	0.99	1.29	0.76	0.02	0.16	0.37	0.13	0.51	0.09	7.59	3.44	0.23	3.03	4.15
Habitat hectares to be removed			0.15	0.45	2.89	0.99	1.29	0.76	0.02	0.16	0.37	0.13	0.51	0.09	7.59	3.44	0.23	3.03	4.15
Habitat hectares to be retained			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVC Conservation Status			En	En	En	En	En	D	D	D	D	D	En	En	En	En	En	En	En
Conservation Significance	Conservation status x Habitat Score		V. High	V. High	V. High	High	High	Medium	Medium	Medium	Medium	Medium	V. High	V. High	V. High	V. High	V. High	V. High	V. High
	Threatened Species		V. High	V. High	V. High	V. High	V. High	V. High	V. High	N/A	High	High	V. High	V. High	V. High	V. High	V. High	V. High	V. High
	Other Site Attributes		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Overall (highest rating)		V. High	V. High	V. High	V. High	V. High	V. High	V. High	Medium	High	High	V. High	V. High	V. High	V. High	V. High	V. High	V. High
Large Old Trees	No. in Study Area		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. to be Removed		3	8	43	20	27	12	0	4	7	2	9	2	100	51	3	53	63
	No. to be Retained		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Area Option			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Habitat Zone			GW7	GW8	HW*	HW1	HW2	HW3	HW4	HW5	HW6	HW7	HW8	HW9	PGW*a	PGW*b	PGW1a	PGW1b	PGW2a
Bioregion			VVP	VVP	CVU	CVU	CVU	CVU	CVU	CVU	CVU	CVU	CVU	CVU	VVP	CVU	VVP	CVU	VVP
EVC Name			GW	GW	HW	HW	HW	HW	HW	HW	HW	HW	HW	HW	PGW	PGW	PGW	PGW	PGW
EVC Number			175	175	48	48	48	48	48	48	48	48	48	48	55_61	55	55_61	55	55_61
		Max Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score
Site Condition	Large Old Trees	10	6	6	4	0	6	6	6	6	0	0	6	6	5.6	5.6	4	4	8
	Canopy Cover	5	5	3	3.33	0	5	5	5	5	0	0	5	5	3.8	3.8	3	3	5
	Under storey	25	10	5	13.89	15	15	15	5	15	15	15	15	15	9	9	5	5	10
	Lack of Weeds	15	6	2	9.33	13	13	6	2	13	6	13	9	9	3.4	3.4	2	2	2
	Recruitment	10	3	0	7	10	10	5	3	10	5	10	5	5	4.2	4.2	3	3	5
	Organic Matter	5	5	3	3.89	3	3	3	5	5	5	3	5	3	4.6	4.6	4	4	5
	Logs	5	4	0	3.11	2	2	4	4	4	2	2	4	4	2.4	2.4	2	2	2
Treeless EVC Multiplier		Multiplier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		Subtotal =	39	19	44.55	43	54	44	30	58	33	43	49	47	33	33	23	23	37
Landscape value	Patch Size	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Neighbourhood	10	7	7	11.44	15	15	7	7	15	15	7	7	15	10.2	10.2	7	7	7
	Distance to Core	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Habitat points out of 100		100	46	26	55.99	58	69	51	37	73	48	50	56	62	43.2	43.2	30	30	44
Habitat Score (habitat points/100)			0.46	0.26	0.56	0.58	0.69	0.51	0.37	0.73	0.48	0.5	0.56	0.62	0.43	0.43	0.3	0.3	0.44
Total Area of Habitat Zone within the Study Area (ha)			2.92	0.44	0.31	7.09	10.89	7.97	0.02	13.15	1.09	0.40	0.48	6.51	0.07	1.15	8.27	6.34	0.06
Area (ha) proposed to be removed			2.92	0.44	0.31	7.09	10.89	7.97	0.02	13.15	1.09	0.40	0.48	6.51	0.07	1.15	8.27	6.34	0.06
Area (ha) proposed to be retained			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total habitat hectares within the Study Area			1.34	0.11	0.17	4.11	7.51	4.07	0.01	9.6	0.52	0.2	0.27	4.04	0.03	0.49	2.48	1.9	0.03
Habitat hectares to be removed			1.34	0.11	0.17	4.11	7.51	4.07	0.01	9.6	0.52	0.2	0.27	4.04	0.03	0.49	2.48	1.9	0.03
Habitat hectares to be retained			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EVC Conservation Status			En	En	D	D	D	D	D	D	D	D	D	D	En	En	En	En	En
Conservation Significance	Conservation status x Habitat Score		V. High	High	Medium	Medium	High	Medium	Medium	High	Medium	Medium	Medium	High	V. High	V. High	High	High	V. High
	Threatened Species		V. High	N/A	V. High	V. High	V. High	V. High	N/A	V. High	V. High	High	V. High	V. High	V. High	V. High	N/A	N/A	V. High
	Other Site Attributes		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Overall (highest rating)		V. High	High	V. High	V. High	V. High	V. High	Medium	V. High	V. High	High	V. High	V. High	V. High	V. High	High	High	V. High
Large Old Trees	No. in Study Area		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No. to be Removed		23	4	1	0	87	48	0	79	0	0	3	39	1	9	41	32	1
	No. to be Retained		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Study Area Option			0	0	0	0
Habitat Zone			PGW2b	PGW3	PGW4	PGW5
Bioregion			CVU	CVU	CVU	CVU
EVC Name			PGW	PGW	PGW	PGW
EVC Number			55	55	55	55
		Max Score	Score	Score	Score	Score
Site Condition	Large Old Trees	10	8	4	4	8
	Canopy Cover	5	5	3	3	5
	Under storey	25	10	15	5	10
	Lack of Weeds	15	2	9	2	2
	Recruitment	10	5	5	3	5
	Organic Matter	5	5	5	4	5
	Logs	5	2	4	2	2
Treeless EVC Multiplier		Multiplier	1	1	1	1
		Subtotal =	37	45	23	37
Landscape value	Patch Size	10	0	0	0	0
	Neighbourhood	10	7	7	15	15
	Distance to Core	5	0	0	0	0
Habitat points out of 100		100	44	52	38	52
Habitat Score (habitat points/100)			0.44	0.52	0.38	0.52
Total Area of Habitat Zone within the Study Area (ha)			2.95	4.27	6.25	1.67
Area (ha) proposed to be removed			2.95	4.27	6.25	1.67
Area (ha) proposed to be retained			0.00	0.00	0.00	0.00
Total habitat hectares within the Study Area			1.3	2.22	2.38	0.87
Habitat hectares to be removed			1.3	2.22	2.38	0.87
Habitat hectares to be retained			0	0	0	0
EVC Conservation Status			En	En	En	En
Conservation Significance	Conservation status x Habitat Score		V. High	V. High	High	V. High
	Threatened Species		V. High	V. High	V. High	V. High
	Other Site Attributes		N/A	N/A	N/A	N/A
	Overall (highest rating)		V. High	V. High	V. High	V. High
Large Old Trees	No. in Study Area		0	0	0	0
	No. to be Removed		35	21	31	20
	No. to be Retained		0	0	0	0

Appendix 2.4 – Scattered Tree location data

Table A2.4. MGA and DBH data for recorded trees within the study area

ID	Latitude	Londitude	Size	Species	Cons. Sig.	Bioregion
5	-37.2022	142.8826594	LOT	Y. Box	Medium	Goldfields
6	-37.1766	142.8772493	LOT	Y. Gum	Medium	Goldfields
95	-37.2423	142.9074387	LOT	Y. Gum	Medium	Goldfields
96	-37.2404	142.9043153	MOT	Y. Box	Medium	Goldfields
97	-37.2294	142.8965155	VLOT	Y. Box	Medium	Goldfields
119	-37.0842	142.7834144	MOT	Bundy	High	Central Victorian Uplands
120	-37.087	142.7859433	ST	Red Stringybark	Low	Central Victorian Uplands
121	-37.0876	142.7866082	MOT	Y. Box	Low	Central Victorian Uplands
122	-37.0882	142.7867559	ST	Red Stringybark	Low	Central Victorian Uplands
123	-37.0883	142.7868072	ST	Red Stringybark	Low	Central Victorian Uplands
124	-37.0884	142.7870708	ST	Red Stringybark	Low	Central Victorian Uplands
125	-37.0887	142.7872663	ST	Bundy	Low	Central Victorian Uplands
126	-37.0889	142.7874228	ST	Y. Box	Low	Central Victorian Uplands
127	-37.089	142.7876788	MOT	Bundy	Low	Central Victorian Uplands
128	-37.0891	142.7876841	MOT	Y. Box	Low	Central Victorian Uplands
129	-37.0892	142.7877717	MOT	Bundy	Low	Central Victorian Uplands
130	-37.0893	142.7878153	ST	Bundy	Low	Central Victorian Uplands
131	-37.0892	142.7881489	LOT	Bundy	Low	Central Victorian Uplands
132	-37.089	142.7883783	LOT	Bundy	Low	Central Victorian Uplands
133	-37.0898	142.7882713	MOT	Y. Gum	Low	Central Victorian Uplands
134	-37.0897	142.7884646	MOT	Bundy	Low	Central Victorian Uplands
135	-37.0888	142.7879185	ST	Y. Gum	Low	Central Victorian Uplands
136	-37.0889	142.7879361	ST	Dead	Low	Central Victorian Uplands
137	-37.1017	142.7973263	LOT	Bundy	Low	Central Victorian Uplands
138	-37.1018	142.7972931	LOT	Bundy	Low	Central Victorian Uplands
139	-37.1021	142.7983412	VLOT	Red Stringybark	Low	Central Victorian Uplands
140	-37.1031	142.7990774	LOT	Red Stringybark	Low	Central Victorian Uplands
143	-37.1555	142.8623576	ST	RRG	High	Central Victorian Uplands
144	-37.1565	142.8621403	ST	RRG	High	Central Victorian Uplands
145	-37.1565	142.8621627	ST	RRG	High	Central Victorian Uplands
146	-37.1567	142.8620942	LOT	RRG	High	Central Victorian Uplands
147	-37.1568	142.8621124	MOT	RRG	High	Central Victorian Uplands
148	-37.1571	142.8621818	ST	RRG	High	Central Victorian Uplands
149	-37.1572	142.8622003	MOT	RRG	High	Central Victorian Uplands
150	-37.1576	142.8622803	LOT	RRG	High	Central Victorian Uplands
151	-37.1576	142.8624245	LOT	RRG	High	Central Victorian Uplands
152	-37.1576	142.8625255	MOT	RRG	High	Central Victorian Uplands

ID	Latitude	Londitude	Size	Species	Cons. Sig.	Bioregion
153	-37.1588	142.863337	LOT	RRG	High	Central Victorian Uplands
154	-37.16	142.8637887	VLOT	RRG	High	Central Victorian Uplands
155	-37.1652	142.8660125	ST	RRG	High	Goldfields
160	-37.1647	142.8656027	MOT	RRG	High	Goldfields
161	-37.1647	142.8656514	ST	RRG	High	Goldfields
162	-37.1647	142.8654676	ST	RRG	High	Goldfields
167	-37.1971	142.8814606	VLOT	Y. Gum	Medium	Goldfields
168	-37.1967	142.8813871	VLOT	Y. Gum	Medium	Goldfields
178	-37.2197	142.89109	MOT	Y. Box	Medium	Goldfields
179	-37.2242	142.8947115	VLOT	Y. Gum	Medium	Goldfields
242	-37.1236	142.8179029	VLOT	Red Stringybark	Low	Central Victorian Uplands
245	-37.1196	142.8144679	VLOT	Red Stringybark	Low	Central Victorian Uplands
250	-37.1293	142.8239689	VLOT	Red Box	Low	Central Victorian Uplands
253	-37.1284	142.822632	LOT	Red Box	Low	Central Victorian Uplands
254	-37.1281	142.8228413	VLOT	Red Stringybark	Low	Central Victorian Uplands
255	-37.1279	142.822727	VLOT	Red Stringybark	Low	Central Victorian Uplands
256	-37.1272	142.8219536	LOT	Red Stringybark	Low	Central Victorian Uplands
262	-37.1387	142.835262	MOT	RRG	High	Central Victorian Uplands
263	-37.1382	142.835098	LOT	RRG	High	Central Victorian Uplands
264	-37.138	142.8346663	LOT	RRG	High	Central Victorian Uplands
265	-37.1382	142.8349032	LOT	RRG	High	Central Victorian Uplands
269	-37.1506	142.8641486	LOT	Y. Box	High	Central Victorian Uplands
306	-37.1956	142.8804649	VLOT	Y. Gum	Medium	Goldfields
307	-37.1951	142.8802801	LOT	Y. Gum	Medium	Goldfields
312	-37.2296	142.8987204	LOT	Y. Gum	Medium	Goldfields
313	-37.2312	142.8995363	ST	Y. Gum	Medium	Goldfields
314	-37.2325	142.9003455	LOT	Y. Box	Medium	Goldfields
320	-37.163	142.8656029	LOT	RRG	High	Goldfields
360	-37.0844	142.7883491	ST	DD	DD	Central Victorian Uplands
361	-37.0851	142.7874481	ST	DD	DD	Central Victorian Uplands
362	-37.0869	142.7869546	ST	DD	DD	Central Victorian Uplands
363	-37.084	142.7840586	MOT	DD	DD	Central Victorian Uplands
364	-37.0827	142.782833	DD	DD	DD	Central Victorian Uplands
365	-37.0828	142.783298	DD	DD	DD	Central Victorian Uplands
366	-37.0873	142.7873149	ST	DD	DD	Central Victorian Uplands
367	-37.1398	142.8432279	MOT	DD	DD	Central Victorian Uplands
368	-37.1398	142.8413423	MOT	DD	DD	Central Victorian Uplands
369	-37.1395	142.8413348	MOT	DD	DD	Central Victorian Uplands
370	-37.1586	142.860415	DD	DD	DD	Central Victorian Uplands
371	-37.1588	142.8605357	DD	DD	DD	Central Victorian Uplands

ID	Latitude	Londitude	Size	Species	Cons. Sig.	Bioregion
374	-37.1759	142.8793861	MOT	DD	DD	Goldfields
375	-37.1798	142.8784238	DD	DD	DD	Goldfields
376	-37.1826	142.8803187	DD	DD	DD	Goldfields
377	-37.1815	142.8796871	DD	DD	DD	Goldfields

Note: VLOT = Very Large Old Tree, LOT= Large Old Tree, MOT = Medium Old Tree, ST = Small Tree, Dead = Dead Tree, DD = Due Diligence (tree to be assessed as part of future Net Gain surveys), CVU = Central Victorian Uplands and VVP = Victorian Volcanic Plains.

Appendix 2.5 – Scattered Tree Summary

Table A2.5. Summary of Scattered Trees within the study area

Bioregion	Size	Conservation Significance	No: trees
Central Victorian Uplands	VLOT	High	1
		Low	6
	LOT	High	8
		Low	7
	MOT	High	5
		Low	6
		DD	4
	ST	High	4
		Low	9
		DD	4
	DD	DD	4
Goldfields	VLOT	Medium	5
	LOT	High	1
		Medium	6
	MOT	High	1
		Medium	2
		DD	1
	ST	High	3
		Medium	1
	DD	DD	3

Appendix 3.1 – Fauna results

Table A3.1. Fauna recorded during the preliminary fauna assesment, and previously recorded within 10 kilometres of the study area.

Type of Record:
H – Heard Ma
S – Seen
I – Incidental (identified from feathers, bones or scats, etc)
T – Trapped / Handheld
* Introduced species

Mi Migratory (EPBC Act)
Marine (EPBC Act)

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
	MAMMALS					
Platypus	*Ornithorhynchus anatinus*	2007	1	-	-	-
Short-beaked Echidna	*Tachyglossus aculeatus*	2006	30	-	-	-
Brush-tailed Phascogale	*Phascogale tapoatafa*	2006	17	Total	-	-
Yellow-footed Antechinus	*Antechinus flavipes*	2005	49	-	-	-
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	2006	7	-	-	-
Southern Brown Bandicoot	*Isoodon obesulus obesulus*	2002	38	-	-	-
Common Brushtail Possum	*Trichosurus vulpecula*	2006	149	Total	-	S
Common Ringtail Possum	*Pseudocheirus peregrinus*	2000	14	Partial	-	-
Yellow-bellied Glider	*Petaurus australis*	1992	1	Total	-	-
Squirrel Glider	*Petaurus norfolcensis*	2006	20	Total	-	-
Sugar Glider	*Petaurus breviceps*	2006	39	Total	-	-
Feathertail Glider	*Acrobates pygmaeus*	2006	8	Total	-	-
Eastern Pygmy-possum	*Cercartetus nanus*	1965	1	Partial	-	-
Koala	*Phascolarctos cinereus*	2001	29	-	-	-
Common Wombat	*Vombatus ursinus*	1995	1	-	-	-

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
Black Wallaby	*Wallabia bicolor*	2005	37	-	-	S
Tammar Wallaby	*Macropus eugenii*	1992	1	-	-	-
Red-necked Wallaby	*Macropus rufogriseus*	2006	5	-	-	-
Western Grey Kangaroo	*Macropus fuliginosus*	1996	3	-	-	-
Eastern Grey Kangaroo	*Macropus giganteus*	2005	37	-	-	S
White-striped Freetail Bat	*Tadarida australis*	2005	13	Total	-	-
Lesser Long-eared Bat	*Nyctophilus geoffroyi*	2001	23	Total	-	-
Gould's Wattled Bat	*Chalinolobus gouldii*	2001	8	Total	-	-
Chocolate Wattled Bat	*Chalinolobus morio*	2001	33	Total	-	-
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*	2001	1	Total	-	-
Southern Forest Bat	*Vespadelus regulus*	2001	1	Total	-	-
Little Forest Bat	*Vespadelus vulturnus*	2001	27	Total	-	-
Large Forest Bat	*Vespadelus darlingtoni*	2001	7	Total	-	-
Swamp Rat	*Rattus lutreolus*	2001	8	-	-	-
*Black Rat	*Rattus rattus*	2002	8	-	-	-
*House Mouse	*Mus musculus*	2002	15	-	-	-
Water Rat	*Hydromys chrysogaster*	1990	1	-	-	-
*European Rabbit	*Oryctolagus cuniculus*	2002	23	-	-	-
*European Hare	*Lepus europeaus*	2001	9	-	-	S
*Goat (feral)	*Capra hircus*	2001	1	-	-	-
*Red Fox	*Vulpes vulpes*	2002	10	-	-	-
*Cat	*Felis catus*	2005	3	-	-	-
Unidentified brushtail possum	*Trichosurus sp.*	1996	1	-	-	-
Southern Freetail Bat (long penis)	*Mormopterus sp. 1*	1996	6	-	-	-
Unidentified Freetail Bat	*Mormopterus sp.*	1970	1	-	-	-
Unidentified long-eared bat	*Nyctophilus sp.*	1996	2	-	-	-
Unidentified Antechinus	*Antechinus sp.*	2006	3	-	-	-

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
Small rodent	*Muridae sp.*	1997	1	-	-	-
Unidentified small dasyurid	*Dasyuridae sp.*	2006	7	-	-	-
Unidentified predator	*Unidentified predator*	2000	2	-	-	-
Unidentified bat	*Unidentified bat*	2001	1	-	-	-
BIRDS						
Painted Button-quail	*Turnix varia*	2000	4	-	-	-
Plains-wanderer	*Pedionomus torquatus*	1975	2	-	-	-
Peaceful Dove	*Geopelia striata*	2005	32	-	-	-
Common Bronzewing	*Phaps chalcoptera*	2006	28	-	-	S
Crested Pigeon	*Ocyphaps lophotes*	2000	1	-	-	S
Australian Spotted Crake	*Porzana fluminea*	1970	1	-	-	-
Black-tailed Native-hen	*Gallinula ventralis*	1999	2	-	-	-
Dusky Moorhen	*Gallinula tenebrosa*	2000	11	-	-	-
Purple Swamphen	*Porphyrio porphyrio*	2000	14	-	Ma	-
Eurasian Coot	*Fulica atra*	2006	32	-	-	S
Australasian Grebe	*Tachybaptus novaehollandiae*	2003	13	-	-	S
Hoary-headed Grebe	*Poliocephalus poliocephalus*	2006	19	-	-	-
Great Cormorant	*Phalacrocorax carbo*	2001	5	-	-	-
Little Black Cormorant	*Phalacrocorax sulcirostris*	2006	8	-	-	-
Pied Cormorant	*Phalacrocorax varius*	2006	2	-	-	-
Little Pied Cormorant	*Microcarbo melanoleucos*	2003	16	-	-	-
Darter	*Anhinga novaehollandiae*	2003	4	-	-	-
Australian Pelican	*Pelecanus conspicillatus*	2006	10	-	Ma	-
Whiskered Tern	*Chlidonias hybridus*	2000	1	-	Ma	-
Silver Gull	*Chroicocephalus novaehollandiae*	2006	25	-	Ma	-
Masked Lapwing	*Vanellus miles*	2006	48	-	Mi	S
Red-capped Plover	*Charadrius ruficapillus*	2001	3	-	Mi/Ma	-

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
Black-fronted Dotterel	*Elseyornis melanops*	2001	4	-	Mi	S
Black-winged Stilt	*Himantopus himantopus*	2006	11	-	Mi/Ma	-
Red-necked Avocet	*Recurvirostra novaehollandiae*	2003	1	-	Mi/Ma	-
Bush Stone-curlew	*Burhinus grallarius*	2005	10	-	-	-
Brolga	*Grus rubicunda*	2004	2	-	Mi	-
Australian White Ibis	*Threskiornis molucca*	2003	10	-	Ma	S
Straw-necked Ibis	*Threskiornis spinicollis*	2005	1	-	Ma	-
Royal Spoonbill	*Platalea regia*	2004	2	-	-	-
Yellow-billed Spoonbill	*Platalea flavipes*	2006	3	-	-	S
Eastern Great Egret	*Ardea modesta*	2001	4	-	Mi/Ma	-
White-faced Heron	*Egretta novaehollandiae*	2006	24	-	-	-
White-necked Heron	*Ardea pacifica*	2001	8	-	-	-
Australian Wood Duck	*Chenonetta jubata*	2002	19	Total	Mi	S
Black Swan	*Cygnus atratus*	2006	38	-	Mi	-
Plumed Whistling-Duck	*Dendrocygna eytoni*	1986	1	-	Mi	-
Australian Shelduck	*Tadorna tadornoides*	2006	37	Total	Mi	-
Pacific Black Duck	*Anas superciliosa*	2006	38	-	Mi	S
Chestnut Teal	*Anas castanea*	2004	10	Total	Mi	S
Grey Teal	*Anas gracilis*	2006	26	Total	Mi	-
Australasian Shoveler	*Anas rhynchotis*	2006	15	-	Mi	-
Pink-eared Duck	*Malacorhynchus membranaceus*	2003	7	Partial	Mi	-
Freckled Duck	*Stictonetta naevosa*	1995	1	-	Mi	-
Hardhead	*Aythya australis*	2006	13	-	Mi	-
Blue-billed Duck	*Oxyura australis*	1992	1	-	Mi	-
Musk Duck	*Biziura lobata*	2003	15	-	Mi/Ma	-
Spotted Harrier	*Circus assimilis*	1995	1	-	Mi	-
Brown Goshawk	*Accipiter fasciatus*	2001	28	-	Mi/Ma	-

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
Wedge-tailed Eagle	*Aquila audax*	2006	23	-	Mi	S
Little Eagle	*Hieraaetus morphnoides*	2002	6	-	Mi	-
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	1982	1	-	Mi/Ma	-
Whistling Kite	*Haliastur sphenurus*	2006	20	-	Mi/Ma	S
Black Kite	*Milvus migrans*	2001	5	-	Mi	S
Black-shouldered Kite	*Elanus axillaris*	2001	4	-	Mi	-
Australian Hobby	*Falco longipennis*	2000	2	-	Mi	-
Peregrine Falcon	*Falco peregrinus*	2005	9	Partial	Mi	-
Brown Falcon	*Falco berigora*	2002	25	-	Mi	S
Southern Boobook	*Ninox novaeseelandiae*	2005	16	Total	Ma	-
Barking Owl	*Ninox connivens*	1997	3	Total	-	-
Powerful Owl	*Ninox strenua*	2001	13	Total	-	-
Rainbow Lorikeet	*Trichoglossus haematodus*	2001	7	Total	-	-
Musk Lorikeet	*Glossopsitta concinna*	2006	58	Total	-	-
Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*	2002	36	Total	-	-
Little Lorikeet	*Glossopsitta pusilla*	2006	24	Total	-	-
Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*	2002	28	Total	-	-
Sulphur-crested Cockatoo	*Cacatua galerita*	2002	36	Total	-	S
Long-billed Corella	*Cacatua tenuirostris*	2002	28	Total	-	S
Galah	*Eolophus roseicapilla*	2006	33	Total	-	S
Cockatiel	*Nymphicus hollandicus*	1991	2	Total	-	-
Crimson Rosella	*Platycercus elegans elegans*	2006	70	Total	-	S
Eastern Rosella	*Platycercus eximius*	2006	62	Total	-	S
Mallee Ringneck	*Barnardius zonarius barnardi*	1994	1	Total	-	S
Red-rumped Parrot	*Psephotus haematonotus*	2006	29	Total	-	S
Blue-winged Parrot	*Neophema chrysostoma*	1996	1	Partial	Ma	-
Elegant Parrot	*Neophema elegans*	1998	3	Total	-	-

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
Swift Parrot	*Lathamus discolor*	2003	6	Total	Ma	-
Tawny Frogmouth	*Podargus strigoides*	2006	8	-	-	-
Australian Owlet-nightjar	*Aegotheles cristatus*	2001	12	Total	-	-
Laughing Kookaburra	*Dacelo novaeguineae*	2002	42	Total	-	S
Sacred Kingfisher	*Todiramphus sanctus*	2001	8	Partial	Ma	-
Rainbow Bee-eater	*Merops ornatus*	2002	20	-	Ma	-
Pallid Cuckoo	*Cuculus pallidus*	2001	12	-	Ma	-
Fan-tailed Cuckoo	*Cacomantis flabelliformis*	2001	9	-	Ma	-
Black-eared Cuckoo	*Chrysococcyx osculans*	2000	2	-	Ma	-
Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*	2001	7	-	Ma	-
Shining Bronze-Cuckoo	*Chrysococcyx lucidus*	2001	3	-	Ma	-
Welcome Swallow	*Hirundo neoxena*	2002	79	Partial	Ma	S
White-backed Swallow	*Cheramoeca leucosternus*	1982	1	-	-	-
Tree Martin	*Hirundo nigricans*	2001	12	Total	Ma	S
Fairy Martin	*Hirundo ariel*	2001	4	Partial	-	-
Grey Fantail	*Rhipidura albiscarpa*	2006	40	-	-	S
Willie Wagtail	*Rhipidura leucophrys*	2005	72	-	-	S
Restless Flycatcher	*Myiagra inquieta*	2005	40	-	-	S
Jacky Winter	*Microeca fascinans*	2002	15	-	-	S
Scarlet Robin	*Petroica boodang*	2001	34	-	-	S
Red-capped Robin	*Petroica goodenovii*	2000	4	-	-	-
Flame Robin	*Petroica phoenicea*	1998	9	-	Ma	S
Rose Robin	*Petroica rosea*	1968	3	-	-	-
Hooded Robin	*Melanodryas cucullata*	2004	7	-	-	-
Eastern Yellow Robin	*Eopsaltria australis*	2003	45	-	-	S
Golden Whistler	*Pachycephala pectoralis*	2001	19	-	-	-
Rufous Whistler	*Pachycephala rufiventris*	2005	48	-	-	-

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
Grey Shrike-thrush	*Colluricincla harmonica*	2005	78	Partial	-	S
Magpie-lark	*Grallina cyanoleuca*	2005	26	-	Ma	S
Crested Shrike-tit	*Falcunculus frontatus*	2003	30	-	-	-
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	2005	42	-	Ma	S
White-bellied Cuckoo-shrike	*Coracina papuensis*	2002	15	-	Ma	-
White-winged Triller	*Lalage sueurii*	2005	17	-	-	S
Grey-crowned Babbler	*Pomatostomus temporalis*	1998	1	-	-	-
White-browed Babbler	*Pomatostomus superciliosus*	2006	41	-	-	S
White-fronted Chat	*Epthianura albifrons*	2001	9	-	-	-
Weebill	*Smicrornis brevirostris*	2001	11	-	-	S
Southern Whiteface	*Aphelocephala leucopsis*	2000	6	-	-	-
Striated Thornbill	*Acanthiza lineata*	2001	14	-	-	S
Yellow Thornbill	*Acanthiza nana*	2001	21	-	-	-
Brown Thornbill	*Acanthiza pusilla*	2002	45	-	-	-
Chestnut-rumped Thornbill	*Acanthiza uropygialis*	1968	3	-	-	-
Buff-rumped Thornbill	*Acanthiza reguloides*	2006	23	-	-	S
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	2005	49	-	-	S
White-browed Scrubwren	*Sericornis frontalis*	1997	2	-	-	-
Chestnut-rumped Heathwren	*Calamanthus pyrrhopygius*	1995	1	-	-	-
Speckled Warbler	*Pyrrholaemus sagittatus*	2005	13	-	-	-
Rufous Songlark	*Cincloramphus mathewsi*	2005	18	-	-	-
Little Grassbird	*Megalurus gramineus*	1999	1	-	-	-
Clamorous Reed Warbler	*Acrocephalus stentoreus*	2000	5	-	Ma	-
Superb Fairy-wren	*Malurus cyaneus*	2004	100	-	-	S
White-browed Woodswallow	*Artamus superciliosus*	2004	11	-	-	-
Dusky Woodswallow	*Artamus cyanopterus*	2006	51	Partial	-	-
Varied Sittella	*Daphoenositta chrysoptera*	2000	25	-	-	S

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*	2006	48	Total	-	S
White-throated Treecreeper	*Cormobates leucophaeus*	2001	46	Total	-	S
Mistletoebird	*Dicaeum hirundinaceum*	2006	44	-	-	S
Spotted Pardalote	*Pardalotus punctatus*	2006	44	-	-	S
Silvereye	*Zosterops lateralis*	2002	25	-	Ma	S
White-naped Honeyeater	*Melithreptus lunatus*	2006	29	-	-	-
Black-chinned Honeyeater	*Melithreptus gularis*	2006	33	-	-	S
Brown-headed Honeyeater	*Melithreptus brevirostris*	2006	56	-	-	S
Black Honeyeater	*Sugamel niger*	1986	2	-	-	-
Eastern Spinebill	*Acanthorhynchus tenuirostris*	2001	33	-	-	-
Tawny-crowned Honeyeater	*Phylidonyris melanops*	1990	1	-	-	-
White-fronted Honeyeater	*Phylidonyris albifrons*	1982	1	-	-	-
Painted Honeyeater	*Grantiella picta*	1998	2	-	-	-
Regent Honeyeater	*Anthochaera phrygia*	1965	2	-	Mi	-
Fuscous Honeyeater	*Lichenostomus fuscus*	2006	79	-	-	S
Yellow-faced Honeyeater	*Lichenostomus chrysops*	2006	30	-	-	S
White-eared Honeyeater	*Lichenostomus leucotis*	2001	8	-	-	-
Yellow-tufted Honeyeater	*Lichenostomus melanops*	2006	70	-	-	S
White-plumed Honeyeater	*Lichenostomus penicillatus*	2006	68	-	-	S
New Holland Honeyeater	*Phylidonyris novaehollandiae*	2006	61	-	-	S
Noisy Miner	*Manorina melanocephala*	2006	38	-	-	-
Little Wattlebird	*Anthochaera chrysoptera*	2001	4	-	-	-
Red Wattlebird	*Anthochaera carunculata*	2006	111	-	-	S
Blue-faced Honeyeater	*Entomyzon cyanotis*	2004	8	-	-	-
Australasian Pipit	*Anthus novaeseelandiae*	2001	4	-	Ma	-
Diamond Firetail	*Stagonopleura guttata*	2005	19	-	-	-
Red-browed Finch	*Neochmia temporalis*	2005	34	-	-	-

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
Olive-backed Oriole	*Oriolus sagittatus*	2001	5	-	-	-
White-winged Chough	*Corcorax melanorhamphos*	2006	41	-	-	-
Pied Currawong	*Strepera graculina*	2001	1	-	-	S
Grey Currawong	*Strepera versicolor*	2003	54	-	-	S
Grey Butcherbird	*Cracticus torquatus*	2002	5	-	-	-
Australian Magpie	*Gymnorhina tibicen*	2006	112	-	-	S
*Domestic Goose	*Anser anser (domestic)*	2004	4	-	-	-
Bassian Thrush	*Zoothera lunulata*	2000	1	-	Ma	-
*Java Sparrow	*Lonchura oryzivora*	2000	1	-	-	-
Unknown Raven	*Corvus sp.*	2000	4	-	-	-
Rosella sp.	*Platycercus sp.*	1999	1	-	-	-
Australian Raven	*Corvus coronoides*	2002	41	-	-	S
*Northern Mallard	*Anas platyrhynchos*	2000	1	-	-	-
Little Raven	*Corvus mellori*	2001	12	-	Ma	S
*Rock Dove	*Columba livia*	1998	1	-	-	-
Striated Pardalote	*Pardalotus striatus*	2006	76	Partial	-	S
Cattle Egret	*Ardea ibis*	1989	4	-	Mi/Ma	-
*Common Blackbird	*Turdus merula*	2002	18	-	-	S
*European Skylark	*Alauda arvensis*	1998	1	-	-	-
*House Sparrow	*Passer domesticus*	2001	20	-	-	S
*European Goldfinch	*Carduelis carduelis*	2001	16	-	-	-
*European Greenfinch	*Carduelis chloris*	1985	1	-	-	-
*Common Starling	*Sturnus vulgaris*	2001	13	Partial	-	-
Unidentified ibis	*Threskiornis sp.*	0	1	-	-	-
Unidentified spoonbill	*Platelea sp.*	0	1	-	-	-
Unidentified cormorant	*Phalacrocoracidae sp.*	0	3	-	-	-
REPTILES						

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
Thick-tailed Gecko	*Nephrurus milii*	2002	14	-	-	-
Olive Legless Lizard	*Delma inornata*	2005	4	-	-	-
Common Scaly-foot	*Pygopus lepidopodus*	2004	1	-	-	-
Bearded Dragon	*Pogona barbata*	2001	7	Partial	-	-
Tree Dragon	*Amphibolurus muricatus*	2002	13	Partial	-	-
Sand Goanna	*Varanus gouldii*	2006	6	-	-	-
Lace Goanna	*Varanus varius*	2006	23	Partial	-	-
Large Striped Skink	*Ctenotus robustus*	2006	28	-	-	-
White's Skink	*Egernia whitii (group)*	1998	6	-	-	-
Three-toed Skink	*Hemiergis decresiensis*	1990	2	-	-	-
Garden Skink	*Lampropholis guichenoti*	2006	34	-	-	-
Bougainville's Skink	*Lerista bougainvillii*	2005	34	-	-	-
Grey's Skink	*Menetia greyii*	2006	8	-	-	-
Boulenger's Skink	*Morethia boulengeri*	2006	16	-	-	-
Common Blue-tongued Lizard	*Tiliqua scincoides*	2002	5	-	-	-
Stumpy-tailed Lizard	*Tiliqua rugosa*	2005	30	-	-	-
Woodland Blind Snake	*Ramphotyphlops proximus*	1969	1	-	-	-
Tiger Snake	*Notechis scutatus*	1991	1	-	-	-
Eastern Three-lined Skink	*Bassiana duperreyi*	2006	19	-	-	-
Red-bellied Black Snake	*Pseudechis porphyriacus*	2001	5	-	-	-
Eastern Brown Snake	*Pseudonaja textilis*	2002	10	-	-	-
Little Whip Snake	*Suta flagellum*	2006	13	-	-	-
Pogona	*Pogona sp.*	1994	3	-	-	-
Black Rock Skink	*Egernia saxatilis intermedia*	1903	1	Partial	-	-
Unidentified blind snake	*Ramphotyphlops sp.*	2000	1	-	-	-
	FROGS					
Spotted Marsh Frog	*Limnodynastes tasmaniensis*	1961	5	-	-	-

Common Name	Scientific Name	Last Documented Record (AVW)	Total # of Documented Records (AVW)	Hollow Use	Mi/ Ma	Present Survey
Mallee Spadefoot Toad	*Neobatrachus pictus*	2005	1	-	-	-
Common Spadefoot Toad	*Neobatrachus sudelli*	2005	8	-	-	-
Brown Toadlet	*Pseudophryne bibronii*	2001	16	-	-	-
Plains Froglet	*Crinia parinsignifera*	2002	13	-	-	-
Common Froglet	*Crinia signifera*	2006	107	-	-	H
Southern Brown Tree Frog	*Litoria ewingii*	2006	29	-	-	H
Peron's Tree Frog	*Litoria peronii*	1998	1	Partial	-	-
Growling Grass Frog	*Litoria raniformis*	1963	5	-	-	-
Southern Bullfrog (northern form)	*Limnodynastes dumerilii dumerilii*	1963	2	-	-	-
	FISHES					
*Rainbow Trout	*Oncorhynchus mykiss*	1981	1	-	-	-
Mountain Galaxias	*Galaxias olidus*	1999	1	-	-	-
*Common Carp	*Cyprinus carpio*	2001	2	-	-	-
*Eastern Gambusia	*Gambusia holbrooki*	1999	2	-	-	-
Golden Perch	*Macquaria ambigua*	1993	2	-	-	-
Southern Pigmy Perch	*Nannoperca australis*	1999	1	-	-	-
*Redfin Perch	*Perca fluviatilis*	1948	1	-	-	-
Flat-headed Gudgeon	*Philypnodon grandiceps*	1999	1	-	-	-
	INVERTEBRATES					
Golden Sun Moth	*Synemon plana*	1906	6	-	-	-
Common Yabbie	*Cherax destructor*	1983	1	-	-	T

Source: DSE Atlas of Victorian Wildlife (2009); Victorian Biodiversity Atlas (DSE 2010c)

Appendix 3.2 – Significant fauna species

Table A3.2. Significant fauna within 10 kilometres of the study area.

Sources used to determine species status:

EPBC *Environment Protection and biodiversity Conservation Act 1999* (Commonwealth)

DSE Advisory List of Threatened Vertebrate Fauna in Victoria (DSE 2009)

FFG *Flora and Fauna Guarantee Act 1988* (Victoria)

Species status:

EX Extinct

RX Regionally extinct

CR Critically endangered

EN Endangered

VU Vulnerable

RA Rare

NT Near threatened

CD Conservation dependent

LR Lower risk (least concern)

DD Data deficient (insufficiently or poorly known)

L Listed as threatened under FFG Act

I Invalid or ineligible for listing under the FFG Act

\# Protected Matters Search Tool (SEWPaC)

~ Museum of Victoria Butterfly database

Use of the study area:

1 Known resident

2 Possible resident

3 Frequent visitor

4 Occasional visitor

5 Rare visitor

6 Vagrant visitor

7 Unlikely/no suitable habitat

Common Name	Scientific Name	Last documented record	Total # of records	EPBC Act	DSE (2009)	FFG ACT	National Action Plan	Likely use of study area
NATIONAL SIGNIFICANCE								
Plains-wanderer	*Pedionomus torquatus*	1975	2	VU	CE	L	EN	5
# Swift Parrot	*Lathamus discolor*	2003	6	EN	EN	L	EN	4
Regent Honeyeater	*Anthochaera phrygia*	1965	2	EN	CE	L	EN	5
# Southern Brown Bandicoot	*Isoodon obesulus obesulus*	2002	38	EN	NT	-	NT	2
# Growling Grass Frog	*Litoria raniformis*	1963	5	VU	EN	L	VU	5
# Golden Sun Moth	*Synemon plana*	1906	6	CE	EN	L	-	1
# Australian Grayling	*Prototroctes maraena*	-	-	VU	VU	L	VU	5
# Australian Painted Snipe	*Rostratula australis*	-	-	VU	CR	L	VU	6
# Dwarf Galaxias	*Galaxiella pusilla*	-	-	VU	VU	L	VU	5
# Heath Mouse	*Pseudomys shortridgei*	-	-	VU	NT	L	EN	6

Common Name	Scientific Name	Last documented record	Total # of records	EPBC Act	DSE (2009)	FFG ACT	National Action Plan	Likely use of study area
# Murray Cod	*Maccullochella peelii peelii*	-	-	VU	EN	L		5
# Spot-tailed Quoll	*Dasyurus maculatus*	-	-	EN	EN	L	VU	6
# Striped Legless Lizard	*Delma impar*	-	-	VU	EN	L	VU	3
		STATE SIGNIFICANCE						
Bush Stone-curlew	*Burhinus grallarius*	2005	10	-	EN	L	NT	2
Brolga	*Grus rubicunda*	2004	2	-	VU	L	-	4
Royal Spoonbill	*Platalea regia*	2004	2	-	VU	-	-	4
Eastern Great Egret	*Ardea modesta*	2001	4	-	VU	L	-	4
Australasian Shoveler	*Anas rhynchotis*	2006	15	-	VU	-	-	4
Freckled Duck	*Stictonetta naevosa*	1995	1	-	EN	L	-	4
Hardhead	*Aythya australis*	2006	13	-	VU	-	-	4
Blue-billed Duck	*Oxyura australis*	1992	1	-	EN	L	-	4
Musk Duck	*Biziura lobata*	2003	15	-	VU	-	-	4
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	1982	1	-	VU	L	-	7
Barking Owl	*Ninox connivens*	1997	3	-	EN	L	NT	1
Powerful Owl	*Ninox strenua*	2001	13	-	VU	L	-	2
Elegant Parrot	*Neophema elegans*	1998	3	-	VU	-	-	4
Hooded Robin	*Melanodryas cucullata*	2004	7	-	NT	L	NT	2
Grey-crowned Babbler	*Pomatostomus temporalis*	1998	1	-	EN	L	NT	2
Chestnut-rumped Heathwren	*Calamanthus pyrrhopygius*	1995	1	-	VU	L	-	2
Speckled Warbler	*Pyrrholaemus sagittatus*	2005	13	-	VU	L	NT	2
Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*	2006	48	-	NT	-	NT	1
Painted Honeyeater	*Grantiella picta*	1998	2	-	VU	L	NT	3
Diamond Firetail	*Stagonopleura guttata*	2005	19	-	VU	L	NT	2
Brush-tailed Phascogale	*Phascogale tapoatafa*	2006	17	-	VU	L	NT	1
Squirrel Glider	*Petaurus norfolcensis*	2006	20	-	EN	L	NT	2
Lace Goanna	*Varanus varius*	2006	23	-	VU	-	-	2
Brown Toadlet	*Pseudophryne bibronii*	2001	16	-	EN	L	DD	1

Common Name	Scientific Name	Last documented record	Total # of records	EPBC Act	DSE (2009)	FFG ACT	National Action Plan	Likely use of study area
Golden Perch	*Macquaria ambigua*	1993	2	-	VU	-	-	4
Yellow Sedge Skipper	*Hesperilla flavescens flavescens*	1947	3	-	NT	L	LR (LC)	7
~ Yellow Ochre Butterfly	*Trapezites luteus luteus*	-	-	-	-	L	-	2
REGIONAL SIGNIFICANCE								
Brown Quail	*Coturnix ypsilophora*	1985	1	-	NT	-	-	7
Pied Cormorant	*Phalacrocorax varius*	2006	2	-	NT	-	-	4
Whiskered Tern	*Chlidonias hybridus*	2000	1	-	NT	-	-	5
Spotted Harrier	*Circus assimilis*	1995	1	-	NT	-	-	2
Black-eared Cuckoo	*Chrysococcyx osculans*	2000	2	-	NT	-	-	6
Black-chinned Honeyeater	*Melithreptus gularis*	2006	33	-	NT	-	-	1
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	2006	7	-	NT	-	-	1
Eastern Pygmy-possum	*Cercartetus nanus*	1965	1	-	NT	-	-	4
Woodland Blind Snake	*Ramphotyphlops proximus*	1969	1	-	NT	-	-	4

Source: DSE Atlas of Victorian Wildlife (AVW 2009); SEWPaC Protected Matters Search Tool (http://www.environment.gov.au/erin/ert/epbc/index.html)

Appendix 3.3 –Terrestrial Fauna: Targeted Surveys

Table A3.3. Results of the targeted terrestrial surveys for the Western Highway Project, Ararat to Stawell (excluding the woodland-dependent bird surveys)

Common Name	Scientific Name	SLL and Fat-tailed Dunnart Survey	GSM and Yellow Ochre Butterfly Surveys	Brown Toadlet Survey + Incidental Records	Powerful Owl and Barking Owl Survey	Arboreal Mammal Survey	Ground-dwelling Mammal Survey	Other (Incidental)	Total
Australian Magpie	*Gymnorhina tibicen*					1	1		2
Barking Owl	*Ninox connivens connivens*				1				1
Bearded Dragon	*Pogona barbata*							1	1
Black Rat*	*Rattus rattus*						2		2
Black Wallaby	*Wallabia bicolor*						3		3
Common Blackbird*	*Turdus merula*						1		1
Brown Toadlet	*Pseudophryne bibroni*	4		56					60
Common Brushtail Possum	*Trichosurus vulpecula*					21	4		25
Brush-tailed Phascogale	*Phascogale tapoatafa*						1		1
Common Froglet	*Crinia signifera*	3							3
Eastern Grey Kangaroo	*Macropus giganteus*						1		1
Eastern Striped Skink	*Ctenotus robustus*	2							2
Eastern Three-lined Skink	*Bassiana duperreyi*	5							5
Short-beaked Echidna	*Tachyglossus aculeatus*						3		3
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	12							12
Red Fox*	*Vulpes vulpes*						2		2

Common Name	Scientific Name	SLL and Fat-tailed Dunnart Survey	GSM and Yellow Ochre Butterfly Surveys	Brown Toadlet Survey + Incidental Records	Powerful Owl and Barking Owl Survey	Arboreal Mammal Survey	Ground-dwelling Mammal Survey	Other (Incidental)	Total
Garden Skink	*Lamphropholis guichenoti*	2							2
Golden Sun Moth	*Synemon plana*		448						448
Grey Currawong	*Strepera versicolor*					1			1
Grey Shrike-thrush	*Colluricincla harmonica*						1		1
European Hare*	*Lepus europeaus*						2		2
House Mouse	*Mus musculus*	2							2
Laughing Kookaburra	*Dacelo novaeguineae*					1			1
Little Button-quail	*Turnix velox*							1	
Pobblebonk	*Limnodynastes dumerilli*	3							3
Sheep*	*Ovis aries*						1		1
Stumpy-tailed Lizard	*Tiliqua rugosa*						1		1
Southern Brown Tree Frog	*Litoria ewingi*	2							2
Tawny Frogmouth	*Podargus strigoides*				1				1
Unidentified skink	-	2							2
White-browed Babbler	*Pomatostomus superciliosus*						1		1
White-winged Chough	*Corcorax melanorhamphos*					1	2		3
Yellow-footed Antechinus	*Antechinus flavipes*						2		2
Total		37	448	56	2	25	28	2	597

Appendix 3.4 – Golden Sun Moth: Targeted Surveys

Table A3.4. Details of Golden Sun Moth surveys and the approximate number of individuals recorded on each day of survey

Assessors	GSM reference site location, time and proximity to study area	Date	Survey Times	Temperature		Wind (0 – 3)	Cloud cover (%)	No. Golden Sun Moth
				10am	3pm			
Jo Day, Kim Downs	Not available	13/12/2010	1100 - 1555	20°C	20°C	1	40	0
Jo Day, Kim Downs	Flying in paddocks within study area east of the junction of St Ethels Road and Grellet Road, Great Western, @ 1210. Also flying at numerous other sites within the study area throughout the day	14/12/2010	945 - 1550	21.5°C	26.5°C	1	0	271
Jo Day, Holly Bennett	Flying in paddocks within study area, east of the junction of St Ethels Road and Grellet Road, Great Western, @ 1050. Also flying at numerous other sites within the study area throughout the day.	22/12/2010	1050 - 1550	13.1°C	21.8°C	2	<5	148
Jo Day, Holly Bennett	Flying in paddocks within study area, east of the junction of St Ethels Road and Grellet Road, Great Western, @ 1040. Also flying at numerous other sites within the study area throughout the day.	23/12/2011	1020 - 1400	13.9°C	25.5°C	2 - 3	10	0
Andrea Canzano, Holly Bennett	Flying in paddocks within study area, east of the junction of St Ethels Road and Grellet Road, Great Western @ 1145. Also flying at one other site within the study area @ 1430	5/01/2011	1115 - 1610	14.8°C	22.7°C	2	20	3
Andrea Canzano, Holly Bennett	Flying in paddock within study area, west of Old Brewery Rd, Ararart, @1335.	6/01/2011	1000 - 1400	16.6°C	29.1°C	0	0	26
Jo Day, Robyn Giles	Flying in paddock within study area, west of Old Brewery Rd, Ararart, @1050	20/01/2011	1050 - 1545	15.8°C	27.2°C	0	0	0

Appendix 3.5 – Woodland-dependent birds: Targeted Surveys

Table A3.5. Bird list from the targeted significant woodland-dependent bird survey for the Western Highway Project, Ararat to Stawell.

* Introduced species

Common name	Scientific name
Australasian Pipit	*Anthus novaeseelandiae*
Australian Magpie	*Gymnorhina tibicen*
Australian Raven	*Corvus coronoides*
Black-chinned Honeyeater	*Melithripterus gularis gularis*
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*
Black-shouldered Kite	*Elanus axillaris*
Blue-winged Parrot	*Neophema chrysostoma*
Brown Falcon	*Falco berigora*
Brown Thornbill	*Acanthiza pusilla*
Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*
Brown-headed Honeyeater	*Melithreptus brevirostris*
Buff-rumped Thornbill	*Acanthiza reguloides*
Common Blackbird*	*Turdus merula*
Common Bronzewing	*Phaps chalcoptera*
Common Starling*	*Sturnus vulgaris*
Crested Pigeon	*Ocyphaps lophotes*
Crested Shrike-tit	*Falcunculus frontatus*
Crimson Rosella	*Platycercus elegans*
Dusky Woodswallow	*Artamus cyanopterus*
Eastern Rosella	*Platycercus eximius*
Eastern Yellow Robin	*Eopsaltria australis*
European Skylark*	*Alauda arvensis*
Fairy Martin	*Hirundo ariel*
Fan-tailed Cuckoo	*Cacomantis flabelliformis*
Flame Robin	*Petroica phoenicea*
Galah	*Eolophus roseicapilla*
Grey Currawong	*Strepera versicolor*
Grey Fantail	*Rhipidura albiscarpa*
Grey Shrike-thrush	*Colluricincla harmonica*
Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*
House Sparrow*	*Passer domesticus*
Jacky Winter	*Microeca fascinans*
Laughing Kookaburra	*Dacelo novaeguineae*
Little Button-quail	*Turnix velox*
Long-billed Corella	*Cacatua tenuirostris*

Common name	Scientific name
Magpie-lark	*Grallina cyanoleuca*
Musk Lorikeet	*Glossopsitta concinna*
Nankeen Kestrel	*Falco cenchroides*
New Holland Honeyeater	*Phylidonyris novaehollandiae*
Olive-backed Oriole	*Oriolus sagittatus*
Pied Currawong	*Strepera graculina*
Rainbow Lorikeet	*Trichoglossus haematodus*
Red Wattlebird	*Anthochaera carunculata*
Red-browed Finch	*Neochmia temporalis*
Red-rumped Parrot	*Psephotus haematonotus*
Restless Flycatcher	*Myiagra inquieta*
Rufous Whistler	*Pachycephala rufiventris*
Scarlet Robin	*Petroica boodang*
Spotted Pardalote	*Pardalotus punctatus*
Striated Pardalote	*Pardalotus striatus*
Striated Thornbill	*Acanthiza lineata*
Sulphur-crested Cockatoo	*Cacatua galerita*
Superb Fairy-wren	*Malurus cyaneus*
Tawny Frogmouth	*Podargus strigoides*
Tree Martin	*Hirundo nigricans*
Varied Sittella	*Daphoenositta chrysoptera*
Wedge-tailed Eagle	*Aquila audax*
Weebill	*Smicrornis brevirostris*
Welcome Swallow	*Hirundo neoxena*
Whistling Kite	*Haliastur sphenurus*
White-bellied Cuckoo-shrike	*Coracina papuensis*
White-browed Babbler	*Pomatostomus superciliosus*
White-plumed Honeyeater	*Lichenostomus penicillatus*
White-throated Treecreeper	*Cormobates leucophaeus*
White-winged Chough	*Corcorax melanorhamphos*
White-winged Triller	*Lalage sueurii*
Willie Wagtail	*Rhipidura leucophrys*
Yellow-faced Honeyeater	*Lichenostomus chrysops*
Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*
Yellow-tufted Honeyeater	*Lichenostomus melanops*

Appendix 3.6 – State and Regionally Significant Fauna Descriptions

Table A3.6. Brief species descriptions of the state and regionally significant fauna for which the targeted surveys were undertaken for the Western Highway Project, Ararat to Stawell.

Common Name	Scientific Name	Description
		STATE SIGNIFICANT
Brush-tailed Phascogale	*Phascogale tapoatafa*	The Brush-tailed Phascogale is a carnivorous, nocturnal and mainly arboreal marsupial. Within Victoria, their distribution is quite fragmented, with records from locations to the east and north-east of Melbourne, Heathcote and Bendigo, north-eastern Victoria (Broadford to Wodonga) and far western Victoria from Mt. Eccles to Apsley. Records include areas in central Victoria surrounding Ballarat, as well as the Brisbane Ranges. They are dependent on old growth forests for nesting hollows. Home ranges differ throughout the year and between the sexes. Female home ranges do not overlap with unrelated females, and cover approximately 20-70 hectares. Males home ranges cover over 140 hectares, overlapping with many females and males, allowing them greater access to females come breeding season.
Squirrel Glider	*Petaurus norfolcensis*	Upperparts pearl-grey, blackish midline of varying width from between eyes to mid back. Edge of gliding membrane blackish fringed with white. Occurs along GDR from central Cape York to near Stawell, mostly in dry sclerophyll forest on inland slopes and near-by riverine corridors. Nocturnal, arboreal, can glide up to 90 m, constructs leaf nest in hollow, eats arthropods, nectar, pollen, sap, nestlings and eggs.
Barking Owl	*Ninox connivens*	This species occurs in dry sclerophyll woodland, particularly that associated with riparian vegetation and on forest edges . Nesting is in large hollows in live eucalypts, often near open country. The decline of the species is due to clearing and subsequent habitat fragmentation, which reduces the abundance of over-mature trees that otherwise provide nesting and roosting hollows, and shelter for prey species in the breeding season (e.g. gliders).
Powerful Owl	*Ninox strenua*	The Powerful Owl is the largest owl in Australasia. It is a typical hawk-owl, with staring yellow eyes and no facial-disc. Adults reach 60 cm in length, have a wingspan of up to 140 cm and weigh up to 1.45 kilograms. Males are larger than females. They are endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest, and requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well .
Elegant Parrot	*Neophema elegans*	Golden-olive with yellow facial mask and under parts a buttercup-yellow, Elegant Parrot can be found in open forests, woodlands, scrublands, river red gums on watercourses; saltbushes, mallee and mulga. Breeds August to December and nests in a tree spout. Is partly nomadic.
Hooded Robin	*Melanodryas cucullata*	This species is one of a suite of woodland birds that has declined markedly as a result of ongoing habitat loss and fragmentation throughout much of its range . It inhabits a range of woodland and mallee communities throughout central and northern Victoria, and is often associated with remnants containing abundant fallen ground debris (e.g. timber, logs, sticks), which the species uses as vantage points when searching for prey.

Common Name	Scientific Name	Description
Grey-crowned Babbler	*Pomatostomus temporalis*	The Grey-crowned Babbler is a distinctive bird, 23-29 cm long, with a curved bill, pale-grey crown, dark face mask, orange-tipped wings, and white-tipped tail. It lives in groups of 2-12 birds, all of which participate in nesting activities and territory defense. Grey-crowned Babblers are widespread throughout eastern and northern Australia , and formerly were widespread through much of western, central and northern Victoria . During this century, however, Grey-crowned Babblers have disappeared from south-western Victoria), and from most of Victoria south of the Great Dividing Range. Northern Victoria is the stronghold of extant populations, but here their range has also shrunk, and they are considered much less common than formerly. Extant populations are scattered over northern Victoria, from near Murtoa in the west, east to Chiltern, and south to Castlemaine and Longwood. They are most abundant in the region between Longwood and Benalla, the Hume Freeway and the Broken River. An estimated 150 groups (c. 600 birds) occur in this region. Elsewhere in the state there are an estimated total of fewer than 50 groups, all of which appear to be under threat.
Chestnut-rumped Heathwren	*Calamanthus pyrrhopygius*	Unstreaked grey-brown above with pale eyebrow, chestnut rump, black band on outer tail feathers, white tips. Shy birds that hops briskly along the ground. Chestnut-rumped Heathwren can be found in heathy woodlands, scrublands and box-ironbark forests. Breeds July to November.
Speckled Warbler	*Pyrrholaemus sagittatus*	Under parts cream with bold black streaks, Speckled Warbler mixes with thornbills hopping over the ground, logs, trunks. Can be found in drier woodlands with tussocks, branches, rocks. Breeds n August to January, nesting in tree trunk.
Brown Treecreeper (south-eastern ssp.)	*Climacteris picumnus victoriae*	This species climbs up the trunks and branches of trees in search of insects and their larvae, while some feeding also takes place on the ground, particularly on fallen logs. Similar to the Hooded Robin, this species is one of a number of woodland birds known to have declined throughout many parts of Victoria. It requires large consolidated areas, often 100's of hectares in size, of remnant native vegetation to persist. Two birds were detected in the same remnant as the Hooded Robin during the survey. A number of the larger remnants that contain high quantities of coarse woody debris on the ground are likely to be important for the long term persistence of this species in the local area.
Painted Honeyeater	*Grantiella picta*	The endemic Painted Honeyeater Grantiella picta is a small, rare, specialized, migratory honeyeater with a conspicuous far-carrying call and a spectacular territorial display song-and-flight. The male has striking black, white and yellow plumage, with a contrasting pink bill and white ear tuft, whereas the female is duller with greyer upper parts and plainer flanks . In Victoria, it now mainly occurs in the Northern Inland Slopes and Goldfields Bioregions, but may also occur in the Central Victorian Uplands, Highlands Southern Fall and Murray Fans bioregions. Victorian localities favored by the Painted Honeyeater include Chiltern–Mt Pilot National Park, Warby Range State Park, Heathcote-Graytown National Park, Whroo Nature Conservation Reserve, Greater Bendigo National Park and Clunes State Forest. The Painted Honeyeater inhabits dry open-forest and woodland where mistletoe from the genus Amyema is common. It is most common in Box-Ironbark communities but also utilizes Broad-leaved Peppermint-Red Stringybark, Box-Buloke, and Black Box open-forests and/or woodlands on the inland side of the Great Dividing Range .
Diamond Firetail	*Stagonopleura guttata*	This species inhabits a wide range of eucalypt-dominated vegetation communities that have a grassy understory, including woodland, forest and mallee . It has declined due to habitat clearing, primarily the loss of key food plants as a result of invasion of exotic grasses.

Common Name	Scientific Name	Description
Lace Goanna	*Varanus varius*	The Lace Goanna or Lace Monitor (up to 2.1m) is semi-arboreal and inhabits holes in trees in the lowland forests of south-eastern Australia. This species inhabits dry woodlands as well as cooler, more temperate forest areas where vegetation is dense. Tree Goannas prey upon birds, smaller reptiles and small mammals, as well as insects and bird eggs. Tree Goannas may be threatened by destruction of habitat, including destruction of old trees containing hollows.
Brown Toadlet	*Pseudophryne bibronii*	The Brown Toadlet is a small brownish coloured toadlet endemic to south-eastern Australia including Tasmania and is found in a variety of habitats not necessarily associated with permanent water. The Brown Toadlet is brown to black on its back, with a scattering of darker flecks and red spots. Its underbelly is marbled black and white and there is a bright yellow patch around its cloaca. In Victoria, the Brown Toadlet is distributed from the north-east through to central and western Victoria with scattered records in Gippsland. In the South West region it is recorded from all bioregions except the Otway Ranges bioregions, although most records are grouped on the Volcanic Plains bioregion north of Werribee, the Greater Grampians bioregion and the Lowan Mallee bioregion in the Little Desert.
		REGIONALLY SIGNIFICANT
Fat-tailed Dunnart	*Sminthopsis crassicaudata*	Small grey marsupial with large ears and pointed nose. Its head and body length is 60–90mm and it weighs just 10–20g. The tail is grey, short (45–70mm) and often quite swollen. They inhabit only lowland areas in the western half of Victoria. The eastern limit of its distribution corresponds roughly to the Hum Highway. The species does not occur in the Wannon region and, because it avoids mallee scrub, is rare in the Lowan Mallee. It is predominantly an animal of sparse grassland and open scrubland habitats where there is a significant component of bare ground. Populations survive in unimproved pasture throughout the Volcanic Plain, Otway Plain, Wimmera, and Riverina. Breeding is seasonal with births occurring from July to February and young in the pouch between July and April.
Black-chinned Honeyeater	*Melithreptus gularis*	Blue eye-crescent and large creamy nape-bank, blackish chin and centre of throat, under parts white, legs yellowish. Black-chinned Honeyeater is found in pairs or small parties, active and demonstrative foraging on limbs, trunks and in foliage, up high. Found in direr eucalypt forests, woodlands, timer on watercourses.. Breeds July to December nesting in fragile cup of bark-sheds, grass, plant fiber, wool; slung high in outer foliage.
River Blackfish	*Gadopsis marmoratus*	Dark grey to pale brown fish with irregular darker bands, blotches or mottling on sides. Found in clear, gently flowing streams with abundant log snags. Tolerant of slightly brackish conditions.
Yellow Ochre Butterfly	*Trapezites lutea*	This species inhabits eucalypt woodland, cypress-pine woodland and grasslands, preferring open grassy areas supporting its larval food plant, *Lomandra filiformis* . Although *Lomandra* sp. was recorded in few numbers throughout the study area, Yellow Ochre Butterfly may be present in areas of ungrazed native grassland.

Appendix 4.1 – Targeted Aquatic Survey Results: Instream Habitat Assessments

Table A4.1. Instream habitat assessment results for the Western Highway Project, Ararat to Stawell

Waterbody	Site #	Bank Erosion (%)	Riparian Vegetation Cleared (%)	Overhanging Vegetation (%)	Large Woody Debris (%)	Coarse Particulate Organic Matter (%)	Macrophyte cover (%)	Substrate	Macrophytes
Concongella Creek	1	0	20	0	1	20	50	Clay/Silt	Juncus sp.; Triglochin sp.; Eleocharis spp.; Typha sp.
Concongella Creek	2	10	20	0	5	20	20	Clay/Silt	Juncus sp.; Triglochin sp.; Typha sp.
Concongella Creek	3	0	60	0	2	30	30	Clay/Silt	Juncus sp.; Triglochin sp.
Concongella Creek	4	10	50	0	5	5	5	Gravel/Pebble/Sand	Juncus sp.
Concongella Creek	5	10	60	0	10	5	2	Gravel/Pebble/Sand	Juncus sp.; Triglochin sp
Concongella Creek	6	40	80	0	1	8	2	Gravel/Pebble/Sand/Clay	Juncus sp
Concongella Creek	7	15	70	20	1	20	40	Gravel/Sand	Juncus sp.; Triglochin sp
Donald Creek	8	40	80	0	1	10	<1	Gravel/Sand/Silt/Clay	Juncus sp.

Waterbody	Site #	Bank Erosion (%)	Riparian Vegetation Cleared (%)	Overhanging Vegetation (%)	Large Woody Debris (%)	Coarse Particulate Organic Matter (%)	Macrophyte cover (%)	Substrate	Macrophytes
Concongella Creek	9	50	60	0	0	10	2	Gravel/Sand/Clay/Silt	Juncus sp.
Cobeys Creek	10	15	70	10	2	5	5	Bedrock/Gravel/Sand	Juncus sp.
Donald Creek	11	5	60	10	<1	2	5	Bedrock/Gravel/Sand/Silt	Juncus sp.; Triglochin sp
Pleasant Creek	12	60	70	0	2	5	0	Gravel/Sand/Silt/Clay	Juncus sp.

Appendix 4.2 – Targeted Aquatic Survey Results: Water Quality

Table A4.2. Summary of winter and summer water quality results for the Western Highway Project, Ararat to Stawell

Waterbody	Site #	Date	Season	Connectivity	Temp (C°)	Dissolved oxygen (mg/L)	pH	Conductivity (mS)	Turbidity (NTU)
Concongella Creek	1	16/06/11	Winter	Disconnected	5.99	8.17	7.57	6.920	2.7
		20/01/12	Summer	Disconnected	22.20	6.52	7.94	6.310	9.3
Concongella Creek	2	16/06/11	Winter	Disconnected	6.83	4.80	7.28	7.250	4.2
		20/01/12	Summer	Disconnected	21.87	3.45	7.65	8.020	15.3
Concongella Creek	3	16/06/11	Winter	Disconnected	7.82	6.93	7.66	8.960	4.9
		20/01/12	Summer	Disconnected	20.20	5.02	7.94	8.110	31.5
Concongella Creek	4a	21/06/11	Winter	Disconnected	9.27	4.62	7.12	1.110	1.3
Concongella Creek	4b	21/06/11	Winter	Disconnected	8.13	11.46	7.30	0.492	91.0
		20/01/12	Summer	Dry					
Concongella Creek	5	21/06/11	Winter	Disconnected	8.54	6.99	6.85	1.000	83.0
		20/01/12	Summer	Dry					
Concongella Creek	6	21/06/11	Winter	Disconnected	9.04	14.06	7.48	2.040	83.0
		20/01/12	Summer	Disconnected	19.40	9.14	7.74	1.160	77.8
Concongella Creek	7	21/06/11	Winter	Disconnected	9.55	11.37	7.38	4.170	25.0
		20/01/12	Summer	Dry					

Waterbody	Site #	Date	Season	Connectivity	Temp (C°)	Dissolved oxygen (mg/L)	pH	Conductivity (mS)	Turbidity (NTU)
Donald Creek	8	21/06/11	Winter	Disconnected	9.02	10.70	7.20	1.730	85.0
		20/01/12	Summer	Dry					
Concongella Creek	9	21/06/11	Winter	Disconnected	7.69	12.37	7.68	0.078	143.0
		20/01/12	Summer	Dry					
Cobeys Creek	10	22/06/11	Winter	Disconnected	10.01	13.74	7.08	8.630	21.0
		20/01/12	Summer	Disconnected	22.69	6.73	7.75	15.900	9.3
Donald Creek	11	22/06/11	Winter	Disconnected	10.13	7.38	6.90	1.190	45.0
		20/01/12	Summer	Disconnected	17.20	4.21	6.49	3.180	130.0
Pleasant Creek	12	22/06/11	Winter	Disconnected	9.88	14.39	6.72	3.800	45.0
		20/01/12	Summer	Disconnected	13.80	9.05	6.33	5.860	30.7
SEPP WoV Objectives Murray & Western Plains						25th percentile - maximum ≥85 - 110 (% Saturation)	25 - 75th percentile ≥6.5 - ≤8.3	75th percentile ≤1.500	75th percentile ≤10

Appendix 4.3 – Targeted Aquatic Survey Results: Macroinvertebrate Surveys

Table A4.3. Summary of macroinvertebrate survey results.

Family	Concongella Creek	Concongella Creek	Cobeys Creek	Donald Creek	Pleasant Creek
	Site 3	Site 6	Site 10	Site 11	Site 12
Acarina	1	4	0	0	0
Aeshnidae	0	0	1	0	0
Baetidae	2	0	0	0	0
Ceinidae	2	10	35	0	0
Chironomidae (pupae)	1	0	0	0	0
Chironominae	22	2	12	3	3
Coenagrionidae	33	1	4	0	1
Corixidae	0	26	11	19	9
Culicidae	1	1	4	2	3
Culicidae (pupae)	0	0	0	0	3
Dytiscidae (A)	3	10	3	13	5
Dytiscidae (L)	20	7	1	1	2
Gyrinidae (A)	0	1	0	0	0
Gyrinidae (L)	1	1	0	0	0
Hydraenidae (A)	0	3	5	2	0
Hydrochidae	0	2	0	0	0
Hydrometridae	3	1	0	0	0
Hydrophilidae (A)	3	2	0	3	4
Hydrophilidae (L)	0	0	1	0	0
Leptoceridae	6	0	2	1	0
Leptophlebiidae	0	1	0	0	0
Lestidae	5	0	0	0	0
Nepidae	0	12	0	0	0
Notonectidae	4	17	21	4	7
Parastacidae	0	0	1	0	0
Physidae	5	0	0	0	0
Scirtidae	2	2	0	13	0
Stratiomyidae	1	0	1	0	0
Tanypodinae	0	1	2	1	0
Veliidae	2	3	0	3	4
Total No. of Families	**18**	**18**	**14**	**11**	**9**
SIGNAL Score	**4.72**	**5.67**	**5.29**	**5.36**	**4.50**
EPT taxa	**2**	**1**	**1**	**1**	**0**
Key Families	**15**	**15**	**13**	**9**	**8**

Appendix 4.4 – Targeted Aquatic Survey Results: Fish Surveys

Table A4.4. Results of the targeted aquatic surveys for the Western Highway Project, Ararat to Stawell.

* Introduced species

Watercourse / Waterbody	Site No.	Common Name	Species Name	Total
Cobeys Creek	Site 10	Tadpole	-	1
Concongella Creek	Site 1	Common Jollytail	*Galaxias maculatus*	4
		Flathead Gudgeon	*Philypnodon grandiceps*	12
	Site 2	Flathead Gudgeon	*Philypnodon grandiceps*	6
	Site 3	Flathead Gudgeon	*Philypnodon grandiceps*	27
		Yabby	*Cherax destructor*	1
	Site 4	Redfin*	*Perca fluviatilis*	5
		Yabby	*Cherax destructor*	9
	Site 5	Common Jollytail	*Galaxias maculatus*	1
		Flathead Gudgeon	*Philypnodon grandiceps*	1
		Tadpole	-	1
		Yabby	*Cherax destructor*	1
	Site 6	Flathead Gudgeon	*Philypnodon grandiceps*	1
		Goldfish*	*Carassius auratus auratus*	1
		Redfin*	*Perca fluviatilis*	8
		Yabby	*Cherax destructor*	4
	Site 7	Flathead Gudgeon	*Philypnodon grandiceps*	1
	Site 9	Southern Brown Tree Frog	*Litoria ewingii*	1
		Yabby	*Cherax destructor*	11

Watercourse / Waterbody	Site No.	Common Name	Species Name	Total
Donald Creek	Site 11	Mosquito Fish*	*Gambusia holbrooki*	1
		Tadpole	-	11
		Yabby	*Cherax destructor*	3
	Site 8	Mosquito Fish*	*Gambusia holbrooki*	40
		Tadpole	-	18
		Yabby	*Cherax destructor*	15
Pleasant Creek	Site 12	Common Jollytail	*Galaxias maculatus*	23
Total				**207**

Appendix 5.1 – VicRoads Standard Environmental Protection Measures

Table A5.1. VicRoads Standard Environmental Protection Measures. Only 'General' measures provided – for full information see VicRoads Contract Shell DC1: Design & Construct, (April 2012).

- Water (1200.04): The quality of water in waterways shall not be detrimentally impacted by runoff from the site;
- Air quality (1200.07): All work under the Contract shall comply with the following requirements:
    - emissions of visible smoke to the atmosphere from construction plant and equipment shall be for periods no greater than 10 consecutive seconds;
    - emissions of odorous substances or particulates shall not create or be likely to create objectionable conditions for the public;
    - materials of any type shall not be disposed of through burning;
    - material that may create a hazard or nuisance dust shall be covered during transport; and,
    - dust generated from road construction activities shall not create a hazard or nuisance to the public, shall not disperse from the site or across roadways, nor interfere with crops, stock or dust-sensitive receptors.
- Erosion and sediment control (1200.08): All exposed surfaces shall be free of or treated to minimise erosion. Erosion and sediment controls shall include but are not limited to:
    - minimising the amount of exposed erodable surfaces during construction including the staging of works;
    - prompt temporary and/or permanent progressive revegetation of the Site as work proceeds;
    - prompt covering of exposed surfaces (including batters and stockpiles) that would otherwise remain bare for more than ##28: days - cover may include mulch, erosion control mat or seeding with sterile grass;
    - installation, stabilisation and maintenance of catch and diversion drains that segregate water runoff from catchments outside the construction site from water exposed to the construction site;
    - installation and maintenance of erosion and sedimentation controls, established in accordance with EPA best practice guidelines for the treatment of sediment laden run-off resulting from construction activities;
    - adequately control and route runoff within the construction site to the appropriate sedimentation controls; and,

  - where trees are required to be removed more than two months in advance of any construction works, remove only that part of the tree that is above ground level and where possible allow the roots to remain intact beneath the ground surface to assist with erosion control.

- Fuels and chemicals (1200.11): Any leakage or spillage of any fuels or chemicals shall not have a detrimental environmental impact. Environmental Management Plan(s) shall include specific procedures to mitigate the effect on the environment from fuels and chemicals, including herbicides and pesticides. Such procedures shall include but not be limited to:

  - nominated fuel and chemical storage areas that comply with Dangerous Goods (Storage and Handling) Regulations 2000 and EPA Bunding Guidelines (EPA Publication 347) including signing of compounds and bulk storage containers;
  - nominated points for the refuelling and fluid top up of vehicles and plant which shall be undertaken in a designated area at least 20 m from any drainage point or waterways;
  - provision of readily accessible and maintained spill kits for the purpose of cleaning up chemical, oil and fuel spillages on the Site at all times;
  - ensuring that personnel trained in the efficient deployment of the spill kits are readily available in the event of spillages; and,
  - a contingency plan that shall address the containment, treatment and disposal of any spill.