PRACTICAL ECOLOGY
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Warringal Parklands and Banyule Flats
Ecological and Conservation Values Assessment

Prepared for:
City of Banyule

May 2017

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Version	Date	Submitted by	Version notes / external reviewers
0.1 (DRAFT)	17/04/2014	Alice Ewing	Stage 1 -Background Review Report Draft for Council
1.0 (DRAFT)	1/11/2016	Alice Ewing	Stage 3 – Draft for internal peer review
1.1 (DRAFT)	29/11/2016	Andrew Stephens	Stage 3 – Draft for Council
2.0 (FINAL)	19/05/2017	Alice Ewing	
2.1(FINAL)	01/06/2017	Alice Ewing	Minor amendments

Cover photograph: south-east of Banyule Swamp, Autumn 2016 (Alice Ewing, Practical Ecology)

Acknowledgements

John Milkins (*Banyule City Council* – Environment Officer) – commission of report and overseeing project delivery

Doug Frood (*Pathways Bushland and Environment*) – flora survey, wetland assessments, EVC descriptions and botanical knowledge

Richard Loyn (*Eco Insight*) – discussion of significant fauna observations in the local area, provision of annotated list of fauna records and sharing of general local ecological knowledge (in joint collaboration with Lyn Easton and Guy Dutson)

Andrew Silcocks (*BirdLife Australia* – Atlas Co-ordinator) – development of a data exchange agreement and provision of full set of local bird records

Rob Gration (*EcoAerial consulting*) –provision of bat call analysis and species call identification services

Geoff Williams (*Australian Platypus Conservancy* – Senior Zoologist) – provision of local platypus and water rat records, advice on the likelihood of their occurrence within the study area and provision of other contacts

Will Steele (*Melbourne Water Corporation* – Senior Biodiversity Scientist, Waterways Delivery Support) – provision of Melbourne Water's frog census data and information on freshwater turtles.

John D'Aloia (*Warringal Conservation Society* – President) – initial community group liaison and introduction

Marion Ware (*Friends of Banyule* – Secretary) – initial community group liaison and introduction

Practical Ecology

Joanna Méry, Sarah Moser, James Kidman, Charlotte Townson & **Beatrix Spencer** (Technical Assistants) – assistance with data collation and/or fieldwork

Austin O'Malley (Senior Zoologist) – assistance with project design, fieldwork and general advice

Colin Broughton, Karen McGregor and Julian Drummond – GIS Mapping and data coordination.

Executive Summary

Practical Ecology was commissioned by the City of Banyule to assess the conservation and wetland importance values of the Warringal Parklands and Banyule Flats, located along the Yarra River in Heidelberg and Viewbank.

The scope of the works included:

Stage 1. **Desktop Review** of existing information regarding the ecological, wetland and conservation values of the study area and results presented in a preliminary report. This involved the collation of approximately 180,000 observations of flora and fauna from the local area.

Stage 2. **Design and Implement Targeted Field Surveys** over a biennial timeframe to obtain a full botanical and faunal inventory, investigate occurrence of rare or threatened flora and fauna within the study area to document the presence of high value conservation species (such as those listed under international migratory agreements, and/or National/State significant species or community listings); and

Stage 3. **Reporting** on the aforementioned desktop review and targeted field survey results; and providing a detailed assessment of the ecological values and conservation significance of the study area.

While the study area has suffered significant modification since colonisation, it still supports wetlands with endangered vegetation communities which have extremely limited representation within the Yarra Floodplain and Greater Melbourne area. This provides important habitat for a great diversity of flora and fauna. One hundred and twenty-six indigenous flora taxa were recorded at the site and of these, four are of State significance. One flora species of national significance is considered likely to occur on the site, but was not detected during this study. Forty fauna species of state or national significance are considered to utilise the study site; many of these are wetland bird species, including Latham's Snipe, Australasian Bittern and Baillon's Crake.

Previous studies have identified the study area to be of State Significance (Beardsell 1997; DNRE 2002). This study found the site to be of state significance for:

- **Ecological Integrity**: due to the presence of intact and extensive stands of wetland vegetation and important waterbird populations.
- **Richness and Diversity:** due to the presence of wetland vegetation communities and fauna including waterbirds.
- **Rarity and Conservation:** due to the presence of endangered wetland communities and rare or threatened waterbird species including: Australasian Bittern, Baillon's Crake, Brown Quail, Grey Goshawk, Hardhead and Painted Snipe.
- **Representation of Type**: due to its importance in demonstrating typical examples of endangered/uncommon wetland vegetation communities.

A number of management recommendations have been provided to manage threats, support and improve the ecological values of the site, including but not limited to:

- Reinstating a more natural hydrological regime to the wetlands and treating polluted stormwater prior to entry
- Management of weeds and pest animals
- Revegetation to support the extensive works already undertaken
- Monitoring to detect the trajectory of species populations within the study area; assess effectiveness of management actions and facilitate community engagement.

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1. INTRODUCTION

Practical Ecology was commissioned by the City of Banyule to assess the conservation and wetland importance values of the Warringal Parklands and Banyule Flats, located along the Yarra River in Heidelberg and Viewbank.

1.1 Scope

The objective of this report is to provide a comprehensive review of the ecological values and conservation significance of the Warringal Parklands and Banyule Flat reserves.

The project was broken into three stages:

Stage 1. **Desktop Review** of existing information regarding the ecological, wetland and conservation values of the study area and results presented in a preliminary report.

Stage 2. **Design and Implement Targeted Field Surveys** over a biennial timeframe to obtain a full botanical and faunal inventory, investigate occurrence of rare or threatened flora and fauna within the study area to document the presence of high value conservation species (such as those listed under international migratory agreements, and/or National/State significant species or community listings); and

Stage 3. **Reporting** on the aforementioned desktop review and targeted field survey results; and providing a detailed assessment of the ecological values and conservation significance of the study area.

1.2 Study Area

The study area is approximately 81 hectares located along the Yarra River floodplain, in Heidelberg and Viewbank. It consists of two sub-areas (reserves): Banyule Flats (46 ha) in the north (Figure 1) and Warringal Parklands (35 ha) in the south (Figure 2).

Banyule Flats is bordered by Buckingham Road in the west, Banyule Road in the north and Somerset Road in the east. These roads and surrounding areas support residential development. The south of the site adjoins the Yarra River.

Warringal Parklands is likewise bound by residential housing in the north-west and adjoins parkland and the Yarra River in other directions.

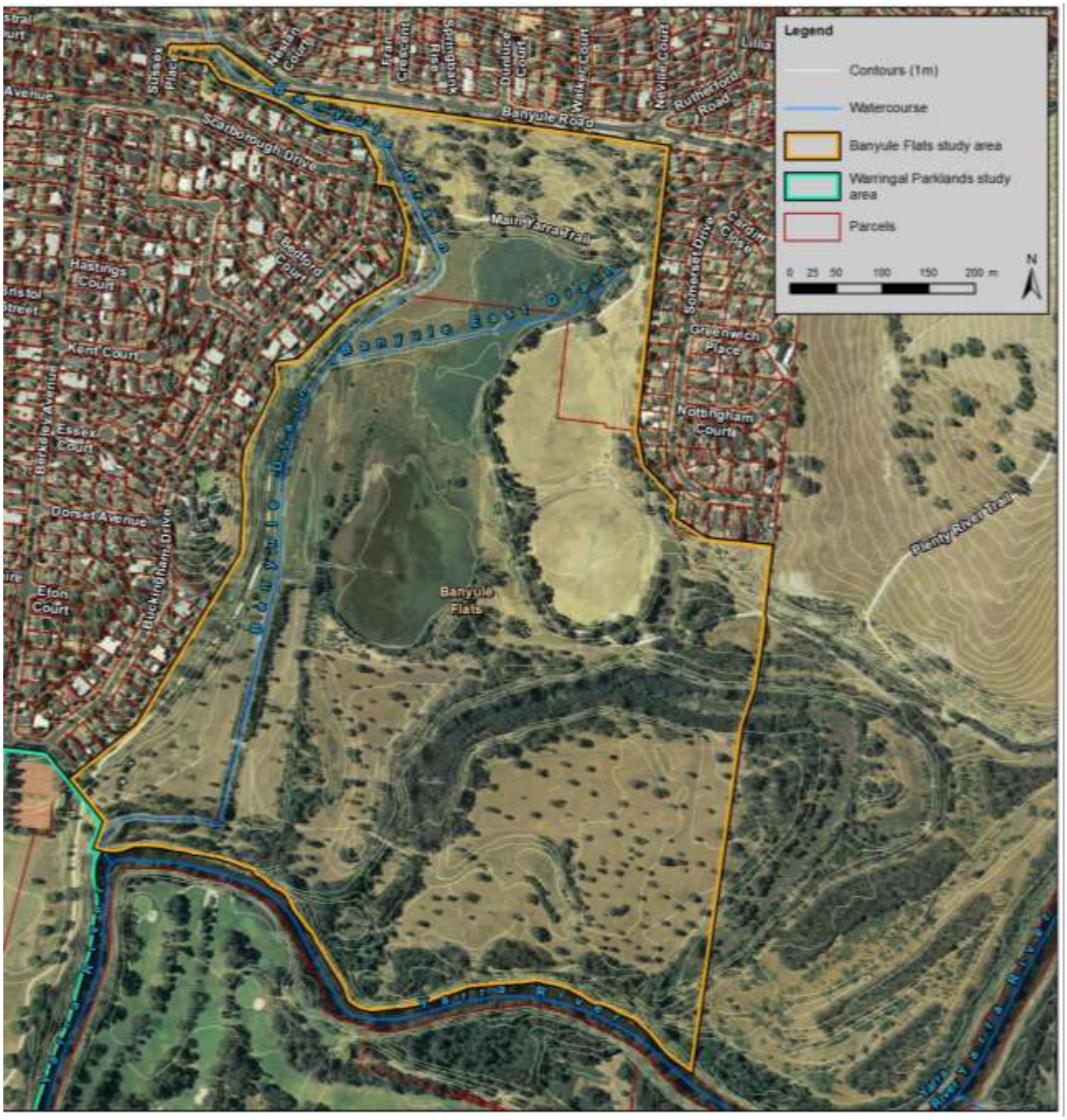

Figure 1. Study area: Banyule Flats

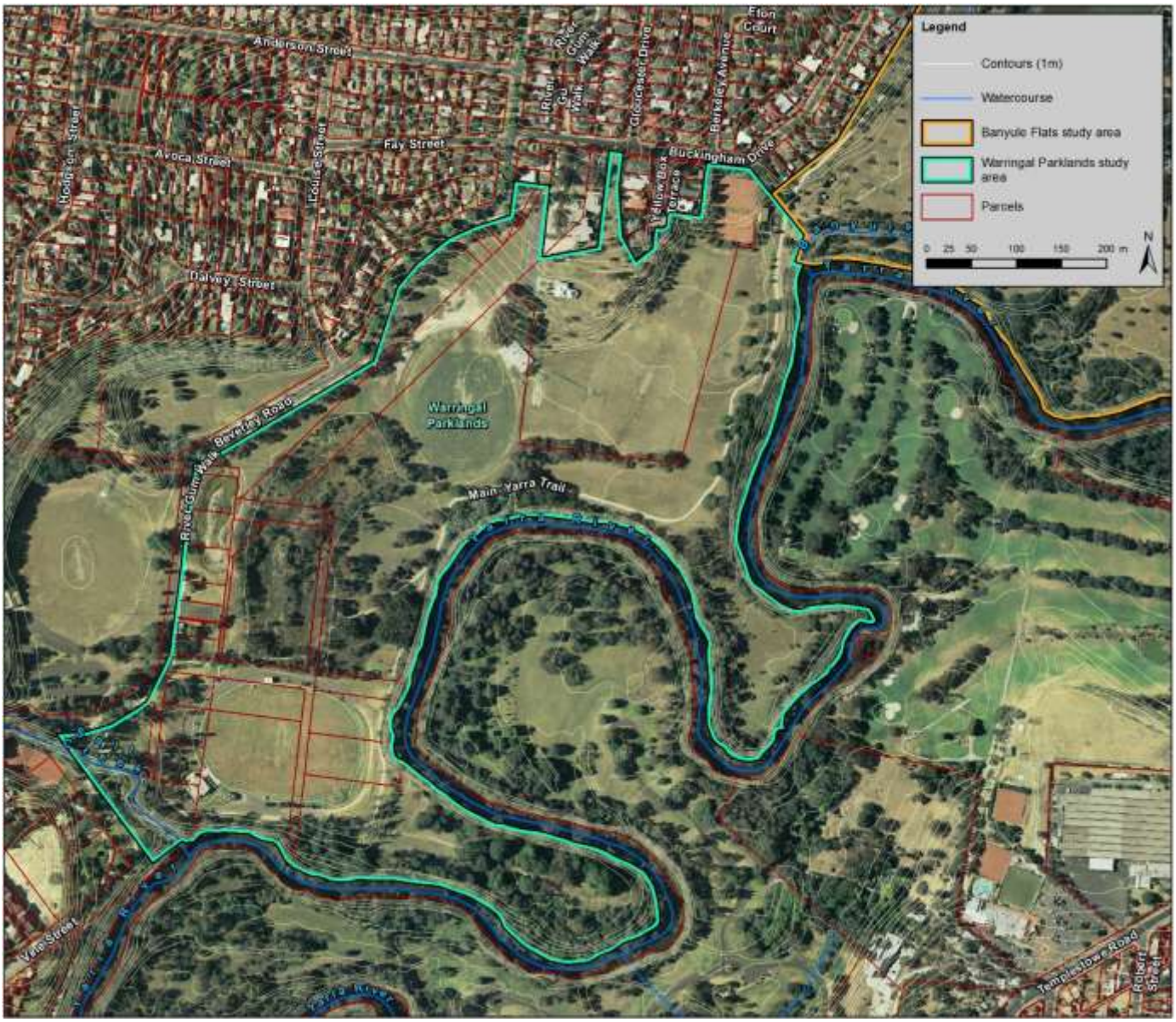

Figure 2. Study area: Warringal Parklands

1.2.1 Bioregion

The study area occurs within the western extremity of the Gippsland Plain Bioregion (DELWP 2015a). This bioregion is characterised by largely sedimentary geology and contains a range of landscapes characterised by generally flat to gently undulating terrain, much of which have been extensively modified in a manner that has affected the native vegetation present. The bioregion extends from the Melbourne Central Business District and the Mornington Peninsula through parts of central and south Gippsland to Lakes Entrance in the east. A number of significant rivers and streams including the Yarra, Bass, La Trobe, Thompson, Macalister and Avon drain the bioregion (DNRE 1996).

1.2.2 Geomorphology

The study area occurs within the Yarra River floodplain. The western and northern boundaries are often steeply sloping and present the edge of the floodplain where the associated alluvial deposits give way to soils derived from older Palaeozoic marine sediments (e.g. sandstone, mudstone, siltstone) (DELWP 2015a).

In the Banyule Flats, the Banyule Drain flows into the north of the site and follows the western escarpment where it flows into the Yarra. The course of the Banyule Drain appears relatively natural in the north of the site but is constructed and straightened in its southern reaches. The Banyule East Drain flows in from the north-east of the site and disperses into the Banyule Swamp. Both of these watercourses collect and distribute stormwater from the adjacent urban areas.

The Banyule Flats provides an important remnant of relatively intact geomorphology, including the Banyule Swamp in the north-west and the Banyule Billabong, a large section of old river course, in the south-west; and various other apparently natural depressions. Some areas of the site have been subject to fill, such as the area near the ovals in the north-east off Somerset Drive, Viewbank. The Banyule Swamp while natural in formation has been modified by filling a substantial area to create sporting ovals and elevating the western bank; along with the influx of urban stormwater the hydrological regime has been simplified, such that the swamp regularly holds water. The Banyule Billabong is provided with a somewhat more natural hydrological regime being filled from occasional flooding of the Yarra River.

The geomorphology of the Warringal Parklands has been significantly modified with the filling and levelling of the floodplain for sporting ovals. However, within this area the Warringal Swamp (or main swamp) has been retained. Constructed wetlands have been created adjacent this main swamp.

1.2.3 Land use history

The study area has a rich history of indigenous and post-contact occupation (Dyke *et al.* 2014). The extensive wetlands provided rich food supplies and sites for social gatherings. In the very early phases of colonial settlement it was extensively cleared for pastoral use and other agricultural pursuits including market gardens, orchards and crops (Dyke *et al.* 2014). More recently it has been utilised for recreation (e.g. sporting fields) and conservation of biodiversity.

2. METHODOLOGY

2.1 Desktop review

A review of existing information relating to the flora and fauna values of the study area was undertaken. This included existing studies, reports and management plans; review of biodiversity databases and any other information provided from groups and organisations associated with the land and biodiversity such as Warringal Conservation Society, Australian Platypus Conservancy, Melbourne Water and Arthur Rylah Institute.

2.1.1 Flora records

Three databases were analysed for records of flora within the two reserves, and within a broader, five kilometre buffer zone from a central point of the two reserves. In total, just over 11,000 records were collated. While it is not possible to identify and remove all duplicates where records have been submitted to two or more databases, or records of species that were planted or garden escapees, this comprehensive dataset provides an insight of the range of flora species that occur within this area. These records date from 1852 up until May 2016, and were sourced from the following databases:

- DELWP's Victorian Biodiversity Atlas
- Viridans' Flora Information System (to Sept. 2014)
- The Atlas of Living Australia

A list of the flora taxa recorded within 5 km of the study area is provided in Appendix 3.

2.1.2 Fauna records

Five databases were analysed for records of fauna within the two reserves, and within a broader, five kilometre buffer zone from a central point of the two reserves. In total, nearly 168,000 records were collated. While it is not possible to identify and remove all duplicates, where observations have been submitted to two or more databases, this comprehensive dataset provides an insight of the wealth of fauna that occurs within this area. The nearly 168,000 observation records date from January 1900 up until May 2016, and were sourced from the following databases:

- DELWP's Victorian Biodiversity Atlas
- Viridans' Victorian Fauna Database (to Sept. 2014)
- BirdLife Australia's Australian Bird Atlas (in conjunction with Eremaea's Birdline / eBird scheme, which became a joint collaboration in early 2014)
- Atlas of Living Australia
- Melbourne Water's aquatic fauna database (frogs)

A list of the fauna taxa recorded within 5 km of the study area is provided in Appendix 8.

BirdLife Australia

A mutual data exchange agreement was established with BirdLife Australia, through correspondence with Andrew Silcocks (Atlas Co-ordinator). Records were exchanged on completion of each survey period, and prior to finalising report data analysis. BirdLife data also include records from Eremaea's earlier datasets, and the recently launched 'e-bird' scheme where observers can record and submit records via the internet or through an application on internet-capable mobile interfaces. The bulk of bird data collated for the background review was from the BirdLife Australia database.

2.2 Field Survey

Targeted field surveys were undertaken over a 2.5-year timeframe to obtain a comprehensive botanical and faunal inventory, investigate occurrence of rare or threatened flora and fauna within the study area and, ultimately, to investigate and/or verify the presence of high value conservation species.

2.2.1 Flora and vegetation

Fieldwork included the following (wetland components undertaken by wetland ecologist, Doug Frood – Pathways Bushland and Environment consulting):

- Compilation of a list of native flora observed within the study area
- Map the distribution of Ecological Vegetation Classes
- Undertake an assessment of wetlands within the study area using the Index of Wetland Condition (DELWP, 2016).

2.2.2 Fauna

Field survey was undertaken to detect vertebrate fauna, including:

- 20-minute, 2-hectare general bird census surveys at fourteen strategic locations within the study area, including the wetlands; these were undertaken at, or around dusk or dawn, to maximise species detection.
- Deployment of fauna monitoring cameras (four to six units), for 2-4 weeks at a time. These were strategically placed throughout suitable (and secure) locations including along the fringe of wetlands with a focus on monitoring for waterbirds; on suitable trees to monitor for arboreal mammals, such as Sugar Gliders, or on the underside of larger branches looking down over well-defined terrestrial animal track/passages. A total of seventeen locations were used, with some sites used multiple times, due to limited secure options in some areas.

- Frog surveys incorporating call playback and spotlighting during late spring/early summer site visits. These included targeted searches for threatened amphibian species identified as potentially occurring, particularly the Growling Grass Frog. Call-playback utilising reference calls of all known amphibian species with potential to use the area, and not yet detected during the survey was generated, with 1-2 minutes playing each species call followed by a up to 5 minutes of quiet listening to detect any responses. These surveys were undertaken at the two main wetlands when water was present, during the main breeding period for most amphibian species; Banyule Swamp (northeast, near stormwater pondage, and south), and Warringal Swamp.

- Spotlighting for mammals and birds along the edge of the most suitable wetlands (depending on wetland condition at the time of surveys) and also for arboreal fauna in suitable vegetated areas, particularly where larger old trees are present. This included call-playback for nocturnal birds such as the Powerful Owl and cryptic waterbirds such as the Australasian Bittern and Baillon's Crake, within two hours of sunset. Spotlighting transects covered the same areas established for the formal bird censuses, as well as intermediate areas while walking between survey sites.

- Scoop and dip net surveys to sample aquatic vertebrate fauna including fish and frog (tadpoles/metamorphs) species within suitable shallow aquatic edge habitat. Sampling was undertaken for 15 minutes in duration at a time, at a minimum of four suitable locations within the two main wetlands, as described above for frog surveys.

- Bait traps (up to 12) were used as an additional survey method for fish. Traps were set in pairs (where possible) and positioned in suitable waterbodies, left overnight and checked early the next morning. A total of 14 locations were used, with some used multiple times, due to limited water-depth during the study period.

- A Bat detector (AnaBat®) was deployed to identify microbats that are present. One detector was consecutively positioned in two separate, suitable, secure locations adjacent to, or near, Banyule Swamp and Banyule Billabong, and left for up to 2-6 weeks at a time, with recorded calls analysed and identified off-site by Rob Gration (EcoAerial consulting).

- Recording of any incidental observations (seen, heard, or identified from scats, tracks or other traces) of native or introduced fauna throughout all time spent within the study area. This was undertaken during all visits to the study area in relation to this project.

2.3 Potentially occurring rare or threatened species

Database information was used to determine likelihood of occurrence of rare or threatened species recorded or predicted to occur within five kilometres of the study area. In determining a 'likelihood of occurrence' and utilisation of the study area by rare or threatened flora and fauna, the following factors were considered:

- the conservation status of the species and its distribution;
- previous recordings of species in the local area;
- date of last record;
- the habitat requirements of individual species;
- the physical attributes of the site, such as topography, geology, soils, aspect and other habitat features such as trees with hollows, the presence of rocks or boulders, logs on the ground;
- the history of land use at the study site; and
- how fragmented and modified is the environment surrounding the study site.

A basic matrix that describes the justification for the likelihood of occurrence is presented below.

Table 1. Criteria for potential occurrence of significant species

Likelihood of occurrence	Criteria
Nil	Species known to be extinct in local area and/or absent from the site.
Low	Unsuitable habitat at study site; or habitat conditions intermediate and records very limited and dated; or if it were present, it is highly likely to have been observed on site.
Moderate	Habitat conditions are intermediate, and/or optimal habitat conditions for species but local records limited or dated and/or if it were present, it is not likely to have been observed on site.
High	Optimal habitat conditions for species or species recorded at site, or intermediate habitat conditions but extensive local records and/or if it were present, it is not likely to have been observed on site.
Present	Species has been identified as being present within the study area either recently, or as part of the current study

2.4 Taxonomy

Flora and fauna taxonomy used in this report is in accordance with the Victorian Biodiversity Atlas Taxa List dated 8/06/2015 (DELWP 2015b).

3. RESULTS

3.1 Existing information

The Warringal Parklands and Banyule Flats have both long been considered as public assets within the local landscape of the Banyule municipality. This has led to a number of surveys, reports and the development of management recommendations/plans being undertaken for Banyule (and the preceding Heidelberg) City Council, and Melbourne Water Corporation (and the preceding Melbourne and Metropolitan Board of Works). In conjunction with physical parallel conservation efforts in the region, including revegetation and restoration works since the late 1970s (Fleming 2010), these studies have led to the accumulation of a range of ecological information, particularly between the late 1990s until the present day. Ecological information collated during this period has included the identification of flora and fauna species present, or likely to be present, and assessment of wetland values and quality.

3.1.1 Previous surveys and reports

Ecological Assessment and Management Reccomendations for Banyule Flats Reserve (2007).

The most recent survey report, within the Banyule Flats study area, is presented in a report prepared by Australian Ecosystems (Osler and Cook 2007), which provided an ecological assessment in conjunction with management recommendations for this reserve. This report was provided as an update to the earlier *Banyule Flats Management Plan* (Ritman 1993) prepared for Melbourne Water and the then Heidelberg City Council. It is referred to in considerable detail throughout this report given it provides the most recent detailed study of the reserve.

Sites of Faunal and Habitat Significance in North East Melbourne (1997)

An important overview of the ecological values of the broader landscape, with particular focus on the identification and description of sites of faunal and habitat significance was undertaken by Cam Beardsell: *Sites of Faunal and Habitat Significance in North East Melbourne (Beardsell 1997)* (known as the NEROC study). This resulted in the production of a six-volume report, with the Banyule Flats – Warringal Swamplands (Parklands) being presented as Site 32 within *Volume 3*: *Alluvial Plains*. The study identified the site as being of an area of approximately 180 hectares, with medium habitat significance and State faunal significance, and states that this site (in particular, the Banyule Swamp and Lagoon, and the adjacent section of the Yarra River) has…*the most diverse waterbird habitat and highest avifauna diversity in lower Yarra*, with forty species of waterbirds recorded.

The study determined a high usage of waterbodies by a range of birds for foraging and roosting, particularly for ducks, swans, rails and crakes, and shorebirds (migratory and resident species) including the Latham's Snipe. The proximity of these waterbodies to connecting vegetation and varying habitat also supports the area to host a broader range of non-aquatic species which are largely insectivorous or nectarivorous, or are predatory – feeding on fauna which utilise the habitat present.

Vegetation Communities of the City of Banyule (2000)

Beardsell (2000) prepared a study on the vegetation communities of Banyule. The Banyule Flats and associated wetlands feature heavily as reference areas for the most intact examples of a number of wetland communities and sub-communities within the Banyule region.

Sites of Zoological Significance of South East Melbourne and the Mornington Peninsula – a compendium of information collected between 1987 and 1991 (edited in 2004)

A review of information collected between 1987 and 1991 for sites of zoological significance of South East Melbourne and the Mornington Peninsula by Brereton *et al.* (2004) included the Yarra River corridor from Warrandyte to the river mouth as being of National and International Treaty Significance. The Banyule Flats were presented on the front cover and along with the Warringal Parklands referred to as being of particular importance to the larger Yarra River site. The Banyule Flats and Warringal Parklands where considered to be of 'Regional A' significance within this study. The editors provide a note that the Banyule Swamp was restored in the 1990s after the period of information review and is now in "excellent condition attracting a wide range of waterbirds."

Yarra Valley Parklands Management Plan (2008)

The Yarra Valley Parklands Management Plan prepared by Parks Victoria (Victoria 2008) provides a 10 to 15 year strategic framework and directions for the management of Yarra Valley Parklands. It considers Crown Land managed by Parks Victoria and also adjacent open space (e.g. parks, reserves and sport fields) managed by local government, including the Banyule Flats and Warringal Parklands. In part, the Plan guides Parks Victoria's management of the land under its jurisdiction, in the context of the park as a whole, including the sections of which are managed by other agencies (e.g. local government).

The Banyule Flats and Warringal Parklands are acknowledged as having a specific identity within the broader parkland. The Banyule Flats are acknowledged for proving significant vegetation including one of the finest representations of Plains Grassy Wetlands in the region.

Wetland areas within the reserves are placed within the "Conservation Zone" in which the purpose of management is to: "Protect, maintain and enhance natural bushland with significant habitat and environmental values." Other areas of the Banyule Flats are zoned "Conservation and Recreation Zone" with the purpose to "Protect, maintain and enhance areas with environmental values while providing suitable passive recreation opportunities." The playing fields are zoned for "Sports and Community Events".

3.1.2 Wetlands

DELWP mapping (2016) (Figure 3) identifies Banyule Swamp and a larger billabong that encompasses all the various smaller wetlands mapped by Australian Ecosystems (Osler and Cook 2007), as being major wetlands that would have been likely to exist prior to European settlement (Dyke et al. 2014), No modelled pre-European wetlands are present at the site of the current Warringal Swamp wetlands. It is also acknowledged by Beardsell in the NEROC Report (Beardsell 1997), that the existing wetlands are of State significance in their extent and quality, particularly with regard to supporting a diverse range of avifauna.

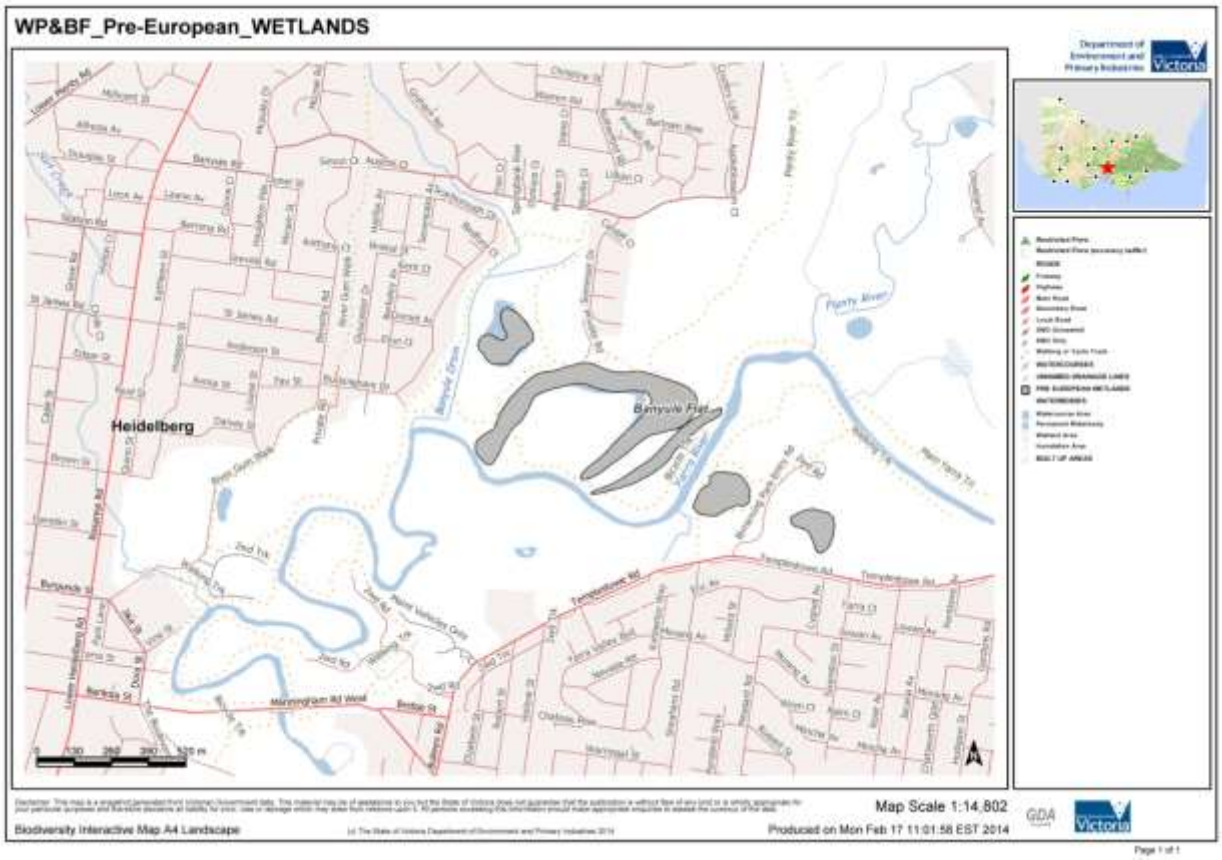

Figure 3. Extent of pre-European wetlands mapped within Warringal Parklands and Banyule Flats reserves (DEPI 2014a)(DEPI 2014a)(DEPI 2014a)(DEPI 2014a)(DEPI 2014a)

3.1.3 Community liaison and other correspondence

3.1.3.1 Australian Platypus Conservancy

Correspondence with senior ecologist, Geoff Williams, from the Australian Platypus Conservancy (APC) provided insight of local Platypus and Water Rat (Rakali) records, with several platypus records as far downstream as the Salt Creek influence with the Yarra River (edge of Warringal Parklands study area). Platypus are more commonly observed upstream of the study area, however, with many records within Plenty River, and at its confluence with the Yarra River. Geoff also commented that it was highly likely that water rats would frequent the wetlands throughout the study area (when wetland conditions are suitable), and within Banyule Swamp in particular. All aquatic fauna surveys for the local area, including platypus monitoring, are now undertaken by consultants on behalf of Melbourne Water, and not the APC.

3.1.3.2 Melbourne Water

Discussions with Dr. Will Steele (Senior Biodiversity Scientist at Melbourne Water) enabled receipt of existing data on frog observations for the study area and surrounds, largely collated through Melbourne Water's Frogwatch programme. However, it was identified that many records do not have a date – it was hoped that this would be resolved. Will Steele also reviewed data available on freshwater turtles, but did not identify any records within the study area, however, it is likely that common species are present throughout and would utilise wetlands when conditions are suitable.

A follow up with Will Steele in October 2016 identified there were no further frog census records for, or nearby the study area, and missing details for the undated records could not be retrieved.

3.1.3.3 Warringal Conservation Society

The Warringal Conservation Society (WCS) provided useful detail including *Banyule Flats History 1970–2010*, which was prepared by WCS member, Anthea Fleming (informal reference). This document provides an insight of the history of the area, and how the area has been transformed in recent decades – in particular earthworks for sports fields and extensive revegetation efforts.

3.1.3.4 Arthur Rylah Institute

Brief correspondence with Zeb Tonkin, an aquatic fauna scientist (and manager of the Aquatic Restoration and Environmental Flows Program) within the Applied Aquatic Ecology Section at the Arthur Rylah Institute suggests that there is still some hope that native fish are present, and could thrive, within the study area's wetlands. Indeed, it was thought that management of these wetlands is required. These actions could include (based on further analysis): allowing wetlands to dry out, and/or establishment of exclusion screening – which would be dependant on connectivity. A considered approach to management of wetlands, will likely assist native fish to maintain populations and/or recolonise. Reference was made to an unpublished report prepared for Melbourne Water (Tonkin *et al.* 2015), which identifies that several native fish species are present in the Yarra River adjacent to the study area (study site located at Sills Bend). Of those species, the following are considered likely to disperse into and/or occupy the wetlands from drainage channels or during major flooding events; native species: Short-finned Eel *Anguilla australis*, Common Galaxias *Galaxias maculatus*, Australian Smelt *Retropinna semoni* and Flat-headed Gudgeon *Philypnodon grandiceps,* and exotic species: Eastern Gambusia **Gambusia holbrooki*, Oriental Weatherloach **Misgurnus anguillicaudatus*, Common Carp **Cyprinus carpio*, Goldfish **Carassius auratus*, Redfin Perch **Perca fluviatilis*, and Roach **Rutilus rutilus*. It was also noted by Tonkin, that while Southern Pygmy Perch *Nannoperca australis* and Eastern Dwarf Galaxias *Galaxiella pusilla* are absent from the records, they are likely to (or should) occur in the wetlands.

3.1.3.5 Local ecologists

Conversations with Richard Loyn (senior ecologist with Eco Insight consulting) identified that there are several local people with a real passion for monitoring fauna within the study area and surrounds. An annotated list of bird and mammals recorded in the Banyule Flats area was provided by Richard, in conjunction with Lyn Easton and Celia Browne, based on previous lists released in 2005. The updated list provided more recent records and location-specific comments on more significant observations. A copy of this annotated list is provided in this report (Appendix 9), and all species recorded within this list are also included in the full fauna species list for the study area (and referenced as such, if not already in a formal database source). Richard also shared valuable local knowledge of the study area, including information on where significant species or interesting breeding activity has previously been recorded, which has been incorporated into this report.

3.2 Ecological Vegetation Classes

Ecological Vegetation Classes (EVCs) are a method of systematic organisation of plant communities into common types that occur in similar environmental conditions throughout Victoria. The Department of Environment, Land, Water and Planning (DELWP's) online Biodiversity Interactive Mapping (BIM) (DELWP 2015a) provides access to the modelled distribution of EVCS prior to European settlement.

This mapping identifies (Figure 4) the following EVC mapping units as occurring within the study area:

- Floodplain Riparian Woodland (EVC 56)
- Floodplain Wetland Aggregate (EVC 172)
- Plains Grassy Woodland (EVC 55)
- Creekline Grassy Woodland (EVC 68).

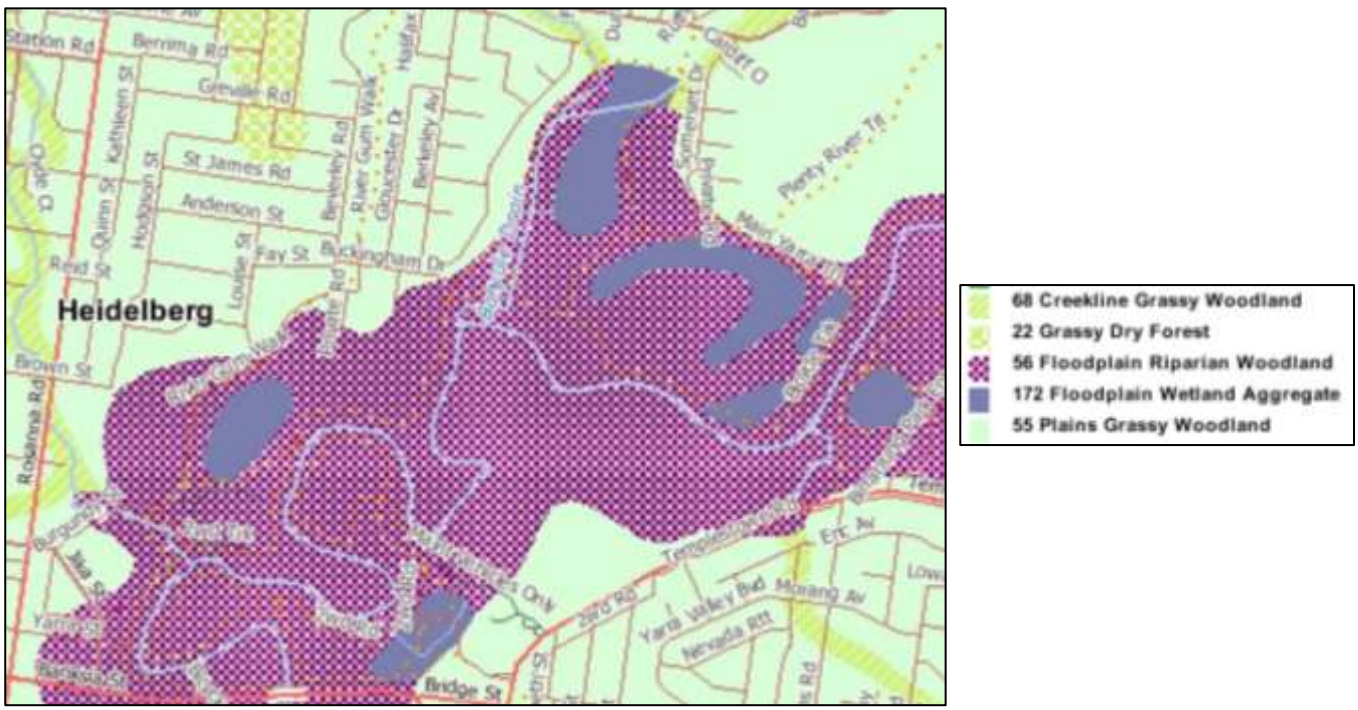

Figure 4. Pre-1750 EVCs as shown in DELWP's Biodiversity Interactive Mapping tool

Prior to European colonisation, the study area supported a system of wetlands interspersed with woodland vegetation. The reconstruction of the overall range of habitats within this landscape, in terms of EVCs, is as follows: The woodland vegetation on the floodplain was largely referable to Floodplain Riparian Woodland (EVC 56), which in turn was flanked by Plains Grassy Woodland (EVC 55) on less steeper parts of the adjacent more elevated ground and variously Grassy Woodland (EVC 175) or Riverine Escarpment Shrubland (EVC 82) on steeper terrain (note that the scale of the mapping shown in Figure 4 tends to not detail these latter EVCs). Minor streams entering the floodplain supported a narrow band of Creekline Grassy Woodland (EVC 68) until such a point as the habitat came under the influence of the ecological factors operating on the floodplain (e.g. soils and flooding regime) rather than those in operation along the low gradient drainage-line further above its confluence with the river.

Map 2 provides a more detailed indication of the historical distribution of EVCs across the study area based on the above discussion and on-ground observations.

It is shown that the vast majority of the Banyule Flats and Warringal Parklands comprises the EVC Floodplain Riparian Woodland. This EVC is intermediate between the true wetland areas that are generally free of trees and the woodlands on the more elevated land. As the name suggests, Floodplain Riparian Woodland occupies flood-prone areas but for much of the time is a dryland environment. However, this EVC can extend into the outer margins of wetlands, and consequently the wettest extremes of Floodplain Riparian Woodland can comprise wetland vegetation.

Along with the terrestrial (dryland) EVCs (Plains Grassy Woodland, Grassy Woodland), Floodplain Riparian Woodland has been much affected by land-clearing and agriculture, such that these EVCs have historically been almost entirely removed from the study area. Evidence that remains of these EVCs within the study area includes, for Plains Grassy Woodland, some remnant trees such as the Yellow Box *Eucalyptus melliodora* along the north-east boundary of the Banyule Flats study area. Or in the case of Floodplain Riparian Woodland, remnant River Red Gums scattered around wetland areas and along the Yarra River.

Hence, the past historic land-use has impacted severely on the terrestrial environments of the study area. However, the wetland environments, having been less accessible, have often avoided such significant impacts such that they still commonly contain a rich array of flora and biological diversity.

The wetlands within the study area largely fall under the collective labels of Billabong Wetland Aggregate (EVC 334) or Floodplain Wetland Aggregate (EVC 172), each of which can include a wide range of component EVCs. These EVCs can occur in very fine-scale mosaics reflecting local variations in depth and duration of wetting. Some of these EVCs occur in temporal mosaics, where they are expressed during different phases of the wetting and drying cycles.

Table 2 below details the EVCs identified across the two portions of the study site and whether they were observed by Australian Ecosystems (AE) in their 2007 study, Practical Ecology (PE) (current study) or both. Excluding Floodplain Riparian Woodland, eleven wetland EVCs were observed in the current study; summary descriptions for these EVCs are provided in Appendix 4.

Floodplain Wetland Aggregate and Billabong Wetland Aggregate include a wide range of component EVCs, with the degree of expression of a range of these component EVCs varying through the wetting and drying cycles of the wetlands. During the vegetation surveys of this study, there was generally no water present (or very shallow levels) within the Warringal Parklands wetlands, the Banyule Billabong, Banyule Flats Wetland C, D and E.

Where Australian Ecosystems recorded EVCs not observed within a given wetland during the current study (e.g. Aquatic Herbland), these are generally components of aggregate EVCs which would be anticipated during a wetter phase. Similarly, the prominence of Floodway Pond Herbland within the wetlands during the current study is indicative of a drier phase not observed by Australian Ecosystems.

The current study notes minor occurrences of Wet Verge Sedgeland – it can be difficult to determine to what extent the dominant sedge and rush species reflect a pre-modification treeless zone, or whether they previously occurred as an understorey to River Red-gum, or have opportunistically colonised under an altered hydrology. It is of little consequence that this EVC component is either

not listed by Australian Ecosystems or is treated as a component of Red Gum Swamp given the difficulty of interpreting remnant vegetation and the relatively minor extent of this EVC component.

Australian Ecosystems listed Submerged Aquatic Herbland as occurring within the study area, however it is uncertain whether this EVC has the potential to occur within the wetlands – the species noted by Australian Ecosystems appear to be more indicative of wetter variants of the broadly circumscribed EVC Aquatic Herbland than Submerged Aquatic Herbland in the sense of its original description.

Table 2. EVCs that have been modelled as previously occurring, likely to be extant, or recently identified within or nearby the study area

KEY

Sources: PE – EVC identified/observed by Practical Ecology; AE – EVC identified/observed by Australian Ecosystems; BIM – EVC modelled/predicted by DELWP Mapping tool

CS – Conservation Significance: LC– Least concern; VU – Vulnerable, EN – Endangered);

^	BCS sourced online (DELWP)
*	BCS as per Frood and Papas (2016)
X	denotes EVC was identified as present in both past (AE) and current studies (PE)
+	denotes EVC was not recorded previously but was identified as present during current study (PE)
-	denotes EVC was not recorded during current study but has been previously recorded (AE)
( )	denotes minor presence of EVC component within wetland area

EVC No.	EVC Name	EVC Abbrev	Bioreg. CS*	1750 (BIM)			2005 (BIM)			Banyule Flats								Warringal Parklands			
				WP	BF	Nearby	WP	BF	Nearby	Banyule Swamp	Banyule Billabong	Banyule Creek	Wetland A	Wetland B	Wetland C	Wetland D	Wetland E	Main wetland	South-east wetland	West constructed wetland	Notes / extent in current study (PE)
22	*Grassy Dry Forest*	*GDF*	*LC^*			*X*			*X*												*Not present, mapped outside study area on BIM*
47	*Valley Grassy Forest*	*VGF*	*VU^*			*X*															*Not present, mapped outside study area on BIM*
53	Swamp Scrub	SS	EN*							(+)											Identified within the south-eastern portion of Banyule Swamp
55	Plains Grassy Woodland	PGW	EN	X	X	X			X												Higher reaches on western to north-eastern edges of Banyule Flats study area
56	Floodplain Riparian Woodland	FRW	EN*	X	X	X	X	X	X												Lower reaches throughout majority of Banyule Flats study area including along Banyule Creek
68	Creekline Grassy Woodland	CrGW	EN^			X		X	X			X									Within Banyule Creek
164	*Creekline Herb-rich Woodland*	*CrHrW*	EN^		X	*X*											`				*Not present in recent times*
895	*Escarpment Shrubland*	*ES*	EN^			*X*			X												*Not present, mapped outside study area on BIM*
175	*Grassy Woodland*	*GW*	EN^			*X*															*Not present, mapped outside study area on BIM*
172	Floodplain Wetland Aggregate	FWAgg	EN*	X	X	X	X	X	X					+	+	+	+	+	+	+	Banyule Flat 'Wetlands B, C, D, E' and all Warringal wetlands (x3)
334	Billabong Wetland Aggregate	BWAgg	EN*								+										Banyule Billabong only
292	Red Gum Swamp	RGS	EN*							X						X					Banyule Swamp and 'Wetland D'
308	Aquatic Sedgeland	AS	VU*								-						-				Banyule Billabong only
653	Aquatic Herbland	AH	EN*							(X)	(X)			X	-		-		+	+	Three Banyule Flat wetlands and two Warringal wetlands
810	Floodway Pond Herbland	FPH	EN*							(+)	+					+	X				Four Banyule Flat wetlands
821	Tall Marsh	TM	EN*								(x)		X	X	X			+	+	+	Four Banyule Flat wetlands and all Warringal wetlands (x3)
918	Submerged Aquatic Herbland	SAH	EN*								-						-				Uncertainty of whether this EVC has potential to occur; species recorded by AE indicate wetter variants of broadly circumscribed EVC Aquatic Herbland (EVC 653).
932	Wet Verge Sedgeland	WVS	VU*								+			+	(+)	+	X	(+)	+	+	Banyule Billabong and 'Wetlands B, C, D, E' and all Warringal wetlands (x3)
949	Dwarf Floating Aquatic Herbland	DFAH	LC*							(+)							-				Banyule Swamp only

3.3 Wetland vegetation condition

The condition of the wetlands within the study site was assessed using the vegetation component of the Index of Wetland Condition (IWC). The results are presented in Table 3.

Table 3. Scores for Vegetation Component of the IWC Assessment for the Banyule Flats and Warringal Parklands.

Scores out of 25 for each of the elements, potential total score of 100

WETLAND (EVC benchmark)	Critical Lifeforms	Lack of Weeds	Altered Processes	Health and Structure	TOTAL SCORE
Banyule Swamp	Red Gum Swamp, minor components of Aquatic Herbland, Dwarf Floating Aquatic Herbland, Floodway Pond Herbland and Swamp Scrub				
Whole wetland (Red Gum Swamp)	9.38	18	10	0	37.38
Open water area (Red Gum Swamp)	3.13	25	0	0	28.13
Fringe area (Red Gum Swamp)	9.38	0	10	15	34.38
Notes	In the open water area almost all of the score comes from the lack of weeds component; in the fringing areas scores are generally poor to medium for all components, but especially poor for lack of weeds. The observations of the current study in relation to the impacts of altered hydrology on Banyule Swamp are totally consistent with those of the Australian Ecosystems 2007 study. These impacts include the losses of the wetland herblands, the diversity of the outer edge of the wetland, and the *Carex* sedgelands from the floor of the wetland. If anything, these processes have become more advanced since the Australian Ecosystems study. The proposals of Australian Ecosystems in addressing the damage caused by stormwater are fully supported, but to date these have not been adopted.				
Banyule Billabong	Billabong Wetland Aggregate, including components of Floodway Pond Herbland, Wet Verge Sedgeland minor components of Tall Marsh and Aquatic Herbland.				
As Billabong Wetland Aggregate	18.75	15	10	20	63.75
Notes	Losses of scoring spread across categories, but most notably for indicators of altered processes and to a lesser extent lack of weeds – score likely to increase somewhat following an inundation event (provided this is of suitable water quality, i.e. not redirected storm water).				
Banyule Flats Wetland A	Tall Marsh				
As Tall Marsh	12.5	12	15	25	64.5
Notes	Generally Tall Marsh will score relatively highly as the benchmark requirements are easily met; in this case possibly over-scored for altered processes given the lack of information on the prior character of wetland				
Banyule Flats Wetland B	Floodplain Wetland Aggregate, including components of Tall Marsh, Wet Verge Sedgeland and Aquatic Herbland				
As Floodplain Wetland Aggregate)	25	18	20	25	88

WETLAND (EVC benchmark)	Critical Lifeforms	Lack of Weeds	Altered Processes	Health and Structure	TOTAL SCORE
Notes	Apparently receiving adequate clean water from local runoff; presumably high diversity is due to appropriate species enrichment plantings and largely suitable hydrological regime despite modified context.				
Banyule Flats Wetland C	Floodplain Wetland Aggregate, including component of Tall Marsh, and minor component of Wet Verge Sedgeland.				
As Floodplain Wetland Aggregate	15.63	0	10	25	50.63
Notes	Losses of scores spread across the components, particularly lack of weeds and to a lesser extent altered processes and critical lifeforms. Some increase in the total score may occur following an inundation event.				
Banyule Flats Wetland D	Floodplain Wetland Aggregate, including components of ?Red Gum Swamp/Wet Verge Sedgeland and Floodway Pond Herbland.				
As Floodplain Wetland Aggregate	15.63	7	15	25	62.63
As Red Gum Swamp	9.38	7	15	15	46.38
Notes	Losses of scores using Floodplain Wetland benchmark spread across the components, notably lack of weeds and to a lesser extent altered processes and critical lifeforms. The main difference between scores if using Red Gum Swamp is due to less representation of critical lifeforms and structural change.				
Banyule Flats Wetland E	Floodplain Wetland Aggregate, including components of Wet Verge Sedgeland and Floodway Pond Herbland				
As Floodplain Wetland Aggregate	15.63	7	15	25	62.63
Notes	Losses of scores spread across the components, notably lack of weeds and to a lesser extent altered processes and critical lifeforms. Some increase in the total score would be anticipated following an inundation event.				
Warringal Main Wetland	Floodplain Wetland Aggregate, including components of Tall Marsh, and incidental specimens of species indicative of Wet Verge Sedgeland.				
Low-lying portion – 20 % (as Floodplain Wetland Aggregate)	15.63	0	10	25	50.63
More elevated portion – 80 % (as Floodplain Wetland Aggregate)	3.15	0	5	5	13.15
Whole wetland: scores as above allocated proportionally	*5.65*	*0*	*6*	*9*	*20.65*
Notes	Low lying areas with remnant wetland vegetation (approx. 20% of wetland): score of 50.63 (losses of score for lack of weeds component and to a lesser extent altered processes and critical lifeforms). Residual weedy elevated areas (approx. 80%), score of 13.15 (difficult to apply structural category, as most lifeforms effectively absent, some with healthy incidental plants at very low frequencies). It is difficult to predict the response of the vegetation to an inundation event, but it is suspected that the recovery of wetland vegetation in the more elevated areas may be poor, at least in the short term.				
Warringal South-east Wetland	Floodplain Wetland Aggregate, including components of Aquatic Herbland, Tall Marsh and Wet Verge Sedgeland.				

WETLAND (EVC benchmark)	Critical Lifeforms	Lack of Weeds	Altered Processes	Health and Structure	TOTAL SCORE
As Floodplain Wetland Aggregate	25	7	15	25	72
Notes	Losses of score largely due to lack of weeds component and to a lesser extent indicators of altered processes. Retaining a good diversity of wetland species, with a somewhat modified but largely functional hydrology applying to most of the wetland area.				
Warringal Western Constructed Wetland	Floodplain Wetland Aggregate, including components of Aquatic Herbland, Tall Marsh and Wet Verge Sedgeland.				
As Floodplain Wetland Aggregate	21.88	18	10	25	74.88
Notes	It is difficult to interpret the indicators of altered processes given the constructed nature of the wetland – the other components were largely allocated high scores.				

3.4 Significant trees

Many significant trees occur within the study area, particularly along the Yarra River corridor and surrounding Banyule Billabong and to a lesser extent, Banyule Flats. These trees are significant due to their large size, and senescence, leading to the development and presence of hollows of varying sizes. These hollows provide shelter and/or breeding habitat for arboreal mammals, microbats, birds – particularly parrots and Powerful Owl, which have been observed, and are known to be regularly breeding in habitat nearby the study area.

3.5 Flora

Three hundred and three (303) flora taxa were recorded within the study area during this study (see Appendix 1). Within Banyule Flats study area there were 258 flora taxa recorded (40% or 104 indigenous) and 183 flora taxa (40% or 74 indigenous) within Warringal Parklands. In total, 166 exotic flora species were recorded across the full study area (comprising 55% of the full flora species list). Eleven were non-indigenous native species, with three further species queried if indigenous or not based on the lack of knowledge of the species' history in the area.

Table 4. Summary table of the origin of flora species recorded during this study (2014-2016)

	Banyule flats		Warringal Parklands		Full study area	
Origin of taxa	No. of taxa	% of taxa	No. of taxa	% of taxa	No. of taxa	% of taxa
Indigenous	104	40.3	74	40.4	126	41.6
Non-indigenous native	9	3.5	7	3.8	11	3.6
Exotic/introduced	145	56.2	102	55.8	166	54.8
Total	**258**		**183**		**303**	

A full list of the flora recorded during this study is provided in Appendix 1.

3.5.1 Variation from previous studies

Different species will express within wetlands during different seasons, as a reflection of different hydrological states. In addition, species which are at very low frequencies will not necessarily be located during different studies, as a reflection of chance encounters and limited search time, as well as seasonal differences in ease of detection such as due to the presence of flowers or plants being obscured in thicker vegetation such as swards of annual grasses. Some species detected by Australian Ecosystems such as Yellow Rush-lily *Tricoryne elatior* and Sweet Hound's-tongue *Cynoglossum suaveolens* were not observed during the current study but are likely to have persisted (even if under threat from introduced grasses).

3.5.2 Rare or threatened flora recorded within study area

Table 5 below details the national and state rare or threatened flora species that have been recorded within the study area (note these records are all from within Banyule Flats and none at Warringal Parklands). Six rare or threatened species are known to have been recorded within the study area prior to this study. Of these two were not recorded during this study, Basalt Peppercress *Lepidium hyssopifolium* and River Swamp Wallaby-grass *Amphibromus fluitans*. The Basalt Peppercress record in the study area is a historic record and it is now believed to be extinct in the Greater Melbourne area (Bull 2014). River Swamp Wallaby-grass is a species that may be persisting in the seedbank and may re-emerge at the site; it also appears to be a highly mobile species and could re-colonise from further up the floodplain. One new threatened species was recorded that has not been previously recorded within the study area Arching Flax-lily *Dianella* sp. aff. *longifolia (Benambra).* This species was observed in recent revegetation plantings.

Table 5. Summary of rare or threatened flora species recorded within the study area

Scientific name	Common Name	EPBC	FFG	VROT	Last Record	No prior recs.*	Location
Callitriche brachycarpa	Short Water-starwort		L	vu	this study	1	Wetlands of Banyule Flats
Callitriche umbonata	Winged Water-starwort			r	this study	1	Previous records are historical (Ferdinand von Mueller); this study observed in wetlands of Banyule Flats
Dianella sp. aff. *longifolia (Benambra)*	Arching Flax-lily			vu	this study		Planted in revegetation beds
Eucalyptus X studleyensis	Studley Park Gum			en	this study	2	Banks of Banyule Billabong
Amphibromus fluitans	River Swamp Wallaby-grass	VU	X		1995	3	Banyule Billabong (edge of study area)
Lepidium hyssopifolium	Basalt Peppercress	EN	L	en	undated	1	Undated herbarium specimen from the Banyule Flats – presumably very old record

*Number of records within study area prior to this study

Conservation status under EPBC Act 1999:
EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant

Conservation status under FFG Act 1988:
L: Listed, N: Nominated, X: Rejected, D: Delisted

Victorian Rare or Threatened Species (VROT) (DEPI 2014b)
ex: Presumed extinct, en: Endangered, vu: Vulnerable, r: rare and k: poorly known

Short Water-starwort and Winged Water-starwort

A few plants of Short Water-starwort *Callitriche brachycarpa* were observed within the Floodway Pond Herbland of the floor of Banyule Billabong. *C. brachycarpa* was also recorded by Australian Ecosystems (Osler and Cook, 2007) from Banyule Swamp. While this wetland held too much water to allow expression of the relevant vegetation during the inspections of the current study, the seed of this species has presumably persisted and the plant would express on exposed mud on the floor of Banyule Swamp during a drawdown phase.

In Victoria, Short Water-starwort is currently known only from the Otway Ranges and adjacent plains, and northern outskirts of Melbourne on sites subject to inundation (Walsh and Entwisle 1999); although, a more recent (2009) record was taken near Leongatha. Hence, the Banyule Flats is one of the few localities this species occurs in Victoria. It is vulnerable to extinction in Victoria and listed under the *FFG Act 1988.*

Winged Water-starwort *Callitriche umbonata* was observed in a damp site associated with a small drain on the perimeter of wetland A, but is likely to be more widespread in similar habitat to *C. brachycarpa* under more suitable conditions. It is scattered and rare in Victoria, mainly in inland swampy areas.

Both starwort species are dependent on suitable hydrological variation and water quality rather than any other specific management. Restoration of the pre-disturbance inundation levels at Banyule Swamp to allow a proper drawdown, and construction of a treatment pond near wetland A as outlined by Australian Ecosystems in 2007 would assist in supporting these species and other remaining values at these wetlands by assisting in the recovery of the vegetation.

3.5.3 Rare or threatened flora recorded within 5km of study area

Twenty national, and/or state significant flora species have been recorded within the five kilometre search area. Appendix 2 lists these species and also provides habitat notes and consideration of the likelihood of the species to be present within the study area. Aside from the species recorded during this study, other rare or threatened species recorded within 5 km with the most potential to occur within the study area are Veiled Fringe-sedge *Fimbristylis velata* (moderate likelihood) and Matted Flax-lily *Dianella amoena* (low to moderate likelihood). The former is rare at the State level and the latter endangered nationally.

3.6 Fauna

One hundred and twenty (120) species of fauna were observed within the study area during this study (Appendix 6). A summary of lifeforms is provided below, along with what proportion are species indigenous to the area, or are exotic or non-indigenous natives which are introduced to the area. Eighty-two percent of all species recorded are indigenous in origin, with all of the exotic species (11% of all species recorded), being either pest/exotic mammal, fish or bird species.

A list of the fauna recorded during this study is provided in Appendix 6.

Table 6. Summary of fauna species observed by lifeform

Lifeform	Total
AMPHIBIAN	**7**
Indigenous	6
Non-indigenous native	1
BIRD	**78**
Indigenous	71
Exotic	7
FISH	**3**
Exotic	3
INVERTEBRATE	**4**
Indigenous	4
MAMMAL	**17**
Indigenous	14
Exotic	3
REPTILE	**3**
Indigenous	3
Grand Total	**120**

During surveys, particularly incidental observations and camera trap records, it was observed that there is a very active fox population within the study area, with foxes observed in almost all camera trap locations situated at ground level.

Other mammals of note were the recording of Echidna and Sugar Glider (both in Banyule Flats study area). It was also noted that Warringal Parklands supports Common Wombat, Swamp Wallaby and Eastern Grey Kangaroo.

Call playback and spotlighting did not detect the presence of any significant crepuscular or nocturnal species, including Powerful Owl and Australasian Bittern; however rarely observed species, the Australian Owlet-Nightjar and Barn Owl were heard.

During the study period, there was generally no water present (or very shallow levels) within the Warringal Parklands wetlands, so fish surveys were limited to waterbodies within the Banyule Flats (Banyule Swamp including the north-eastern storm-water entry to the Swamp colloquially known as 'Grotty Pond', and Banyule Creek Drain towards the Yarra River). No significant species of fish or amphibians were observed.

No native fish were captured in the wetlands or drainage channel, with most fish captured being Eastern Gambusia, an exotic species, in amongst smaller numbers of other exotic species: Oriental Weatherloach and Goldfish.

There were signs of burrowing crayfish and freshwater crayfish along the Yarra River banks, but other than the Common Yabby, no individuals were captured to allow full identification to species level. It is possible that their extent is greater than what was observed.

The results from bat recording deployments identified a total of seven microbat species present within the study area (Table 7). Southern Freetail Bat and Chocolate Wattled Bat comprised the majority of the calls recorded within this outcome including a diverse range of microbat species.

Table 7. Microbat species recorded during study

Common Name	Scientific Name
White-striped Freetail Bat	*Tadarida australis*
Southern Freetail bat	*Mormopterus planiceps*
Gould's Wattled Bat	*Chalinolobus gouldi*
Chocolate Wattled Bat	*Chalinolobus morio*
Eastern Falsistrellus	*Falsistrellus tasmaniensis*
Large Forest Bat	*Vespadelus darlingtoni*
Little Forest Bat	*Vespadelus vulturnus*
Total (7 species)	

3.6.1 National or state significant fauna

Eighty national, and/or state significant species have been recorded within the five kilometres of the subject site and fifty of these recorded in the study area. Ten of these species have only been recorded prior to 1995 and potentially do not utilise the site. The remaining forty have been recorded after 1998.

Forty-one of these eighty species were recorded within the Banyule Flats study area, and thirteen within the Warringal Parklands study area.

The frog data from Melbourne Water's dataset currently has a lot of missing dates, so there may be more recent records available for some frog species (Will Steele, pers. comm.). Unfortunately, these dates were not able to be recovered by the conclusion of this study.

A summary of the number of significant fauna in five main lifeforms/groups recorded within five kilometres is provided in Table 8 below.

Table 8. Summary of significant fauna species and their respective lifeforms recorded within 5 km of the study area

Lifeform/group	Number of significant species recorded
Amphibian	3
Bird	61
Fish	5
Invertebrate	1
Mammal	7
Reptile	3
TOTAL	**80**

Table 9 below shows the number of records (and number of individuals where this is recorded) of the fifty national or state species recorded within the study area. It also indicates the year of the last database observation and details which of these species were recorded during this study or recorded by Loyn, Easton and Guy (2016). The Banyule Flats study area has more observation records (700) of a wider range of species, compared to that of Warringal Parklands (43 observations).

Appendix 7 further details all rare and threatened fauna species recorded within 5kms and provides habitat notes and consideration of the likelihood of the species to utilise the study area.

Table 9. Summary of national and state significant fauna species recorded in Banyule Flats and Warringal Parklands

Treaty: JAMBA / CAMBA, ROKAMBA and/or Bonn Convention Listed Species

M1-2: M1: Migratory species; M2: Marine species

EPBC Act 1999 conservation status

EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant.

FFG Act 1988 status

L: Listed, N: Nominated, X: Invalid, ineligible or delisted

Victorian Rare or Threatened Species (VROTS) (DSE 2013)

ex: Extinct, rx: Regionally Extinct, wx: Extinct in the Wild,
cr: Critically Endangered, en: Endangered, vu: Vulnerable, nt: Near Threatened,
dd: Data Deficient

PE = recorded by Practical Ecology during this study; RL= recorded in Loyn, Easton and Guy (2016).

Lifeform	Common name	Scientific name	EPBC	FFG	VROT	TREATY	Banyule Flats (database recs)		Warringal Parklands (database recs)		Last database rec.	PE	RL
							No. obs.	No. indiv.	No. obs.	No. indiv.			
Amphibian	Growling Grass Frog	*Litoria raniformis*	VU	L	en		3	11			2009		
Bird	Australasian Bittern	*Botaurus poiciloptilus*	EN	L	en		3	2			2007		
Bird	Australasian Shoveler	*Anas rhynchotis*			vu		17	8	1	1	2011		x
Bird	Australian Painted Snipe	*Rostratula australis*	VU	L	cr	C	10	7			2001		x
Bird	Azure Kingfisher	*Alcedo azurea*			nt		2	0			2008		x
Bird	Baillon's Crake	*Porzana pusilla palustris*		L	vu		9	4			2006		x
Bird	Black Falcon	*Falco subniger*			vu		3	0			2013		
Bird	Blue-billed Duck	*Oxyura australis*		L	en		2	2			2009		x
Bird	Brolga	*Grus rubicunda*		L	vu				1	9	1991		
Bird	Brown Treecreeper (S.E. ssp.)	*Climacteris picumnus victoriae*			nt		1	0			1978		
Bird	Cattle Egret	*Ardea ibis*				C,J	101	660	11	271	2013	x	x
Bird	Clamorous Reed Warbler	*Acrocephalus stentoreus*				B2H	65	2			2007		
Bird	Common Sandpiper	*Actitis hypoleucos*			vu	B2H,C,J,R	1	0			1967		
Bird	Eastern Great Egret	*Ardea modesta*		L	vu	C,J	137	32	11	10	2013	x	x
Bird	Fork-tailed Swift	*Apus pacificus*				C,J,R	1	0			1995		
Bird	Freckled Duck	*Stictonetta naevosa*		L	en		2	1			2013		x
Bird	Grey Falcon	*Falco hypoleucos*		L	en		1	0			1977		

Lifeform	Common name	Scientific name	EPBC	FFG	VROT	TREATY	Banyule Flats (database recs)		Warringal Parklands (database recs)		Last database rec.	PE	RL
							No. obs.	No. indiv.	No. obs.	No. indiv.			
Bird	Grey Goshawk	*Accipiter novaehollandiae novaehollandiae*		L	vu		3	1			2008		x
Bird	Hardhead	*Aythya australis*			vu		53	14			2014	x	x
Bird	Hooded Robin	*Melanodryas cucullata cucullata*		L	nt		2	0			1992		
Bird	Intermediate Egret	*Ardea intermedia*		L	en								x
Bird	Latham's Snipe	*Gallinago hardwickii*			nt	B2H,J,R,C	108	121	2	2	2013	x	x
Bird	Lewin's Rail	*Lewinia pectoralis pectoralis*		L	vu		1	0			2013		
Bird	Little Egret	*Egretta garzetta nigripes*		L	en		5	0			2000		x
Bird	Magpie Goose	*Anseranas semipalmata*		L	nt				1	0	2008		
Bird	Marsh Sandpiper	*Tringa stagnatilis*			vu	B2H,R,J,C	1	0			2004		
Bird	Masked Owl	*Tyto novaehollandiae novaehollandiae*		L	en		1	1			2001		
Bird	Musk Duck	*Biziura lobata*			vu		3	1			2013		
Bird	Nankeen Night Heron	*Nycticorax caledonicus hillii*			nt		45	0	1	0	2008	x	x
Bird	Pacific Gull	*Larus pacificus pacificus*			nt				1	3	2002		
Bird	Painted Honeyeater	*Grantiella picta*	VU	L	vu		1	1			2013		
Bird	Pied Cormorant	*Phalacrocorax varius*			nt		3	0			2008		x
Bird	Plains-wanderer	*Pedionomus torquatus*	CR	L	cr		1	0			1980		
Bird	Powerful Owl	*Ninox strenua*		L	vu		4	3			2013		x
Bird	Red-backed Kingfisher	*Todiramphus pyrropygia pyrropygia*			nt				1	1	1985		x
Bird	Regent Honeyeater	*Anthochaera phrygia*	CR	L	cr		4	0			2001		
Bird	Royal Spoonbill	*Platalea regia*			nt		28	25			2013		x
Bird	Rufous Fantail	*Rhipidura rufifrons*				B2H	8	1			2013		x
Bird	Satin Flycatcher	*Myiagra cyanoleuca*				B2H	5	0	1	1	2010		x
Bird	Sharp-tailed Sandpiper	*Calidris acuminata*				B2H,C,R,J	3	0			1999		x
Bird	Speckled Warbler	*Chthonicola sagittatus*		L	vu		1	0			1969		
Bird	Spotted Harrier	*Circus assimilis*			nt		1	1			2013		
Bird	Swift Parrot	*Lathamus discolor*	EN	L	en		8	0			2012		

Lifeform	Common name	Scientific name	EPBC	FFG	VROT	TREATY	Banyule Flats (database recs) No. obs.	Banyule Flats (database recs) No. indiv.	Warringal Parklands (database recs) No. obs.	Warringal Parklands (database recs) No. indiv.	Last database rec.	PE	RL
Bird	White-throated Needletail	*Hirundapus caudacutus*			vu	C,R,J	49	0			2013		x
Bird	Whiskered Tern	*Chlidonias hybridus javanicus*			nt								x
Fish	Golden Perch	*Macquaria ambigua*		R	nt				2	1	2008		
Fish	Macquarie Perch	*Macquaria australasica*	EN	L	en				9	12	2008		
Fish	Murray Cod	*Maccullochella peelii*	VU	L	vu				1	2	2008		
Mammal	New Holland Mouse	*Pseudomys novaehollandiae*	VU	L	vu		1	1			1987		
Mammal	Grey-headed Flying-fox	*Pteropus poliocephalus*	VU	L	vu							x	x
Reptile	Common Long-necked Turtle	*Chelodina longicollis*			dd		2	1			2012		
Totals			**11**	**27**	**45**	**12**	**699**	**900**	**43**	**313**		**6**	**24**

4. BIOLOGICAL CONSERVATION SIGNIFICANCE OF SITE

4.1 Defining biological conservation significance

A site's biological conservation significance is a measure of the significance of the contribution it makes in conserving biodiversity. This is founded on the principle that practically all sites supporting native biodiversity assist in maintaining the integrity and resilience of ecosystems and their constituent biodiversity and hence have some level of conservation significance. While not ignoring that the conservation of biodiversity at one site is dependent on other sites across landscapes and nations it is meaningful to consider the significance of the relative contribution each site makes in conserving biodiversity. Two of the major roles of the assessment of conservation significance are (Margules and Usher 1981 cited in DSE (2004a)).:

a) identifying priority areas for conservation management action and reservation, and

b) incorporating biological conservation objectives into regional and local planning procedures.

4.2 Previous assessments of conservation significance

4.2.1 Sites of Zoological Significance of South East Melbourne and the Mornington Peninsula – a compendium of information collected between 1987 and 1991

A review of information collected between 1987 and 1991 for sites of zoological significance of South East Melbourne and the Mornington Peninsula included the Yarra River corridor from Warrandyte to the river mouth as being of National and International Treaty Significance (Brereton *et al.* 2004). The Banyule Flats were presented on the front cover and along with the Warringal Parklands referred to as being of particular importance to the larger Yarra River site. The Banyule Flats and Warringal Parklands where considered to be of 'Regional A' significance within this study. The editor's provide a note that the Banyule Swamp was restored in the 1990s after the period of information review and is now in "excellent condition attracting a wide range of waterbirds."

4.2.2 Sites of Faunal and Habitat Significance in North East Melbourne (1997)

An important overview of the ecological values of the broader landscape, with particular focus on the identification and description of sites of faunal and habitat significance was undertaken by Cam Beardsell: *Sites of Faunal and Habitat Significance in North East Melbourne (Beardsell 1997)* (known as the NEROC study). This resulted in the production of a six-volume report, with the Banyule Flats – Warringal Swamplands (Parklands) being presented as Site 32 within *Volume 3*: *Alluvial Plains*. The study identified the site as being of an area of approximately 180 hectares, with medium habitat significance and State faunal significance, and states that this site (in particular, the Banyule Swamp and Lagoon, and the adjacent section of the Yarra River) has…*the most diverse waterbird habitat and highest avifauna diversity in lower Yarra*, with forty species of waterbirds recorded.

4.2.3 Sites of Biodiversity Significance in Port Phillip and Westernport Region Victoria

A comprehensive review of the sites of biodiversity significance in Port Phillip and Westernport region was compiled by the then Department of Natural Resources and Environment in 2002 (DNRE 2002). This report identified Banyule Flats (Biosite 4864) as a site of State significance and Warringal Swampland – Banksia Park (Biosite 5159) to be of Regional significance. The determination of this was based on a draft version of the criteria later published in DSE (2004a). The assessment against that criteria was not published with the 2002 Biosites report but is held in a state-wide Biosite database administered by the Department that has not been made publicly available.

The 2002 Biosites report did however place a special emphasis on Banyule Flats and presented it as a case study along with the Yarra Flats – Bolin Billabong Biosite (Biosite 4860). It identified that the Banyule Flats was of State significance across at least four of the five criteria used in the assessment:

- **State Significance for Ecological Integrity**: due to the presence of intact and extensive stands of wetland vegetation and important waterbird populations.
- **State Significance for Richness and Diversity:** due to the presence of wetland vegetation communities and fauna including waterbirds and frogs.
- **State Significance for Rarity and Conservation:** due to the presence of endangered wetland communities and rare or threatened waterbird species including Australasian Bittern, Baillon's Crake, Brown Quail, Grey Goshawk, Hardhead and Painted Snipe.
- **State Significance for Representation of Type**: due to its importance in demonstrating typical examples of endangered/uncommon wetland vegetation communities.

The report goes on to detail that Banyule Swamp supports the most viable surviving stands of two communities of Herb-rich Plains Grassy Wetland in the Yarra Valley and that these are transitional between those on the Mornington Peninsula and communities of Plains Grassy Wetland on the Volcanic Plain. Note that the nomenclature of these vegetation communities has since been refined and is reflected in the more detailed assessment shown in this study, identifying eleven wetland EVCs.

It also states: "that the biological significance of Banyule Flats rests with the intactness of Banyule Swamp and the extent and diversity of wetland habitats. The Plains Grassy Wetland and lagoon herbfield at Banyule Swamp and fringing River Red Gums *Eucalyptus camaldulensis,* mudflat herbfield and open water of Banyule Billabong are key wetland areas in maintaining the viability of populations of waterbirds and wetland processes and ecosystems in the Lower Yarra."

In regards to its representation of type the report states that: "Banyule Flats is an important illustration of successional zones within River Red Gum riverine and wetland habitats, …it is one of the most important wetland scientific study sites in the Yarra Valley.

It also states that "Banyule Swamp is the finest wetland in the Yarra Valley for the migratory Latham's Snipe. Up to 50 birds visit the swamp each summer from the northern hemisphere. Other recent sightings at Banyule Swamp include the endangered Australasian Bittern *Botaurus poiciloptilus* and vulnerable Baillon's Crake *Porzana pusilla*."

4.3 Assessing conservation significance

The Victorian Government devised a standard set of criteria for assessing sites of biological significance (DSE 2004a). This system provides an assessment of the scale of reference in which a site should be considered significant; i.e. at what scale does the site provide a significant contribution to biodiversity. The categories used are:

I – International significance

N – National significance

S – State Significance

R – Regional (Bioregional) Significance

L – Local Significance

U – Unknown Significance (not yet assessed but believed to have conservation significance)

NS – Not Significant (fully assessed and does not qualify against any relevant criterion).

Note that within this system the 'internationally significant' category is used in recognition that the site has assets that are recognised in an international treaty. If this were not the case many sites of national significance could also be considered of international significance because the assets they contain are more often than not endemic to Australia, or the Australasian region (DSE 2004a).

This system has been used to assess the significance of the subject site based on current available data and is presented below:

State conservation significance

This study has identified the study area to be of State significance for biological (biodiversity) conservation. Using the criteria of DSE (2004a) it has found that the site is of **State** significance for:

- **Ecological Integrity**: due to the presence of intact and extensive stands of wetland vegetation and important waterbird populations.
- **Richness and Diversity:** due to the presence of wetland vegetation communities and fauna including waterbirds.
- **Rarity and Conservation:** due to the presence of endangered wetland communities and rare or threatened waterbird species including Australasian Bittern, Baillon's Crake, Brown Quail, Grey Goshawk, Hardhead and Painted Snipe.
- **Representation of Type**: due to its importance in demonstrating typical examples of endangered/uncommon wetland vegetation communities.

4.4 Considering international significance – Ramsar criteria for Wetlands of International Importance

The signing of the Convention on Wetlands took place in 1971 at the small Iranian town of Ramsar. Known as the Ramsar Convention it is an international treaty aimed at halting the worldwide loss and degradation of wetlands. The Convention details a process for the nomination and listing of wetlands of international importance by signatory countries. In nominating a wetland the nominating country agrees to establish and oversee a management framework that conservers and maintains the ecological character of the wetland. Wetlands can be listed because of the international significance of their biodiversity and uniqueness of their ecology, botany, zoology, limnology or hydrology.

Within Australia site nominations can be made to the Federal Government, the Mister for Environment then assesses the merits of the application in considering to forward the nomination to the Ramsar Convention Secretariat for inclusion on the Ramsar List.

The process of nominating a site is detailed and lengthy – and well outside the scope of this document. However brief consideration of the criteria for nomination, as listed in Table 10 below is provided.

The most relevant Criteria to the site are Criteria 1 and 2.

Criterion 1 relates to rare, or unique examples of a natural or near-natural wetland type found within the appropriate biogeographic region. In Australia the biogeographic regionalisation scheme for aquatic ecosystems is the Australian Drainage Division system for inland and coastal ecosystems (Commonwealth of Australia 2012) – which classifies the site as being within Yarra River drainage division. The wetland type relates to typology defined in the Ramsar Convention (e.g. Ramsar Convention 2014) and are relative broad definitions such as Permanent freshwater marshes/pools (Tp) or Seasonal/intermittent freshwater marshes/pools on inorganic soil (Ts).

The Criterion is seeking to identify 'best' national examples of particular wetland types; as such a national wetland inventory is the fundamental requirement for the application of this Criterion, since it is only with such information that it is possible to assess whether a wetland is representative, rare or unique (Ramsar Convention 2014). Without this inventory it will be apparently not possible to include under this criterion. The Convention also encourages grouping connected wetlands for listing and in this regard consideration of the broader Yarra River and associated wetlands for Ramsar listing may be more appropriate for consideration (see Brereton *et al.* (2004) which identify the lower Yarra River corridor to be of National and International Treaty Significance).

Criterion 2 seeks to identify wetlands that support vulnerable, endangered, or critically endangered species or threatened ecological communities. The Criterion is non-quantitative and merely requires that the site support the categories given at the national or international level. While there are nationally endangered species that have been recorded at the site (e.g. Australasian Bittern) it is not considered that the site is of significant enough consequence in supporting these species to be listed for this reason. While the site contains EVCs endangered at the bioregional scale these communities are not nationally listed and are unlikely to be justification for Criterion 2.

In summary, brief consideration of the site in regard to the Ramsar criteria for identifying wetlands of international importance would suggest the site is not likely of international significance in itself, but could support listing for the larger Yarra River corridor. In association with the broader lower Yarra River corridor, the site is relevant to Criteria 1 and 2 as discussed above and also Criterion 3.

Table 10. Ramsar Criteria for Identifying Wetlands of International Importance (DSEWPC 2012).

Group A of the Criteria. Sites containing representative, rare or unique wetland types
Criterion 1: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.
Group B of the Criteria. Sites of international importance for conserving biological diversity
Criteria based on species and ecological communities
Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.
Criterion 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.
Criterion 4: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.
Specific criteria based on waterbirds
Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.
Criterion 6: A wetland should be considered internationally important if it regularly supports 1 % of the individuals in a population of one species or subspecies of waterbird.
Specific criteria based on fish
Criterion 7: A wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity.
Criterion 8: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.
Specific criteria based on other taxa
Criterion 9: A wetland should be considered internationally important if it regularly supports 1 % of the individuals in a population of one species or subspecies of wetland-dependent non-avian animal species.

5. MANAGEMENT RECOMMENDATIONS

5.1 Altered hydrology of wetlands

Every effort should be made to reverse some of the damage to the wetlands created by altered hydrology, including the construction of the treatment pond adjacent to wetland A, as proposed by Australian Ecosystems; and the restoration of the outlet level to Banyule Swamp. In the future, some monitoring of the responses of other wetlands to inundation would be warranted, to determine whether there is a case to further develop watering plans. However, the use of storm water in these wetlands should be avoided.

The observations of the current study in relation to the impacts of altered hydrology on Banyule Swamp are totally consistent with those of the Australian Ecosystems study. These impacts include the losses of the wetland herblands, the diversity of the outer edge of the wetland, and the *Carex* sedgelands from the floor of the wetland. If anything, these processes have become more advanced since the Australian Ecosystems study. The proposals of Australian Ecosystems in addressing the damage caused by stormwater are fully supported, but to date these have not been adopted.

It is presumed that the dormant wetland flora at Banyule Billabong would express following an inundation event. In the short to medium term, the main management consideration for Banyule Billabong would be to protect it from contaminated urban run-off.

5.2 Threatening processes

In addition to altered hydrology, there are a number of other threatening processes including:

- Loss of tree habitat, ageing trees falling/being removed, and lack of recruitment in some areas
- Weed coverage – while some effort has been made to control blackberry and willow within the Banyule Swamp, there are areas within the Banyule Billabong, and along the Yarra River corridor which would benefit from more aggressive weed control (for example Blackberry, Spear Thistle, Wandering Tradescantia and Sweet Vernal-grass) and subsequent revegetation work using indigenous plants. A focus on maintaining weed free areas and extending these in higher quality habitat is recommended.
- Foxes: there appear to be quite a lot of foxes, as this invasive predator was recorded almost across the entire study area through various survey approaches. Fox kills were present around the edge of Banyule Swamp, with remains of waterfowl, including Black Swan, detected. While it is possible that other predators may have had some influence on those kill findings, no cats were observed on camera traps and seem not to be as consequential as foxes.
- Rabbits are likely preventing higher recruitment success of indigenous plants. It is recommended that more management of rabbits is required, particularly around and near Banyule Swamp.

- Exotic fish, particularly Eastern Gambusia are likely significantly affecting native fish populations. Restoring the hydrological regime to wetlands and allowing a more natural summer draw down will assist with managing exotic fish species.

- Domestic dog and human traffic within the fenced off areas of Banyule Swamp was detected. It may be required to monitor this further and determine whether alternative, or possibly screened, access should be provided (board walk, bird hide), to minimise disturbance of birds foraging and roosting within the wetland and fringing areas.

- Erosion is an issue in some areas of the banks of the Yarra River – often in association with wombat activity, but also with dog/human access points to the river.

- Mange: There is some indication there may be mange present in some of Banyule's wombat populations – intervention may be required to identify if it is present, and to treat this disease to ensure resident wombats, as well as domestic dogs visiting the area remain healthy. Foxes are a known carrier of mange, so additional control of this exotic species will help reduce spread.

5.3 Proactive management

Proactive management to improve the ecological values of the study area include:

- Revegetation of the site over the last several decades has significantly increased the habitat values of the site. Ongoing targeted and well-designed revegetation is strongly encouraged to continue to restore the site.

- Connectivity and corridors: Development of, or enhancement of existing, connectivity corridors, particularly along drainage lines at ground level and above. Sugar Gliders were identified as present within Banyule Flats reserve, but there is limited suitable vegetation and/or connecting habitat for them to colonize bigger areas (as well as hollows for shelter). Additional smaller corridors could be planted to connect existing vegetation corridors, and expansion or further undergrowth/shrub planting within corridors largely comprised of canopy trees is recommended.

- Tree health: Ensure protection of and health of significant trees / trees with hollows – these trees are largely present along the Yarra River banks, and surrounding Banyule Billabong and Banyule Swamp. Occasional flooding of Banyule Billabong will likely enhance the health of trees within, and surrounding this area.

- Consider creating more native fish-friendly habitat by adding more shading and emergent vegetation on edge of, and possibly, some additional islands to be created within constructed wetlands that carry water regularly. Consulting a specialist in wetland improvement/revegetation and/or planning for native fish reintroduction is advised.

5.4 Ecological monitoring and information sharing

Management of the study area should be informed by targeted monitoring to assess the trajectory of the ecological values of the site and effectiveness of management techniques. Recommended monitoring includes:

- Further surveys are recommended to determine whether higher numbers of the migratory Latham's Snipe may be present at any one time (during their non-breeding season within Australia), as it is possible that larger numbers may be present, but cannot be observed simultaneously.
- Weed monitoring and control should be increased to document the success of weed control and ensure the retention of native flora.
- Monitoring of pest animals associated with a targeted management program.
- Water quality monitoring within the wetlands should be regularly undertaken associated with the treatment of stormwater.
- Community engagement in fauna surveys to identify changes in fish, amphibian and bird fauna diversity, particularly when enhancement work is to be implemented, such as:
    - Frog census and bird census schedules which can foster citizen science and increased community engagement – this could also incorporate management of the introduced Eastern Dwarf Tree Frog
    - Establish fish monitoring programme and possibly reintroduction of native species
    - Increase information on monitoring species, through visual, interpretive signage and/or website or apps. QR-scanner images on information boards could be a useful way to provide additional information on-site, linking people to additional information online.

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Appendix 1. Flora recorded within study area

Flora recorded within the study area by Doug Frood during this study.

Origin	Common Name	Scientific Name	BF	WP
	Gold-dust Wattle	*Acacia acinacea*	x	x
#	Snowy River Wattle	*Acacia boormanii*		x
	Silver Wattle	*Acacia dealbata*	x	x
*	Early Black-wattle	*Acacia decurrens*	x	
#	While Sallow-wattle	*Acacia floribunda*	x	x
	Lightwood	*Acacia implexa*	x	x
	Black Wattle	*Acacia mearnsii*	x	
	Blackwood	*Acacia melanoxylon*	x	x
*	Gosford Wattle	*Acacia prominens*		x
	Golden Wattle	*Acacia pycnantha*	x	
	Needle-leaf Prickly Moses	*Acacia verticillata subsp. cephalantha*	x	x
	Sheep's-burr	*Acaena echinata*	x	
	Bidgee-widgee	*Acaena novae-zelandiae*	x	x
	Australian Sheep's-burr	*Acaena ovina*	x	
*	Maple	*Acer sp.*	x	x
*	Agapanthus	*Agapanthus praecox subsp. orientalis*	x	
*	Brown-top Bent	*Agrostis capillaris*	x	
*	Silvery Hair-grass	*Aira caryophyllea*	x	
	Water Plantain	*Alisma plantago-aquatica*	x	
*	Angled Onion	*Allium triquetrum*	x	x
	Black Sheoak	*Allocasuarina littoralis*	x	
	Drooping Sheoak	*Allocasuarina verticillata*	x	x
	Lesser Joyweed	*Alternanthera denticulata*	x	x
	Common Wheat-grass	*Anthosachne scabra*	x	x
*	Sweet Vernal-grass	*Anthoxanthum odoratum*	x	x
*	White Bladder-flower	*Araujia sericifera*	x	x
*	Cape Weed	*Arctotheca calendula*	x	x
*	Bridal Creeper	*Asparagus asparagoides*	x	x
*	Aster-weed	*Aster subulatus*	x	x
*	Hastate Orache	*Atriplex prostrata*	x	
	Berry Saltbush	*Atriplex semibaccata*	x	
*	Bearded Oat	*Avena barbata*	x	x
*	Sterile Oat	*Avena sterilis*	x	
	Pacific Azolla	*Azolla filiculoides*	x	
*	Bamboo	*Bambusa sp.*	x	x
*	English Daisy	*Bellis perennis*	x	x
	Salt Club-rush	*Bolboschoenus caldwellii*		x
	Marsh Club-rush	*Bolboschoenus medianus*	x	x
	Cut-leaf Daisy	*Brachyscome multifida*	x	
*	Brassica	*Brassica sp.*	x	
*	Shell Grass / Large Quaking-grass	*Briza maxima*	x	
*	Prairie Grass	*Bromus catharticus*	x	x

Origin	Common Name	Scientific Name	BF	WP
*	Great Brome	*Bromus diandrus*	x	x
*	Soft Brome	*Bromus hordeaceus*	x	
	Sweet Bursaria	*Bursaria spinosa*	x	x
	River Bottlebrush	*Callistemon sieberi*	x	x
*	Bottlebrush	*Callistemon spp.*	x	x
	Short Water-starwort	*Callitriche brachycarpa*	x	
	Winged Water-starwort	*Callitriche umbonata*	x	
*	Shepherd's Purse	*Capsella bursa-pastoris*		x
*	Common Bitter-cress	*Cardamine hirsuta*		x
*	Winged Slender-thistle	*Carduus tenuiflorus*	x	
	Tall Sedge	*Carex appressa*	x	x
	Tassel Sedge	*Carex fascicularis*	x	x
	Poong'ort / Basket Sedge	*Carex tereticaulis*	x	x
	Drooping Cassinia	*Cassinia arcuata*		x
	Shiny Cassinia	*Cassinia longifolia*	x	
*	Sheoak	*Casuarina spp.*	x	
*	Kikuyu	*Cenchrus clandestinus*	x	x
*	Common Centaury	*Centaurium erythraea*	x	
	Common Sneezeweed / Old Man Weed	*Centipeda cunninghamii*		x
	Spreading Sneezeweed	*Centipeda minima*	x	
*	Sticky Mouse-ear Chickweed	*Cerastium glomeratum s.s.*	x	x
*	Fat Hen	*Chenopodium album*	x	x
*	Sowbane	*Chenopodium murale*	x	
*	Spear Thistle	*Cirsium vulgare*	x	x
	Slender Clematis	*Clematis decipiens*	x	
	Small-leaved Clematis	*Clematis microphylla s.l.*	x	x
*	Fleabane	*Conyza spp.*	x	
*	Tall Fleabane	*Conyza sumatrensis*	x	x
	Prickly Currant-bush	*Coprosma quadrifida*		x
*	New Zealand Cabbage-tree	*Cordyline australis*	x	
*	Pampas Grass	*Cortaderia selloana*	x	
*	Lemon-scented Gum	*Corymbia citriodora*	x	
#	Spotted Gum	*Corymbia maculata*	x	x
*	Velvet Cotoneaster	*Cotoneaster pannosa*		x
	Common Cotula	*Cotula australis*		x
	Spreading Crassula	*Crassula decumbens*		x
*	Hawthorn	*Crataegus monogyna*	x	
*	Monterey Cypress	*Cupressus macrocarpa*	x	
	Water Ribbons	*Cycnogeton procerum*	x	x
*	Couch	*Cynodon dactylon var. dactylon*	x	x
*	Drain Flat-sedge	*Cyperus eragrostis*	x	x
	Leafy Flat-sedge	*Cyperus lucidus*	x	
*	Cocksfoot	*Dactylis glomerata*	x	x
*	Cape Ivy	*Delairea odorata*	x	
	Black-anther Flax-lily	*Dianella admixta*	x	
	Smooth Flax-lily	*Dianella laevis*	x	

Origin	Common Name	Scientific Name	BF	WP
	Arching Flax-lily	*Dianella sp. aff. longifolia (Benambra)*	x	
	Kidney-weed	*Dichondra repens*		x
*	Summer Grass	*Digitaria sanguinalis*		x
	Sticky Hop-bush	*Dodonaea viscosa subsp. spatulata*	x	
*	Paterson's Curse	*Echium plantagineum*	x	
*	Panic Veldt-grass	*Ehrharta erecta*	x	x
*	Annual Veldt-grass	*Ehrharta longiflora*	x	x
	Nodding Saltbush	*Einadia nutans subsp. nutans*	x	x
	Lax Goosefoot	*Einadia trigonos*		x
	Waterwort	*Elatine gratioloides*	x	
	Common Spike-sedge	*Eleocharis acuta*	x	x
	Ruby Saltbush	*Enchylaena tomentosa*	x	
	Hairy Willow-herb	*Epilobium hirtigerum*	x	x
*	Seaside Daisy	*Erigeron karvinskianus*	x	
*	Loquat	*Eriobotrya japonica*	x	
*	Musky Heron's-bill	*Erodium moschatum*	x	x
	Blakely's Red-gum	*Eucalyptus blakelyi*		x
	River Red-gum	*Eucalyptus camaldulensis*	x	x
	Sugar Gum	*Eucalyptus cladocalyx*	x	
#	Southern Blue-gum	*Eucalyptus globulus subsp. pseudoglobulus*	x	x
#?	Yellow Gum	*Eucalyptus leucoxylon*	x	x
	Yellow Box	*Eucalyptus melliodora*	x	
*	Narrow-leaved Black Peppermint	*Eucalyptus nicholii*		x
	Swamp Gum	*Eucalypts ovata subsp. ovata*	x	x
#?	Red Box	*Eucalyptus polyanthemos subsp. vestita*	x	
*	Sydney Blue-gum	*Eucalyptus saligna*	x	x
#	Mugga	*Eucalyptus sideroxylon*	x	x
*	Gum	*Eucalyptus spp.*	x	x
	Studley Park Gum	*Eucalyptus x studleyensis*	x	
	Manna Gum	*Eucalyptus viminalis subsp. viminalis*	x	x
	Manna Gum - Swamp Gum hybrid	*Eucalyptus viminalis X ovata*	x	
	Star Cudweed	*Euchiton involucratus s.s.*		x
*	Petty Spurge	*Euphorbia peplus*		x
*	Red Fescue	*Festuca rubra*		x
*	Fig	*Ficus carica*	x	
*	Fennel	*Foeniculum vulgare*	x	
*	Desert Ash	*Fraxinus angustifolia*	x	x
*	Dense-flower Fumitory	*Fumaria densiflora*	x	x
*	Wall Fumitory	*Fumaria muralis subsp. muralis*	x	x
*	Fumitory	*Fumaria spp.*	x	x
*	Cleavers	*Galium aparine*	x	x
*	Small Goosegrass	*Galium murale*	x	
*	Spiked Cudweed	*Gamochaeta purpurea*		x
*	Montpellier Broom	*Genista monspessulana*	x	x
*	Cut-leaf Crane's-bill	*Geranium dissectum*	x	x
*	Dove's Foot Crane's-bill	*Geranium molle*	x	

Origin	Common Name	Scientific Name	BF	WP
	Naked Crane's-bill	*Geranium sp. 5*	x	x
	Australian Sweet-grass	*Glyceria australis*	x	
	Hop Goodenia	*Goodenia ovata*	x	x
*	Silky Oak	*Grevillea robusta*	x	
	Hemp Bush	*Gynatrix pulchella*	x	x
#?	Bushy Needlewood	*Hakea decurrens*	x	
*	Hakea	*Hakea spp.*	x	
*	English Ivy	*Hedera helix*	x	
	Jersey Cudweed	*Helichrysum luteoalbum*	x	x
*	Ox-tongue	*Helminthotheca echioides*	x	x
*	Yorkshire Fog	*Holcus lanatus*	x	x
*	Barley-grass	*Hordeum leporinum*	x	x
*	Bluebell	*Hyacinthoides sp.*		
*	Flatweed	*Hypochaeris radicata*	x	x
	Austral Indigo	*Indigofera australis*	x	
*	Blue Morning-glory	*Ipomoea indica*	x	
	Swamp Club-sedge	*Isolepis inundata*	x	
	Little Club-sedge	*Isolepis marginata*	x	
*	Winter Jasmine	*Jasminum polyanthum*	x	
	Hollow Rush	*Juncus amabilis*	x	x
	Gold Rush	*Juncus flavidus*	x	x
	Green Rush	*Juncus gregiflorus*	x	
	Giant Rush	*Juncus ingens*		x
	Pale Rush	*Juncus pallidus*		x
	Broom Rush	*Juncus sarophorus*	x	
	Finger Rush	*Juncus subsecundus*		x
	Billabong Rush	*Juncus usitatus*	x	x
	Burgan	*Kunzea ericoides s.l.*	x	x
	Wetland Blown-grass	*Lachnagrostis filiformis s.l.*	x	
	Common Blown-grass	*Lachnagrostis filiformis s.s.*	x	x
*	Prickly Lettuce	*Lactuca serriola*		x
	Common Duckweed	*Lemna disperma*	x	
*	Common Peppercress	*Lepidium africanum*	x	x
	Woolly Tea-tree	*Leptospermum lanigerum*		x
*	Privet	*Ligustrum sp.*	x	
*	European Privet	*Ligustrum vulgare*	x	
*	French Flax	*Linum trigynum*	x	
*	Perennial Rye-grass	*Lolium perenne*	x	x
	Wattle Mat-rush	*Lomandra filiformis*	x	
	Spiny-headed Mat-rush	*Lomandra longifolia subsp. longifolia*	x	x
*	Hairy Bird's-foot Trefoil	*Lotus subbiflorus*		x
*	African Boxthorn	*Lycium ferocissimum*	x	x
*	Pimpernel	*Lysimachia arvensis*	x	
	Small Loosestrife	*Lythrum hyssopifolia*	x	x
	Purple Loosestrife	*Lythrum salicaria*		x
*	Apple	*Malus pumila*	x	
*	Mallow of Nice	*Malva nicaeensis*	x	x

Origin	Common Name	Scientific Name	BF	WP
*	Small-flower Mallow	*Malva parviflora*	x	x
*	Tall Mallow	*Malva sylvestris var. sylvestris*	x	
	(?Common) Nardoo	*Marsilea ?drummondii*	x	x
*	Spotted Medic	*Medicago arabica*	x	x
*	Burr Medic	*Medicago polymorpha*	x	
#	Giant Honey-myrtle	*Melaleuca armillaris*	x	
	Swamp Paperbark	*Melaleuca ericifolia*	x	x
*	Flax-leaf Paperbark	*Melaleuca linearifolia*		x
*	Prickly Paperbark	*Melaleuca styphelioides*	x	x
	Tree Violet	*Melicytus dentatus*	x	x
	River Mint	*Mentha australis*	x	
	Weeping Grass	*Microlaena stipoides*	x	x
*	Red-flower Mallow	*Modiola caroliniana*	x	x
	Creeping Mistletoe	*Muellerina eucalyptoides*	x	
*	Wood Forget-me-not	*Myosotis sylvatica*		x
	Upright Water-milfoil	*Myriophyllum crispatum*	x	
	Lake Water-milfoil	*Myriophyllum salsugineum*	x	
*	Needle Grass	*Nassella sp.*	x	
	Snowy Daisy-bush	*Olearia lirata*	x	
	Shady Wood-sorrel	*Oxalis exilis*	x	
*	Pale Wood-sorrel	*Oxalis incarnata*	x	
*	Grassland Wood-sorrel	*Oxalis perennans*	x	
*	Soursob	*Oxalis pes-caprae*	x	
	Small-flower Wood-sorrel	*Oxalis sp. aff. exilis (glabrescent)*	x	x
	Tree Everlasting	*Ozothamnus ferrugineus*		x
*	Paspalum	*Paspalum dilatatum*	x	x
*	Water Couch	*Paspalum distichum*	x	x
	Slender Knotweed	*Persicaria decipiens*	x	x
	Pale Knotweed	*Persicaria lapathifolia*	x	x
	Water-pepper	*Persicaria hydropiper*	x	
	Creeping Knotweed	*Persicaria prostrata*	x	x
*	Toowoomba Canary-grass	*Phalaris aquatica*	x	x
	Common Reed	*Phragmites australis*	x	x
*	Red-ink Weed	*Phytolacca octandra*	x	
*	Radiata Pine	*Pinus radiata*	x	x
#	Sweet Pittosporum	*Pittosporum undulatum*	x	x
*	Ribwort	*Plantago lanceolata*	x	x
*	Greater Plantain	*Plantago major*	x	
*	Annual Meadow-grass	*Poa annua*	x	
*	Sword Tusock-grass	*Poa ensiformis*	x	
*	Early Meadow-grass	*Poa infirma*	x	x
	Common Tussock-grass	*Poa labillardierei var. labillardierei*	x	x
*	Kentucky Blue-grass	*Poa pratensis*	x	x
*	Four-leaved Allseed	*Polycarpon tetraphyllum*	x	x
*	Wireweed	*Polygonum arenastrum*		x
*	Hogweed	*Polygonum aviculare*		x
	Hazel Pomaderris	*Pomaderris aspera*	x	x

Origin	Common Name	Scientific Name	BF	WP
	Prunus Pomaderris	*Pomaderris prunifolia*	x	x
*	White Poplar	*Populus alba*		x
*	Lombardy Poplar	*Populus nigra 'italica'*		x
	Victorian Christmas-bush	*Prostanthera lasianthos*		x
*	Cherry Plum	*Prunus cerasifera*	x	x
*	Peach	*Prunus persica*	x	
#	(?Jungle) Brake	*Pteris ?umbrosa*		
*	English Oak	*Quercus robur*	x	x
	River Buttercup	*Ranunculus inundatus*		x
*	Creeping Buttercup	*Ranunculus repens*	x	
*	Celery Buttercup	*Ranunculus sceleratus*	x	
*	Wild Radish	*Raphanus raphanistrum*	x	x
*	Locust Tree	*Robinia pseudoacacia*	x	x
*	Onion Grasss	*Romulea rosea*	x	x
*	Marsh Yellow-cress	*Rorippa palustris*	x	x
*	Dog Rose	*Rosa canina*	x	
*	Common Blackberry	*Rubus anglocandicans*	x	x
	Small-leaf Bramble	*Rubus parvifolius*	x	x
*	Blackberry	*Rubus spp.*	x	
	Mud Dock	*Rumex bidens*	x	
	Slender Dock	*Rumex brownii*		x
*	Clustered Dock	*Rumex conglomeratus*	x	x
*	Curled Dock	*Rumex crispus*	x	x
*	Fiddle Dock	*Rumex pulcher*	x	
	Copper-awned Wallaby-grass	*Rytidosperma fulvum*	x	
	Slender Wallaby-grass	*Rytidosperma racemosum*	x	x
	Bristly Wallaby-grass	*Rytidosperma setaceum*		x
	Wallaby Grass	*Rytidosperma spp.*	x	
*	Weeping Willow	*Salix ? x sepulcralis (S. babylonica s.l.)*	x	x
*	Crack Willow	*Salix fragilis*	x	x
*	Pampas Lily-of-the-Valley	*Salpichroa origanifolia*	x	
	River Club-sedge	*Schoenoplectus tabernaemontani*		x
	Floodplain Fireweed	*Senecio campylocarpus*	x	
	Annual Fireweed	*Senecio glomeratus*	x	x
	Cotton Fireweed	*Senecio quadridentatus*	x	
	Tall Fireweed	*Senecio runcinifolius*	x	
*	Mustard	*Sisymbrium sp.*		x
	Large Kangaroo Apple	*Solanum laciniatum*	x	x
*	Black Nightshade	*Solanum nigrum*	x	x
*	Madiera Winter-cherry	*Solanum pseudocapsicum*	x	x
*	Jo Jo	*Soliva sessilis*		x
*	Rough Sow-thistle	*Sonchus asper s.l.*	x	x
*	Common Sow-thistle	*Sonchus oleraceus*	x	x
*	Rat-tail Grass	*Sporobolus africanus*	x	x
*	Chickweed	*Stellaria media*	x	x
*	Lesser Chickweed	*Stellaria pallida*	x	
*	Dandelion	*Taraxacum spp.*	x	x

Origin	Common Name	Scientific Name	BF	WP
*	Wandering Jew	*Tradescantia fluminensis*	x	x
*	Salsify	*Tragopogon porrifolius*	x	
*	Suckling Clover	*Trifolium dubium*		x
*	Clustered Clover	*Trifolium glomeratum*	x	
*	White Clover	*Trifolium repens*	x	x
*	Subterranean Clover	*Trifolium subterraneum*	x	
	Narrow-leaf Cumbungi	*Typha domingensis*	x	x
*	Lesser Reed-mace	*Typha latifolia*	x	
	Broad-leaf Cumbungi	*Typha orientalis*	x	
*	Elm	*Ulmus spp.*	x	
	Scrub Nettle	*Urtica incisa*	x	x
	Small Nettle	*Urtica urens*	x	
*	Purple-top Verbena	*Verbena bonariensis*	x	x
*	Wall Speedwell	*Veronica arvensis*	x	x
	Slender Speedwell	*Veronica gracilis*	x	x
*	Wandering Speedwell	*Veronica peregrina*	x	x
*	Persian Speedwell	*Veronica persica*	x	
	Trailing Speedwell	*Veronica plebeia*	x	
*	(?French Tiny) Vetch	*Vicia ?disperma*	x	x
*	Narrow-leaf Vetch	*Vicia sativa subsp. nigra*	x	
*	Common Vetch	*Vicia sativa subsp. sativa*	x	x
*	Blue Periwinkle	*Vinca major*	x	x
*	Squirrel-tail Fescue	*Vulpia bromoides*	x	x
*	Wall Fescue	*Vulpia muralis*	x	x
*	Rat's-tail Fescue	*Vulpia myuros f. myuros*		x
	(?Tufted) Bluebell	*Wahlenbergia ?communis*	x	
*	Watsonia	*Watsonia sp.*	x	
*	White Arum-lily	*Zantedeschia aethiopica*	x	

Appendix 2. Potentially occurring national or state significant flora

The following table shows the number of records of each of the rare or threatened flora species recorded within a five-kilometre buffer of the study site. In addition are habitat notes for the species and the final column indicates our consideration of the likelihood of the flora species to be present within the study area.

Conservation status under EPBC Act 1999:
EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant

Conservation status under FFG Act 1988:
L: Listed, N: Nominated, X: Rejected, D: Delisted

Victorian Rare or Threatened Species (VROT) (DEPI 2014b)
ex: Presumed extinct, en: Endangered, vu: Vulnerable, r: rare and k: poorly known

EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Date last record	Likelihood of occurrence	Habitat/species notes	Likelihood Reasoning
		r	*Acacia flexifolia*	Bent-leaf Wattle	1	2002	Low	Extending into north-central Victoria where it grows in shallow soil in open-forest or mallee scrub (Walsh and Entwisle 1996, p. 627).	One record, outside species' normal distribution range – may still be present (planted).
		vu	*Acacia trineura*	Three-nerve Wattle	4	2002	Low	Bush shrub to small tree, scattered in western Vic and south central NSW, open eucalypt and cypress pine woodlands and Mallee on red earths, an uncommon species over its range, reported to be a quick growing, drought and frost tolerant plant, suitable for a variety of soils (Tame 1992)	Outside species' normal distribution range – may still be present (planted)
VU	X		*Amphibromus fluitans*	River Swamp Wallaby-grass	3	1995	Moderate	Moist soils, usually confined to permanent swamps, and tolerates inundation. Mainly distributed along Murray River, it is rarer in southern Victoria (Australian Plants Society Maroondah 2001, p. 449; Walsh and Entwisle 1994). Largely restricted in greater Melbourne to seasonal wetlands and mudflats of River Red Gum swamps of the Lower Yarra and Plenty/Merri volcanic plains north of Melbourne (Cam Beardsell pers. comm.)	Previously recorded immediately just outside (approximately one hundred metres) east of Banyule Flats study area. There is potential that this species is persisting in low numbers in the seed bank and may re-emerge at the site.
		k	*Caesia parviflora var. minor*	Pale Grass-lily	2	1886	Nil-Low	Moist, well-drained soils of damp lowland grassland, open grassy woodland and tea-tree heath (Australian Plants Society Maroondah 2001, p. 657; Walsh and Entwisle 1994).	Historic record, unlikely to still be present within the local area due to intensive land-use activity.

EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Date last record	Likelihood of occurrence	Habitat/species notes	Likelihood Reasoning
	L	vu	***Callitriche brachycarpa***	**Short Water-starwort**	**1**	**2007**	**Present**	In Victoria currently known only from the Otway Ranges and adjacent plains, and northern outskirts of Melbourne on sites subject to inundation (Walsh and Entwisle 1999); although, a more recent (2009) record was taken near Leongatha.	Recorded within the wetlands of the Banyule Flats study area.
		r	***Callitriche umbonata***	**Winged Water-starwort**	**4**	**undated**	**Present**	Occurs mostly inland in swampy or wet areas (Walsh and Entwisle 1999).	Recorded within the wetlands of the Banyule Flats study area.
		k	*Convolvulus angustissimus subsp. omnigracilis*	Slender Bindweed	1	2006	Low	Apparently endemic to Victoria where found mostly around and west of Melbourne in grassland and grassy woodland on heavy clay soils (Royal Botanic Gardens Victoria 2016).	Could occur, but likely to have been observed if present on site.
		r	*Corybas fimbriatus*	Fringed Helmet-orchid	2	1992	Low	Forms colonies, mainly in coastal scrub, and heath, also in lowland sclerophyll forest valleys, and heathy woodland; usually on moist, shaded sandy soil with leaf and bark litter. Distribution is mostly east of Westernport, but with isolated colonies on north-eastern outskirts of Melbourne; flowers May to July. (Australian Plants Society Maroondah 2001, p. 836; Jeanes and Backhouse 2006; Walsh and Entwisle 1994).	Site unlikely to provide habitat for species.
EN	L	en	*Dianella amoena*	Matted Flax-lily	38	2010	Low-moderate	This plant is known to occur in lowland grasslands, grassy woodlands and grassy wetlands. It ranges from well drained to seasonally wet soils (DSE 2006).	While there are many records, including relatively recently, all these are outside the study area. Probably absent from much of the site as a result a past agricultural use – there is some potential habitat in escarpment areas.
		r	*Eucalyptus globulus subsp. maidenii*	Maiden's Gum	1	1945	Nil-Low	Coastal ranges and foothills of south-eastern NSW from the Shoalhaven River area, extending into adjacent areas of near coastal far eastern Victoria in the Genoa and Cann River Areas (Brooker 1999)	One very old record, outside species' normal distribution range – may still be present (planted)

EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Date last record	Likelihood of occurrence	Habitat/species notes	Likelihood Reasoning
		r	*Eucalyptus perriniana*	Spinning Gum	1	1944	Nil-Low	High plateaus and mountains of SE NSW, ACT, Eastern Victoria west from the Nunniong Plateau to the Blue Range east of Buxton, and in south-eastern Tasmania (Brooker 1999)	One very old record, outside species' normal distribution range – may still be present (planted)
		en	***Eucalyptus X studleyensis***	**Studley Park Gum**	**16**	**2006**	**Present**	A naturally occurring hybrid (E. ovata × E. camaldulensis) found in Studley Park/Yarra Bend and along the Yarra Valley (Australian Plants Society Maroondah 2001).	Present on edge of Banyule Billabong.
		r	*Eucalyptus yarraensis*	Yarra Gum	2	1984	Low	Tree to 15m, endemic in Victoria, distribution fragmented: open forest areas, from Traralgon to north west Victoria, near Ararat. Flowers September to December (Walsh and Entwisle 1996, p. 964).	Not observed within the study area.
		r	*Fimbristylis velata*	Veiled Fringe-sedge	3	2011	Moderate	On drying mud beside lakes and rivers and in seasonally wet depressions (Walsh and Entwisle 1994, p. 332).	Could occur, as could be overlooked and recent nearby records along Yarra floodplain.
VU	L	vu	*Glycine latrobeana*	Clover Glycine	5	1988	Low	Widespread, infrequent populations in southern Victoria (Walsh and Entwisle 1996). Plains Grassland and Woodlands in moist well drained soils (Australian Plants Society Maroondah 2001).	Could occur, as could be easily overlooked. However, has not been recorded within study area – and potential habitat has been historically been utilised intensively for pastoral and agriculture usage.
		r	*Goodia medicaginea*	Western Golden-tip	1	2002	Nil-Low	Favouring drier habitat to Goodia lotifolia this species has a distribution in dry sclerophyll forest throughout south-western (i.e. north of Portland/Mt Arapiles), central (Eaglehawk/Killawarra Forest), north-eastern Victoria (Suggan Buggan), also west of Melbourne at Long Forest (Walsh and Entwisle 1996).	Would have been observed if present; only one local record, not from within study area.
EN	L	en	*Lepidium hyssopifolium*	Basalt Peppercress	5	1990	Low	Grows on basalt plains; rarely reported in western Victoria (Walsh and Entwisle 1996); in total seven Victorian locations and now considered extinct in Greater Melbourne (Bull 2014).	Undated historical record for Banyule Creek, with other nearby old records. Now believed extinct in Greater Melbourne.

EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Date last record	Likelihood of occurrence	Habitat/species notes	Likelihood Reasoning
		k	*Lepidium pseudohyssopifolium*	Native Peppercress	5	2007	Moderate	Uncommon plant, most recent reports from heavy soils of the Murray River floodplain in the far north-west (Walsh and Entwisle 1996, p. 421).	Could occur, known to still occur along the nearby Yarra floodplain and could be easily overlooked.
		k	*Olearia stellulata*	Starry Daisy-bush	1	1925	Nil	Shrub to 2m high, Wannon, Otway Range, Wilsons Prom, in Victoria restricted to Mt Clay near Portland, Chapple Vale Area and Wilson Promontory, Flowers Nov-Jan (Walsh and Entwisle 1999)	One historic record – most likely of planted origin.
		r	*Polystichum formosum*	Broad Shield-fern	1	1973	Nil-Low	Known only from a few sites in East Gippsland (Mitchell River Gorge Area, W-Tree and Murrindal areas near Buchan, Upper Genoa River), usually growing in creek beds or on wet rock faces, but never common (Walsh and Entwisle 1994)	One, old record, and outside normal distribution range for species.
		r	*Prostanthera nivea var. nivea*	Snowy Mint-bush	3	2010	Low	Largely confined to shrub land and open woodland associated with granite outcrops (e.g. Mt hope, Terrick Terrick, Kooyora and Pilot, You Yangs), also in Lerderderg Gorge, Barwon Heads and Anglesea areas – Flowers Sep to Dec (Walsh and Entwisle 1999)	Few recent records – most likely of planted origin.
		k	*Sclerolaena muricata var. muricata*	Black Roly-poly	1	1986	Low	Occasional distribution along the Murray River and associated lakes and floodplains (Kerang to near SA border). Isolated historic records (1920) from Sunbury (Walsh and Entwisle 1996, p. 180).	One, old record, and outside normal distribution range for species.

Appendix 3. Flora recorded within 5km of the study area

Data collated for a five-kilometre search area, from the following databases: DELWP's Victorian Biodiversity Atlas, Viridans' Flora Information System database (up until September 2014), and the Atlas of Living Australia. For a key to abbreviations and significance categories, refer to end of table.

Conservation status under EPBC Act 1999:
EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant

Victorian Rare or Threatened Species Advisory Listing (VROT) (DEPI 2014b)
ex: Presumed extinct, en: Endangered, vu: Vulnerable, r: rare and k: poorly known

Conservation status under FFG Act 1988:
L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted Conservation

* denotes species is of introduced/exotic origin
# denotes species is native to Australia but not indigenous within local area

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
				Gold-dust Acacia	*Acacia acinacea*
				Thin-leaf Wattle	*Acacia aculeatissima*
			*	Cootamundra Wattle	*Acacia baileyana*
				Silver Wattle	*Acacia dealbata*
			*	Early Black-wattle	*Acacia decurrens*
		r		Bent-leaf Wattle	*Acacia flexifolia*
				Lightwood	*Acacia implexa*
			*	Flinders Range Wattle	*Acacia iteaphylla*
			#	Sallow Wattle	*Acacia longifolia*
			#	Sallow Wattle	*Acacia longifolia subsp. longifolia*
			#	Coast Wattle	*Acacia longifolia subsp. sophorae*
				Black Wattle	*Acacia mearnsii*
				Blackwood	*Acacia melanoxylon*
				Hedge Wattle	*Acacia paradoxa*
			#	Ovens Wattle	*Acacia pravissima*
			*	Gosford Wattle	*Acacia prominens*
			#	Wirilda	*Acacia provincialis*
				Golden Wattle	*Acacia pycnantha*
				Red-stem Wattle	*Acacia rubida*
			*	Golden Wreath Wattle	*Acacia saligna*
				Wattle	*Acacia spp.*
				Hop Wattle	*Acacia stricta*
		vu		Green Wattle	*Acacia trineura*
				Needle-leaf Prickly Moses	*Acacia verticillata subsp. cephalantha*
				Prickly Moses	*Acacia verticillata subsp. verticillata*
				Hairy Sheep's Burr	*Acaena agnipila*
				Sheep's Burr	*Acaena echinata*
				Bidgee-widgee	*Acaena novae-zelandiae*
				Australian Sheep's Burr	*Acaena ovina*
				Australian Sheep's Burr	*Acaena ovina var. velutina*
			*	Bear's Breach	*Acanthus mollis*
				Pygmy Moss	*Acaulon integrifolium*
				Spiny-spored Pygmy-moss	*Acaulon mediterraneum*
			*	Box-elder Maple	*Acer negundo*
			*	Turkey Rhubarb	*Acetosa sagittata*
			*	Sheep Sorrel	*Acetosella vulgaris*
				Honey-pots	*Acrotriche serrulata*
				Common Maidenhair	*Adiantum aethiopicum*
			*	Agapanthus	*Agapanthus praecox subsp. orientalis*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
			*	Century Plant	*Agave americana*
			*	Variegated Century Plant	*Agave americana var. picta*
			*	Crofton Weed	*Ageratina adenophora*
			*	Peppermint	*Agonis flexuosa*
			*	Brown-top Bent	*Agrostis capillaris*
			*	Brown-top Bent	*Agrostis capillaris var. capillaris*
			*	Red-top Bent	*Agrostis gigantea*
				Bent/Blown Grass	*Agrostis s.l. spp.*
			*	Creeping Bent	*Agrostis stolonifera*
				'Bent Grass'	*Agrostis venusta*
			*	Silvery Hair-grass	*Aira caryophyllea subsp. caryophyllea*
			*	Quicksilver Grass	*Aira cupaniana*
			*	Delicate Hair-grass	*Aira elegantissima*
			*	Early Hair-grass	*Aira praecox*
			*	Hair Grass	*Aira spp.*
			*	Narrow leaved water plantain	*Alisma lanceolatum*
				Water Plantain	*Alisma plantago-aquatica*
				Swamp Daisy	*Allittia cardiocarpa*
			*	Sand Leek	*Allium scorodoprasum*
			*	Garlic	*Allium spp.*
			*	Angled Onion	*Allium triquetrum*
				Black Sheoak	*Allocasuarina littoralis*
				Sheoak	*Allocasuarina spp.*
				Drooping Sheoak	*Allocasuarina verticillata*
			*	Broad-leaf Aloe	*Aloe maculata*
			*	Meadow Fox-tail	*Alopecurus pratensis*
				Lesser Joyweed	*Alternanthera denticulata*
				Lesser Joyweed	*Alternanthera denticulata s.l.*
				Lesser-Common Joyweed group	*Alternanthera denticulata-nodiflora group*
			*	Alligator Weed	*Alternanthera philoxeroides*
			*	Spreading Amaranth	*Amaranthus deflexus*
			*	Belladonna Lily	*Amaryllis belladonna*
			*	Creeping Feather-moss	*Amblystegium serpens*
VU				River Swamp Wallaby-grass	*Amphibromus fluitans*
				Common Swamp Wallaby-grass	*Amphibromus nervosus*
				Box Mistletoe	*Amyema miquelii*
				Drooping Mistletoe	*Amyema pendula*
					Amyema pendula subsp. pendula
				Grey Mistletoe	*Amyema quandang*
				Grey Mistletoe	*Amyema quandang var. quandang*
			*	Madeira Vine	*Anredera cordifolia*
				Common Wheat-grass	*Anthosachne scabra s.l.*
			*	Sweet Vernal-grass	*Anthoxanthum odoratum*
			*	Parsley Piert	*Aphanes arvensis*
			*	Celery	*Apium graveolens*
			*	White Bladder-flower	*Araujia sericifera*
			*	Cruel Plant	*Araujia sericifera*
			*	Irish Strawberry Tree	*Arbutus unedo*
			*	Cape weed	*Arctotheca calendula*
			*	Creeping Bear's-ear	*Arctotheca prostrata*
				Oatgrass	*Arrhenatherum elatius*
				Chocolate Lily	*Arthropodium strictum s.l.*
				Chocolate Lily	*Arthropodium strictum s.s.*
			*	Bridal Creeper	*Asparagus asparagoides*
			*	Asparagus	*Asparagus officinalis*
				Common Woodruff	*Asperula conferta*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
				Prickly Woodruff	*Asperula scoparia subsp. scoparia*
				Fan-leaved Fern	*Asplenium flabellifolium*
			*	Aster-weed	*Aster subulatus*
				Cranberry Heath	*Astroloma humifusum*
				Grey Saltbush	*Atriplex cinerea*
			*	Hastate Orache	*Atriplex prostrata*
				Berry Saltbush	*Atriplex semibaccata*
				Dense Spear-grass	*Austrostipa densiflora*
				Soft Spear-grass	*Austrostipa mollis*
				Tall Spear-grass	*Austrostipa pubinodis*
				Veined Spear-grass	*Austrostipa rudis*
				Veined Spear-grass	*Austrostipa rudis subsp. nervosa*
				Veined Spear-grass	*Austrostipa rudis subsp. rudis*
				Rough Spear-grass	*Austrostipa scabra*
				Rough Spear-grass	*Austrostipa scabra subsp. falcata*
				Bearded Spear-grass	*Austrostipa semibarbata*
				Spear Grass	*Austrostipa spp.*
			*	Bearded Oat	*Avena barbata*
			*	Wild Oat	*Avena fatua*
			*	Oat	*Avena spp.*
			*	Sterile Oat	*Avena sterilis*
				Pacific Azolla	*Azolla filiculoides*
				Ferny Azolla	*Azolla pinnata*
				Slime mould sp.	*Badhamia foliicola*
				Common Beard-moss	*Barbula calycina*
				Dusky Beard-moss	*Barbula crinita*
			*	Bird's-claw Beard-moss	*Barbula unguiculata*
				Bartramia moss	*Bartramia ithyphylla*
			*	English Daisy	*Bellis perennis*
			*	Beet	*Beta vulgaris subsp. vulgaris*
			*	Bifora	*Bifora testiculata*
			*	Bluebell Creeper	*Billardiera heterophylla*
				Apple Berry	*Billardiera mutabilis*
				Apple Berry	*Billardiera scandens*
				Common Apple-berry	*Billardiera scandens s.l.*
				Salt Club-sedge	*Bolboschoenus caldwellii*
				Marsh Club-sedge	*Bolboschoenus medianus*
			*	Borage	*Borago officinalis*
				Creeping Bossiaea	*Bossiaea prostrata*
			#	Kurrajong	*Brachychiton populneus subsp. populneus*
			*	False Brome	*Brachypodium distachyon*
				Field Daisy	*Brachyscome decipiens*
				Cut-leaf Daisy	*Brachyscome multifida*
				Brachythecium Moss	*Brachythecium*
			*	Whitish Feather-moss	*Brachythecium albicans*
				Rough-stalked Feather-moss	*Brachythecium rutabulum*
			*	Twiggy Turnip	*Brassica fruticulosa*
			*	Black Mustard	*Brassica nigra*
			*	White Turnip	*Brassica rapa*
			*	Turnip	*Brassica spp.*
				Common Breutelia	*Breutelia affinis*
			*	Large Quaking-grass	*Briza maxima*
			*	Lesser Quaking-grass	*Briza minor*
			*	Prairie Grass	*Bromus catharticus*
			*	Prairie Grass	*Bromus catharticus var. catharticus*
			*	Great Brome	*Bromus diandrus*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
			*	Soft Brome	*Bromus hordeaceus subsp. hordeaceus*
			*	Chilean Brome	*Bromus lithobius*
			*	Madrid Brome	*Bromus madritensis*
			*	Red Brome	*Bromus rubens*
				Blue Pincushion	*Brunonia australis*
				Silver Moss	*Bryum argenteum*
				Disc Lichen	*Buellia spp.*
				Bulbine Lily	*Bulbine bulbosa*
				Milkmaids	*Burchardia umbellata*
				Sweet Bursaria	*Bursaria spinosa*
				Sweet Bursaria	*Bursaria spinosa subsp. spinosa*
				Tree Bursaria	*Bursaria spinosa subsp. spinosa var. macrophylla*
				Blue Grass-lily	*Caesia calliantha*
		k		Pale Grass-lily	*Caesia parviflora var. minor*
				Finger Orchid	*Caladenia carnea*
			*	Garden Marigold	*Calendula officinalis*
				River Bottlebrush	*Callistemon sieberi*
				Bottlebrush	*Callistemon spp.*
				Pedunculate Water-starwort	*Callitriche brutia*
				Matted Water-starwort	*Callitriche sonderi*
			*	Common Water-starwort	*Callitriche stagnalis*
		r		Winged Water-starwort	*Callitriche umbonata*
				Hooded Bindweed	*Calystegia sepium*
				Large Bindweed	*Calystegia sepium subsp. roseata*
			*	Greater Bindweed	*Calystegia silvatica*
				Heath Star Moss	*Campylopus introflexus*
				Swan-neck Moss	*Campylopus spp.*
			*	Shepherd's Purse	*Capsella bursa-pastoris*
			*	Flick Weed	*Cardamine aff. flexuosa*
			*	Slender Thistle	*Carduus pycnocephalus*
			*	Winged Slender-thistle	*Carduus tenuiflorus*
				Tall Sedge	*Carex appressa*
				Common Grass-sedge	*Carex breviculmis*
			*	Divided Sedge	*Carex divisa*
				Knob Sedge	*Carex inversa*
				Tussock Sedge	*Carex iynx*
				Bergalia Tussock	*Carex longebrachiata*
				Sedge	*Carex spp.*
				Poong'ort	*Carex tereticaulis*
				Inland Pigface	*Carpobrotus modestus*
				Common Cassinia	*Cassinia aculeata*
				Drooping Cassinia	*Cassinia arcuata*
				Shiny Cassinia	*Cassinia longifolia*
			*	River Oak	*Casuarina cunninghamiana subsp. cunninghamiana*
			*	Swamp Oak	*Casuarina glauca*
				Sheoak	*Casuarina spp.*
			*	Fern Grass	*Catapodium rigidum*
			*	European Hackberry	*Celtis australis*
			*	Kikuyu	*Cenchrus clandestinus*
			*	Malta Thistle	*Centaurea melitensis*
			*	Common Centaury	*Centaurium erythraea*
			*	Centaury	*Centaurium spp.*
			*	Slender Centaury	*Centaurium tenuiflorum*
				Centella	*Centella cordifolia*
				Common Sneezeweed	*Centipeda cunninghamii*
				Spreading Sneezeweed	*Centipeda minima s.l.*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
			*	Red Valerian	*Centranthus ruber subsp. ruber*
				Sticky Mouse-ear Chickweed	*Cerastium glomeratum*
			*	Common Mouse-ear Chickweed	*Cerastium glomeratum s.l.*
			*	Sticky Mouse-ear Chickweed	*Cerastium glomeratum s.s.*
				Slime mould sp.	*Ceratiomyxa fruticulosa*
				Redshank Moss	*Ceratodon purpureus subsp. convolutus*
			*	Tree Lucerne	*Chamaecytisus palmensis*
			*	Chasmanthe	*Chasmanthe bicolor*
				Green Rock-fern	*Cheilanthes austrotenuifolia*
			*	Fat Hen	*Chenopodium album*
			*	Sowbane	*Chenopodium murale*
				Chiloscyphus	*Chiloscyphus*
				Liverwort sp.	*Chiloscyphus semiteres*
				Common Crestwort	*Chiloscyphus semiteres s.l.*
				Windmill Grass	*Chloris truncata*
			*	Spider Plant	*Chlorophytum comosum*
			*	Boneseed	*Chrysanthemoides monilifera*
			*	African Boneseed	*Chrysanthemoides monilifera subsp. monilifera*
				Daisy	*Chrysanthemum*
				Clustered Everlasting	*Chrysocephalum semipapposum*
			*	Square Cicendia	*Cicendia quadrangularis*
			*	Slender Celery	*Ciclospermum leptophyllum*
			*	Spear Thistle	*Cirsium vulgare*
				Cup-lichen sp.	*Cladina confusa*
				Green algae sp.	*Cladophora glomerata (L.) Kuetz.*
				Small-leaved Clematis	*Clematis microphylla s.l.*
				Small-leaved Clematis	*Clematis microphylla var. microphylla spp. agg.*
			*	Pink Diosma	*Coleonema pulchellum*
				Blue Love Creeper	*Comesperma volubile*
		k		Slender Bindweed	*Convolvulus angustissimus subsp. omnigracilis*
			*	Common Bindweed	*Convolvulus arvensis*
				Pink Bindweed	*Convolvulus erubescens spp. agg.*
				Grass Bindweed	*Convolvulus remotus*
				Bindweed	*Convolvulus spp.*
			*	Flaxleaf Fleabane	*Conyza bonariensis*
			*	Fleabane	*Conyza spp.*
			*	Tall Fleabane	*Conyza sumatrensis var. sumatrensis*
				Prickly Currant-bush	*Coprosma quadrifida*
			*	Mirror Bush	*Coprosma repens*
			*	New Zealand Cabbage-tree	*Cordyline australis*
				Button Everlasting	*Coronidium scorpioides*
				Button Everlasting	*Coronidium scorpioides s.s.*
				Rock Correa	*Correa glabra var. glabra*
				Common Correa	*Correa reflexa*
			*	Pink Pampas-grass	*Cortaderia jubata*
			*	Pampas Grass	*Cortaderia selloana*
		r		Fringed Helmet-orchid	*Corybas fimbriatus*
			*	Lemon-scented Gum	*Corymbia citriodora subsp. citriodora*
			*	Flowering Gum	*Corymbia ficifolia*
		vu	#	Spotted Gum	*Corymbia maculata*
			*	Large-leaf Cotoneaster	*Cotoneaster glaucophyllus var. serotinus*
			*	Velvet Cotoneaster	*Cotoneaster pannosus*
				Common Cotula	*Cotula australis*
			*	Water Buttons	*Cotula coronopifolia*
				Cotula	*Cotula spp.*
				Spreading Crassula	*Crassula decumbens var. decumbens*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
				Swamp Crassula	*Crassula helmsii*
			*	Shade Crassula	*Crassula multicava subsp. multicava*
				Sieber Crassula	*Crassula sieberiana s.l.*
			*	Shrubby Crassula	*Crassula tetragona subsp. robusta*
				Australian Stonecrop	*Crassula tetramera*
			*	Hawthorn	*Crataegus monogyna*
			*	Hawthorn	*Crataegus monogyna subsp. monogyna*
			*	Azzarola	*Crataegus X sinaica*
			*	Smooth Hawksbeard	*Crepis capillaris*
				Rust sp.	*Cronartium jacksoniae*
			*	Cypress	*Cupressus spp.*
				Rough Tree Fern	*Cyathea australis*
			*	Ivy-leaf Toadflax	*Cymbalaria muralis subsp. muralis*
			*	Artichoke Thistle	*Cynara cardunculus subsp. flavescens*
				Couch	*Cynodon dactylon*
			*	Couch	*Cynodon dactylon var. dactylon*
				Sweet Hound's Tongue	*Cynoglossum suaveolens*
			*	Rough Dog's-tail	*Cynosurus echinatus*
				Sedge	*Cyperaceae spp.*
			*	Drain Flat-sedge	*Cyperus eragrostis*
				Leafy Flat-sedge	*Cyperus lucidus*
				Flat Sedge	*Cyperus spp.*
				Tiny Flat-sedge	*Cyperus tenellus*
				Gnat Orchid	*Cyrtostylis reniformis*
			*	Cocksfoot	*Dactylis glomerata*
			*	Common Thorn-apple	*Datura stramonium*
				Hop Bitter-pea	*Daviesia latifolia*
				Hybrid Bitter-pea	*Daviesia latifolia x leptophylla*
				Narrow-leaf Bitter-pea	*Daviesia leptophylla*
				Bitter-pea	*Daviesia spp.*
				Bitter-pea	*Daviesia ulicifolia subsp. ruscifolia*
				Giant Moss	*Dawsonia longiseta*
			*	Cape Ivy	*Delairea odorata*
				Reed Bent-grass	*Deyeuxia quadriseta*
				Bent-grass	*Deyeuxia spp.*
				Black-anther Flax-lily	*Dianella admixta*
EN	L	en		Matted Flax-lily	*Dianella amoena*
				Flax-lily	*Dianella longifolia*
				Pale Flax-lily	*Dianella longifolia var. longifolia s.l.*
				Black-anther Flax-lily	*Dianella revoluta var. revoluta s.l.*
				Flax Lily	*Dianella spp.*
				Long-hair Plume-grass	*Dichelachne crinita*
				Long-hair Plume Grass	*Dichelachne crinita*
				Short-hair Plume-grass	*Dichelachne sciurea spp. agg.*
				Kidney-weed	*Dichondra repens*
				Kidney Weed	*Dichondra repens*
				Forklet Moss	*Dicranella dietrichiae*
				Fungus sp.	*Didymium squamulosum*
				Beard Moss	*Didymodon torquatus*
			*	Summer Grass	*Digitaria sanguinalis*
				Grey Dillwynia	*Dillwynia cinerascens*
				Grey Parrot-pea	*Dillwynia cinerascens s.l.*
				Prickly Parrot-pea	*Dillwynia juniperina*
			*	Sand Rocket	*Diplotaxis tenuifolia*
			*	South African Orchid	*Disa bracteata*
			*	Stinkwort	*Dittrichia graveolens*

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				Hornet Orchid	*Diuris sulphurea*
				Hop Bush	*Dodonaea spp.*
				Common Rasp-fern	*Doodia australis*
			*	Rodondo Creeper	*Drosanthemum candens*
				Tall Sundew	*Drosera auriculata*
				Sundew sp.	*Drosera hookeri*
				Pale Sundew	*Drosera peltata subsp. peltata spp. agg.*
			#	Clammy Goosefoot	*Dysphania pumilio*
				Earth Moss	*Eccremidium pulchellum*
			*	Barnyard Grass	*Echinochloa crus-galli*
			*	Paterson's Curse	*Echium plantagineum*
			*	Panic Veldt-grass	*Ehrharta erecta var. erecta*
			*	Annual Veldt-grass	*Ehrharta longiflora*
			*	Water Hyacinth	*Eichhornia crassipes*
				Nodding Saltbush	*Einadia nutans*
				Fishweed	*Einadia trigonos*
				Lax Goosefoot	*Einadia trigonos subsp. trigonos*
				Waterwort	*Elatine gratioloides*
				Common Spike-sedge	*Eleocharis acuta*
				Slender Spike-rush	*Eleocharis gracilis*
				Tall Spike-sedge	*Eleocharis sphacelata*
			*	American Crows-foot Grass	*Eleusine tristachya*
			*	Canadian Pondweed	*Elodea canadensis*
				Common Wheat-grass	*Elymus scaber*
			*	English Couch	*Elytrigia repens*
				Ruby Saltbush	*Enchylaena tomentosa var. tomentosa*
				Common Heath	*Epacris impressa*
				Variable Willow-herb	*Epilobium billardierianum*
				Grey Willow-herb	*Epilobium billardierianum subsp. cinereum*
			*	Glandular Willow-herb	*Epilobium ciliatum*
				Hairy Willow-herb	*Epilobium hirtigerum*
				Showy Willow-herb	*Epilobium pallidiflorum*
				Willow Herb	*Epilobium spp.*
				Common Love-grass	*Eragrostis brownii*
			*	Stink Grass	*Eragrostis cilianensis*
			*	Mexican Love-grass	*Eragrostis mexicana*
			*	Mexican Love-grass	*Eragrostis mexicana subsp. virescens*
			*	Smaller Stink-grass	*Eragrostis minor*
				Love Grass	*Eragrostis spp.*
			*	Seaside Daisy	*Erigeron karvinskianus*
			*	Loquat	*Eriobotrya japonica*
				Parson's Bands	*Eriochilus cucullatus*
				Parson's Bands	*Eriochilus cucullatus s.l.*
			*	Big Heron's-bill	*Erodium botrys*
			*	Common Heron's-bill	*Erodium cicutarium*
			*	Musky Heron's-bill	*Erodium moschatum*
				Blakely's Red-gum	*Eucalyptus blakelyi*
			#	Southern Mahogany	*Eucalyptus botryoides*
	L			River Red-gum	*Eucalyptus camaldulensis*
				River Red Gum	*Eucalyptus camaldulensis subsp. camaldulensis*
				Mealy Stringybark	*Eucalyptus cephalocarpa s.s.*
			*	Sugar Gum	*Eucalyptus cladocalyx*
				Mountain Grey-gum	*Eucalyptus cypellocarpa*
			#	Forman's Gum	*Eucalyptus formanii*
		r		Maiden's Gum	*Eucalyptus globulus subsp. maidenii*
				Bundy	*Eucalyptus goniocalyx s.l.*

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				Bundy	*Eucalyptus goniocalyx s.s.*
				Bundy x Swamp Gum hybrid	*Eucalyptus goniocalyx x ovata subsp. ovata*
		en	#	Large-fruit Yellow-gum	*Eucalyptus leucoxylon subsp. megalocarpa*
				Yellow Box	*Eucalyptus melliodora*
				Swamp Gum	*Eucalyptus ovata*
				Swamp Gum	*Eucalyptus ovata var. ovata*
				Swamp Gum x Manna Gum hybrid	*Eucalyptus ovata x viminalis subsp. viminalis*
		r		Dargo Gum	*Eucalyptus perriniana*
				Narrow-leaved Peppermint	*Eucalyptus radiata subsp. radiata*
				Narrow-leaf Peppermint	*Eucalyptus radiata subsp. radiata*
				Candlebark	*Eucalyptus rubida*
				Four Wing Mallee	*Eucalyptus tetraptera*
				Manna Gum	*Eucalyptus viminalis*
				Manna Gum	*Eucalyptus viminalis subsp. viminalis*
		en		Studley Park Gum	*Eucalyptus X studleyensis*
	I	r		Yarra Gum	*Eucalyptus yarraensis*
				Star Cudweed	*Euchiton involucratus s.s.*
				Clustered/Creeping Cudweed	*Euchiton japonicus s.l.*
				Creeping Cudweed	*Euchiton japonicus s.s.*
				Annual Cudweed	*Euchiton sphaericus*
			*	Eyebane	*Euphorbia maculata*
			*	Petty Spurge	*Euphorbia peplus*
				Spurge	*Euphorbia spp.*
				Common Feather-moss	*Eurhynchium praelongum*
				Cherry Ballart	*Exocarpos cupressiformis*
				Bean	*Fabaceae spp.*
				Moss sp.	*Fallaciella gracilis*
			*	Dwarf Japanese Knotweed	*Fallopia japonica var. compacta*
			*	Giant Fescue	*Festuca arundinacea*
			*	Tall Fescue	*Festuca arundinacea*
				Creeping Fescue	*Festuca rubra*
			*	Red Fescue	*Festuca rubra s.l.*
				Fescue	*Festuca spp.*
			*	Common Fig	*Ficus carica*
		r		Veiled Fringe-sedge	*Fimbristylis velata*
				Pocket-moss	*Fissidens spp.*
				Pocket-moss sp.	*Fissidens curvatus curvatus*
				Curly Pocket-moss	*Fissidens megalotis*
				Pygmy Pocket-moss	*Fissidens taylorii*
				Pocket-moss sp.	*Fissidens taylorii sainsburianus*
				Flavoparmelia Lichen	*Flavoparmelia rutidota*
				Flavoparmelia Lichen	*Flavoparmelia soredians*
			*	Fennel	*Foeniculum vulgare*
				Common Frillwort	*Fossombronia pusilla*
				Frillwort	*Fossombronia spp.*
			*	Desert Ash	*Fraxinus angustifolia*
			*	Desert Ash	*Fraxinus angustifolia subsp. angustifolia*
			*	Ash	*Fraxinus spp.*
			*	Freesia hybrid	*Freesia alba x Freesia leichtlinii*
				Rufous Scalewort	*Frullania falciloba*
				Khaki Scalewort	*Frullania pentapleura*
				Slime mould sp.	*Fuligo septica*
			*	Bastard's Fumitory	*Fumaria bastardii*
			*	Wall Fumitory	*Fumaria muralis subsp. muralis*
			*	Fumitory	*Fumaria spp.*
				Cord-moss	*Funaria*

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				Common Cord-moss	*Funaria hygrometrica*
				Thatch Saw-sedge	*Gahnia radula*
			*	Galenia	*Galenia pubescens var. pubescens*
			*	Cleavers	*Galium aparine*
			*	Slender Bedstraw	*Galium divaricatum*
			*	Purple Cudweed	*Gamochaeta purpurea s.l.*
			*	Spiked Cudweed	*Gamochaeta purpurea s.s.*
			*	Fragile Oat	*Gaudinia fragilis*
			*	Flax-leaf Broom	*Genista linifolia*
			*	Montpellier Broom	*Genista monspessulana*
			*	Madeira Broom	*Genista X spachiana*
				Early Forest-gentian	*Gentianella polysperes*
			*	Cut-leaf Crane's-bill	*Geranium dissectum*
			*	Dove's Foot	*Geranium molle*
				Soft Crane's-bill	*Geranium potentilloides*
				Grassland Crane's-bill	*Geranium retrorsum s.l.*
				Austral Crane's-bill	*Geranium solanderi s.l.*
				Naked Crane's-bill	*Geranium sp. 5*
				Crane's-bill sp.	*Geranium sp. Pleated sepals (D.E. Albrecht 4707)*
				Crane's-bill sp.	*Geranium spp.*
			*	Gladiolus sp.	*Gladiolus spp.*
			*	Avon-flower	*Gladiolus tristis*
			*	Evening-flower Gladiolus	*Gladiolus tristis*
				Wax-lip Orchid	*Glossodia major*
				Australian Sweet-grass	*Glyceria australis*
VU	L	vu		Clover Glycine	*Glycine latrobeana*
				Variable Glycine	*Glycine tabacina s.l.*
				Cudweed sp.	*Gnaphalium spp.*
			*	Swan Plant	*Gomphocarpus fruticosus subsp. fruticosus*
				Common Raspwort	*Gonocarpus tetragynus*
				Lanky Goodenia	*Goodenia elongata*
				Hop Goodenia	*Goodenia ovata*
				Clover Tree	*Goodia lotifolia*
		r		Western Golden-tip	*Goodia medicaginea*
				Narrow Curved-leaf Grevillea	*Grevillea curviloba subsp. incurva*
			*	Grevillea hybrids and cultivars	*Grevillea hybrids (naturalized)*
				Grevillea sp.	*Grevillea spp.*
				Salt and Pepper	*Grimmia laevigata*
				Hemp Bush	*Gynatrix pulchella*
				Hemp Bush	*Gynatrix pulchella s.l.*
			*	Common Barb-grass	*Hainardia cylindrica*
				Bushy Needlewood	*Hakea decurrens subsp. physocarpa*
			*	Willow-leaf Hakea	*Hakea salicifolia subsp. salicifolia*
				Varied Raspwort	*Haloragis heterophylla*
				Coral-pea sp.	*Hardenbergia spp.*
				Purple Coral-pea	*Hardenbergia violacea*
			*	English Ivy	*Hedera helix*
				Jersey Cudweed	*Helichrysum luteoalbum*
			*	Common Heliotrope	*Heliotropium europaeum*
			*	Ox-tongue	*Helminthotheca echioides*
				Mat Grass	*Hemarthria uncinata var. uncinata*
			*	Buchan Weed	*Hirschfeldia incana*
			*	Yorkshire Fog	*Holcus lanatus*
			*	Bleeding Heart	*Homalanthus populifolius*
			*	Northern Barley-grass	*Hordeum glaucum*
			*	Barley-grass	*Hordeum leporinum*

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			*	Barley-grass sp.	*Hordeum spp.*
				Common Hovea	*Hovea heterophylla*
				Small St John's Wort	*Hypericum gramineum spp. agg.*
				Matted St John's Wort	*Hypericum japonicum*
			*	St John's Wort	*Hypericum perforatum subsp. veronense*
				Common Plait-moss	*Hypnum cupressiforme*
				Great Plait-moss	*Hypnum cupressiforme var. lacunosum*
				Slender Plait-moss	*Hypnum cupressiforme var. mossmanianum*
			*	Smooth Cat's-ear	*Hypochaeris glabra*
			*	Cat's Ear	*Hypochaeris radicata*
				Ruddy Ground Fern	*Hypolepis rugosula*
				Golden Weather-grass	*Hypoxis hygrometrica var. villosisepala*
				Yellow Star	*Hypoxis vaginata var. vaginata*
			*	Blue Morning-glory	*Ipomoea indica*
			*	Yellow Flag Iris	*Iris pseudacorus*
				Nodding Club-sedge	*Isolepis cernua var. cernua*
				Broad-fruit Club-sedge	*Isolepis cernua var. platycarpa*
				Grassy Club-sedge	*Isolepis hookeriana*
				Swamp Club-sedge	*Isolepis inundata*
			*	Tiny Flat-sedge	*Isolepis levynsiana*
				Little Club-sedge	*Isolepis marginata*
				Grassy Club-sedge	*Isolepis multicaulis*
			*	Variable Ixia	*Ixia polystachya*
				Hollow Rush	*Juncus amabilis*
				Gentle Rush	*Juncus amabilis*
			*	Jointed Rush	*Juncus articulatus subsp. articulatus*
				Jointed Rush x Joint-leaf Rush hybrid	*Juncus articulatus x holoschoenus*
				Austral Rush	*Juncus australis*
				Toad Rush	*Juncus bufonius*
			*	Capitate Rush	*Juncus capitatus*
				Gold Rush	*Juncus flavidus*
				Green Rush	*Juncus gregiflorus*
				Joint-leaf Rush	*Juncus holoschoenus*
				Giant Rush	*Juncus ingens*
			*	Tiny-headed Rush	*Juncus microcephalus*
				Pale Rush	*Juncus pallidus*
				Loose-flower Rush	*Juncus pauciflorus*
				Tall Rush	*Juncus procerus*
				Hoary Rush	*Juncus radula*
				Broom Rush	*Juncus sarophorus*
				Rush sp.	*Juncus spp.*
				Finger Rush	*Juncus subsecundus*
				Billabong Rush	*Juncus usitatus*
				Running Postman	*Kennedia prostrata*
			#	Dusky Coral-pea	*Kennedia rubicunda*
			*	Pointed Toad-flax	*Kickxia elatine*
			*	Woolly Toad-flax	*Kickxia elatine subsp. elatine*
				Burgan	*Kunzea ericoides*
				Burgan	*Kunzea ericoides spp. agg.*
				Leafy Blown-grass	*Lachnagrostis aemula s.l.*
				Leafy Blown-grass	*Lachnagrostis aemula s.s.*
				Common Blown-grass	*Lachnagrostis filiformis s.l.*
				Common Blown-grass	*Lachnagrostis filiformis s.s.*
			*	Willow-leaf Lettuce	*Lactuca saligna*
			*	Prickly Lettuce	*Lactuca serriola*
			*	Pyramid Tree	*Lagunaria patersonia subsp. patersonia*

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				Thin Duckweed	*Landoltia punctata*
			*	Bay Laurel	*Laurus nobilis*
			*	Toothed Lavender	*Lavandula dentata var. candicans*
			*	Lavender	*Lavandula spp.*
				Native rice grass	*Leersia hexandra*
			*	Rice Cut Grass	*Leersia oryzoides*
				Catkin Moss	*Lembophyllum divulsum*
				Common Duckweed	*Lemna disperma*
				Common Duckweed	*Lemna minor s.l.*
			*	Hairy Hawkbit	*Leontodon taraxacoides subsp. taraxacoides*
			*	Common Peppercress	*Lepidium africanum*
			*	Lesser Swine-cress	*Lepidium didymum*
			*	Hoary Cress	*Lepidium draba*
EN	L	en		Basalt Peppercress	*Lepidium hyssopifolium*
		k		Peppercress	*Lepidium pseudohyssopifolium*
				Shade Peppercress	*Lepidium pseudotasmanicum*
				Peppercress	*Lepidium spp.*
				Variable Sword-sedge	*Lepidosperma laterale*
				Variable Sword-sedge	*Lepidosperma laterale var. laterale*
				Liverwort	*Lepidozia glaucophylla*
				Golden Thread-moss	*Leptobryum pyriforme*
				Rabbit Orchid	*Leptoceras menziesii*
				Hare Orchid	*Leptoceras menziesii*
				Scaly Buttons	*Leptorhynchos squamatus*
				Scaly Buttons	*Leptorhynchos squamatus subsp. squamatus*
				Wiry Buttons	*Leptorhynchos tenuifolius*
				Prickly Tea-tree	*Leptospermum continentale*
				Mountain Tea-tree	*Leptospermum grandifolium*
			#	Coast Tea-tree	*Leptospermum laevigatum*
				Woolly Tea-tree	*Leptospermum lanigerum*
				Creek Tea-tree	*Leptospermum obovatum*
			*	Lemon Scented Tea-tree	*Leptospermum petersonii*
				Common Beard-heath	*Leucopogon virgatus*
				Hairy Stylewort	*Levenhookia dubia*
			*	Large-leaf Privet	*Ligustrum lucidum*
			*	Hedge Privet	*Ligustrum ovalifolium*
			*	Privet	*Ligustrum spp.*
			*	European Privet	*Ligustrum vulgare*
			*	Pelisser's Toad-flax	*Linaria pelisseriana*
			*	French Flax	*Linum trigynum*
			*	Perennial Rye-grass	*Lolium perenne*
			*	Perennial Rye-grass	*Lolium perenne var. perenne*
			*	Wimmera Rye-grass	*Lolium rigidum*
			*	Rye Grass	*Lolium spp.*
			*	Darnel	*Lolium temulentum*
			*	Hybrid Rye-grass	*Lolium X hybridum*
				Wattle Mat-rush	*Lomandra filiformis*
				Wattle Mat-rush	*Lomandra filiformis subsp. coriacea*
				Wattle Mat-rush	*Lomandra filiformis subsp. filiformis*
				Spiny-headed Mat-rush	*Lomandra longifolia*
				Spiny-headed Mat-rush	*Lomandra longifolia subsp. longifolia*
				Mat-rush	*Lomandra spp.*
			*	Japanese Honeysuckle	*Lonicera japonica*
			*	Slender Bird's-foot Trefoil	*Lotus angustissimus*
			*	Bird's-foot Trefoil	*Lotus corniculatus*
			*	Bird's-foot Trefoil	*Lotus corniculatus var. corniculatus*

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				Trefoil sp.	*Lotus spp.*
			*	Hairy Bird's-foot Trefoil	*Lotus subbiflorus*
				Common Woodrush	*Luzula meridionalis*
				Common Woodrush	*Luzula meridionalis var. densiflora*
				Common Woodrush	*Luzula meridionalis var. meridionalis*
			*	African Box-thorn	*Lycium ferocissimum*
				Australian Gipsywort	*Lycopus australis*
			*	Pimpernel	*Lysimachia arvensis*
			*	Scarlet Pimpernel	*Lysimachia arvensis (Red-flowered variant)*
				Small Loosestrife	*Lythrum hyssopifolia*
			*	Apple	*Malus pumila*
			*	Mallow of Nice	*Malva nicaeensis*
			*	Small-flower Mallow	*Malva parviflora*
				Mallow sp.	*Malva spp.*
			*	Common Mallow	*Malva sylvestris*
				Common Marchantia	*Marchantia berteroana*
			*	Horehound	*Marrubium vulgare*
			*	Stock	*Matthiola incana*
			*	Common Stock	*Matthiola incana*
			*	Swamp Marguerite	*Mauranthemum paludosum*
				Swamp Mazus	*Mazus pumilio*
			*	Spotted Medic	*Medicago arabica*
			*	Black Medic	*Medicago lupulina*
			*	Little Medic	*Medicago minima*
			*	Burr Medic	*Medicago polymorpha*
			*	Lucerne	*Medicago sativa subsp. sativa*
			*	Medic sp.	*Medicago spp.*
		r	#	Giant Honey-myrtle	*Melaleuca armillaris subsp. armillaris*
			#	Swamp Paperbark	*Melaleuca ericifolia*
			*	Grey Honey-myrtle	*Melaleuca incana subsp. incana*
				Moonah	*Melaleuca lanceolata*
			*	Flax Leaf Paperbark	*Melaleuca linariifolia*
			#	Rough-barked Honey-myrtle	*Melaleuca parvistaminea*
				Honey-myrtle	*Melaleuca spp.*
			*	Prickly Paperbark	*Melaleuca styphelioides*
				Montane Shrub-violet	*Melicytus dentatus*
				Tree Violet	*Melicytus dentatus s.l.*
			*	Sweet Melilot	*Melilotus indicus*
				Mint sp.	*Mentha spp.*
				Slime mould	*Metatrichia floriformis*
				Common Veilwort	*Metzgeria decipiens*
				Flat Veilwort	*Metzgeria furcata*
				Weeping Grass	*Microlaena spp.*
				Meadow Rice Grass	*Microlaena stipoides*
				Weeping Grass	*Microlaena stipoides var. stipoides*
				Onion-orchid sp.	*Microseris spp.*
				Notched Onion-orchid	*Microtis arenaria*
				Slender Onion-orchid	*Microtis parviflora*
				Onion-orchid sp.	*Microtis spp.*
				Common Onion-orchid	*Microtis unifolia*
			*	Lesser Snapdragon	*Misopates orontium*
			*	Red-flower Mallow	*Modiola caroliniana*
			*	Erect Chickweed	*Moenchia erecta*
				White Purslane	*Montia australasica*
			*	Golden Iris	*Moraea lewisiae*
			*	Thread Iris	*Moraea setifolia*

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				Creeping Mistletoe	*Muellerina eucalyptoides*
			#	Common Boobialla	*Myoporum insulare*
			*	Forget-me-not	*Myosotis discolor*
			*	Water Forget-me-not	*Myosotis laxa subsp. caespitosa*
				Forget-me-not sp.	*Myosotis spp.*
			*	Wood Forget-me-not	*Myosotis sylvatica*
			*	Parrot's Feather	*Myriophyllum aquaticum*
				Upright Water-milfoil	*Myriophyllum crispatum*
				Water Milfoil	*Myriophyllum spp.*
				Brush Mutton-wood	*Myrsine howittiana*
			*	Daffodil sp.	*Narcissus spp.*
			*	Daffodil	*Narcissus pseudonarcissus*
			*	Tazetta	*Narcissus tazetta*
			*	Tazetta	*Narcissus tazetta subsp. tazetta*
			*	Daffodil	*Narcissus x incomparabilis*
			*	Lobed Needle-grass	*Nassella charruana*
			*	Cane Needle-grass	*Nassella hyalina*
			*	Texas Needle-grass	*Nassella leucotricha*
			*	Chilean Needle-grass	*Nassella neesiana*
			*	Mexican Feather-grass	*Nassella tenuissima*
			*	Serrated Tussock	*Nassella trichotoma*
			*	Watercress	*Nasturtium officinale*
			*	Fishbone Fern	*Nephrolepis cordifolia*
			*	Tobacco sp.	*Nicotiana spp.*
			*	Waterlily	*Nymphaea spp.*
			*	Common Evening-primrose	*Oenothera stricta subsp. stricta*
			*	Olive	*Olea europaea*
				Daisy Bush	*Olearia lirata*
		k		Starry Daisy Bush	*Olearia stellulata*
				Broad-leaf Stinkweed	*Opercularia ovata*
				Variable Stinkweed	*Opercularia varia*
			*	Wheel Cactus	*Opuntia robusta*
			*	Prickly pear	*Opuntia spp.*
			*	Wild Marjoram	*Origanum vulgare*
				Cape Thread-moss	*Orthodontium lineare*
				Thread-moss	*Orthotrichum tasmanicum*
				Thread-moss	*Orthotrichum tasmanicum tasmanicum*
				Swamp Lily	*Ottelia ovalifolia*
				Swamp Lily	*Ottelia ovalifolia subsp.. ovalifolia*
			*	Sourgrass	*Oxalis articulata*
			*	Brazilian Wood-sorrel	*Oxalis brasiliensis*
			*	Winged Wood-sorrel	*Oxalis compressa*
				Yellow Wood-sorrel	*Oxalis corniculata s.l.*
			*	Creeping Wood-sorrel	*Oxalis corniculata s.s.*
				Shady Wood-sorrel	*Oxalis exilis*
				Shady/Grassland Wood-sorrel	*Oxalis exilis/perennans*
			*	Pale Wood-sorrel	*Oxalis incarnata*
			*	Large-leaf Wood-sorrel	*Oxalis latifolia*
				Grassland Wood-sorrel	*Oxalis perennans*
			*	Soursob	*Oxalis pes-caprae*
			*	Large-flower Wood-sorrel	*Oxalis purpurea*
				Stout-rooted Wood-sorrel	*Oxalis radicosa*
				Small-flower Wood-sorrel	*Oxalis sp. aff. exilis (glabrescent)*
				Wood-sorrel sp.	*Oxalis spp.*
				Tree Everlasting	*Ozothamnus ferrugineus*
				Grey Everlasting	*Ozothamnus obcordatus*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
			*	Long Headed Poppy	*Papaver dubium*
			*	Paspalum	*Paspalum dilatatum*
			*	Water Couch	*Paspalum distichum*
			*	Regal Pelargonium	*Pelargonium X domesticum*
				Sickle Fern	*Pellaea falcata s.l.*
				Fungus sp.	*Pellicularia*
				Fungus sp.	*Peniophora*
				Five-awned Spear-grass	*Pentapogon quadrifidus var. quadrifidus*
				Fungus sp.	*Perenniporia ochroleuca*
				Slender Knotweed	*Persicaria decipiens*
				Water Pepper	*Persicaria hydropiper*
				Pale Knotweed	*Persicaria lapathifolia*
				Spotted Knotweed	*Persicaria praetermissa*
				Creeping Knotweed	*Persicaria prostrata*
				Knotweed	*Persicaria spp.*
				Hairy Knotweed	*Persicaria subsessilis*
			*	Childling Pink	*Petrorhagia nanteuilii*
			*	Pink	*Petrorhagia spp.*
			*	Parsley	*Petroselinum crispum*
			*	Toowoomba Canary-grass	*Phalaris aquatica*
			*	Reed Canary-grass	*Phalaris arundinacea*
			*	Canary Grass	*Phalaris spp.*
			*	Timothy Grass	*Phleum pratense*
			*	Canary Island Date-palm	*Phoenix canariensis*
				Common Reed	*Phragmites australis*
			*	Fog-fruit	*Phyla canescens*
				Ox-tongue	*Picris burbidgeae*
				Curved Rice-flower	*Pimelea curviflora*
				Curved Rice-flower	*Pimelea curviflora s.l.*
				Curved Rice-flower	*Pimelea curviflora s.s.*
				Curved Rice-flower	*Pimelea curviflora var. sericea*
				Common Rice-flower	*Pimelea humilis*
				Buttons	*Pimelea linifolia subsp. linifolia*
			*	Radiata Pine	*Pinus radiata*
			*	Rice Millet	*Piptatherum miliaceum*
			*	Garden Pea	*Pisum sativum*
			#	Sweet Pittosporum	*Pittosporum undulatum*
			*	Buck's-horn Plantain	*Plantago coronopus*
			*	Buck's-horn Plantain	*Plantago coronopus subsp. commutata*
			*	Buck's-horn Plantain	*Plantago coronopus subsp. coronopus*
				Narrow Plantain	*Plantago gaudichaudii*
			*	Ribwort	*Plantago lanceolata*
			*	Greater Plantain	*Plantago major*
				Plantain	*Plantago spp.*
				Variable Plantain	*Plantago varia*
				Handsome Flat-pea	*Platylobium formosum spp. agg.*
				Common Flat-pea	*Platylobium obtusangulum*
				Earth Moss	*Pleuridium nervosum*
			*	Annual Meadow-grass	*Poa annua*
				Sword Tussock-grass	*Poa ensiformis*
				Common Tussock-grass	*Poa labillardierei*
				Common Tussock-grass	*Poa labillardierei var. labillardierei*
				Soft Tussock-grass	*Poa morrisii*
			*	Kentucky Blue-grass	*Poa pratensis*
				Velvet Tussock-grass	*Poa rodwayi*
				Grey Tussock-grass	*Poa sieberiana*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
				Grey Tussock-grass	*Poa sieberiana var. hirtella*
				Grey Tussock-grass	*Poa sieberiana var. sieberiana*
				Tussock-grass sp.	*Poa spp.*
			*	Rough Meadow-grass	*Poa trivialis*
			#	Plum Pine	*Podocarpus totara*
			*	Four-leaved Allseed	*Polycarpon tetraphyllum*
			*	Myrtle-leaf Milkwort	*Polygala myrtifolia*
			*	Wireweed	*Polygonum arenastrum*
			*	Prostrate Knotweed	*Polygonum aviculare s.l.*
			*	Hogweed	*Polygonum aviculare s.s.*
				Small Knotweed	*Polygonum plebeium*
				Hogweed	*Polygonum spp.*
			*	Annual Beard-grass	*Polypogon monspeliensis*
		r		Broad Shield Fern	*Polystichum formosum*
				Mother Shield Fern	*Polystichum proliferum*
				Juniper Haircap	*Polytrichum juniperinum*
				Hazel Pomaderris	*Pomaderris aspera*
				Woolly Pomaderris	*Pomaderris lanigera*
				Prunus Pomaderris	*Pomaderris prunifolia var. prunifolia*
			*	White Poplar	*Populus alba*
			*	Lombardy Poplar	*Populus nigra 'Italica'*
			*	Poplar sp.	*Populus spp.*
				Poplar	*Populus x canescens*
				Small Poranthera	*Poranthera microphylla s.l.*
				Mushroom sp.	*Poria spp.*
				Common Purslane	*Portulaca oleracea*
				Brown-rot fungi	*Postia sericeomollis*
				Curly Pondweed	*Potamogeton crispus*
				Pottia sp.	*Pottia spp.*
				Pottia	*Pottia subphyscomitrioides*
				Pottia	*Pottia truncata*
				Graceful Leek Orchid	*Prasophyllum pyriforme*
				Victorian Christmas-bush	*Prostanthera lasianthos*
		r	#	Snowy Mint-bush	*Prostanthera nivea var. nivea*
			*	Self-heal	*Prunella vulgaris*
			*	Cherry Plum	*Prunus cerasifera*
			*	Purple-leaf Cherry-plum	*Prunus cerasifera 'Atropurpurea'*
			*	Purple-leaf Cherry-plum	*Prunus cerasifera 'Nigra'*
			*	Peach	*Prunus persica*
			*	Blackthorn	*Prunus spinosa*
			*	Prunus	*Prunus spp.*
				White Cordyalis	*Pseudofumaria alba*
				Austral Bracken	*Pteridium esculentum*
				Tender Brake	*Pteris tremula*
				Tender Bracken Fern	*Pteris tremula*
				Alpine Greenhood	*Pterostylis alpina s.l.*
				Blunt Greenhood	*Pterostylis curta*
				Maroonhood	*Pterostylis pedunculata*
				Moss	*Ptychomitrium australe*
				White-rot fungus	*Pycnoporus spp.*
			*	Nepal Firethorn	*Pyracantha crenulata*
			*	Firethorn	*Pyracantha spp.*
			*	Pear	*Pyrus communis*
			*	Pin Oak	*Quercus palustris*
			*	English Oak	*Quercus robur*
				Buttercup	*Ranunculus spp.*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
				River Buttercup	*Ranunculus inundatus*
				Australian Buttercup	*Ranunculus lappaceus*
			*	Sharp Buttercup	*Ranunculus muricatus*
			*	Small-flower Buttercup	*Ranunculus parviflorus*
			*	Creeping Buttercup	*Ranunculus repens*
			*	Celery Buttercup	*Ranunculus sceleratus subsp. sceleratus*
			*	Wild Radish	*Raphanus raphanistrum*
			*	Jointed Charlock	*Raphanus raphanistrum*
			*	Giant Mustard	*Rapistrum rugosum*
				Feather Moss	*Rhynchostegium tenuifolium*
				Lizard Crystalwort	*Riccia bifurca*
				Floating Crystalwort	*Riccia duplex var. duplex*
				Crystalwort	*Riccia spp.*
				Floating Liverwort	*Ricciocarpos natans*
			*	Castor Oil Plant	*Ricinus communis*
			*	Locust Tree	*Robinia pseudoacacia*
			*	Onion Grass	*Romulea rosea*
				Onion Grass	*Romulea rosea var. australis*
			*	Common Onion-grass	*Romulea rosea var. australis s.s.*
			*	Large-flower Onion-grass	*Romulea rosea var. reflexa*
				Water Cress	*Rorippa nasturtium-aquaticum*
			*	Marsh Yellow-cress	*Rorippa palustris*
			*	Burnet Rose	*Rosa pimpinellifolia*
			*	Sweet Briar	*Rosa rubiginosa*
			*	Rose	*Rosa spp.*
			*	Rosemary	*Rosmarinus officinalis*
				Common Thread-moss	*Rosulabryum billarderi*
				Sand Thread-moss	*Rosulabryum campylothecium*
				Twisting Thread-moss	*Rosulabryum torquescens*
			*	Common Blackberry	*Rubus anglocandicans*
			*	Blackberry	*Rubus fruticosus spp. agg.*
				Small-leaf Bramble	*Rubus parvifolius*
			*	Forest Blackberry	*Rubus polyanthemus*
				Bramble sp.	*Rubus spp.*
			*	Elm-leaf Blackberry	*Rubus ulmifolius var. ulmifolius*
				Mud Dock	*Rumex bidens*
				Slender Dock	*Rumex brownii*
			*	Clustered Dock	*Rumex conglomeratus*
			*	Curled Dock	*Rumex crispus*
			*	Fiddle Dock	*Rumex pulcher subsp. pulcher*
				Dock sp.	*Rumex spp.*
			*	Dock (naturalised)	*Rumex spp. (naturalised)*
				Lobed Wallaby-grass	*Rytidosperma auriculatum*
				Leafy Wallaby-grass	*Rytidosperma bipartitum s.l.*
				Leafy Wallaby-grass	*Rytidosperma bipartitum s.s.*
				Common Wallaby-grass	*Rytidosperma caespitosum*
				Brown-back Wallaby-grass	*Rytidosperma duttonianum*
				Hill Wallaby-grass	*Rytidosperma erianthum*
				Copper-awned Wallaby-grass	*Rytidosperma fulvum*
				Kneed Wallaby-grass	*Rytidosperma geniculatum*
				Smooth Wallaby-grass	*Rytidosperma laeve*
				Silvertop Wallaby-grass	*Rytidosperma pallidum*
				Weeping Wallaby-grass	*Rytidosperma penicillatum*
				Velvet Wallaby-grass	*Rytidosperma pilosum*
				Large Velvet Wallaby-grass	*Rytidosperma pilosum var. paleaceum*
				Slender Wallaby-grass	*Rytidosperma racemosum var. racemosum*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
				Bristly Wallaby-grass	*Rytidosperma setaceum*
				Bristly Wallaby-grass	*Rytidosperma setaceum var. setaceum*
				Wallaby-grass	*Rytidosperma sp. aff. setaceum*
				Wallaby-grass sp.	*Rytidosperma spp.*
				Purplish Wallaby-grass	*Rytidosperma tenuius*
			*	Spreading Pearlwort	*Sagina procumbens*
			*	Willow	*Salix spp.*
			*	White Willow	*Salix alba*
			*	Cricket Bat Willow	*Salix alba var. caerulea*
			*	Weeping Willow	*Salix babylonica s.l.*
			*	Grey Sallow	*Salix cinerea*
			*	Crack Willow	*Salix fragilis*
			*	Crack Willow	*Salix fragilis nothovar. x fragilis*
			*	Golden Weeping Willow	*Salix sepulcralis nothovar. x chrysocoma*
			*	Basket Willow	*Salix X rubens*
			*	Pampas Lily-of-the-Valley	*Salpichroa origanifolia*
			*	Pincushion	*Scabiosa atropurpurea*
			*	Pepper Tree	*Schinus molle*
				Sessile Grimmia	*Schistidium apocarpum*
				River Club-sedge	*Schoenoplectus tabernaemontani*
				Common Bog-sedge	*Schoenus apogon*
				Soft Bog-sedge	*Schoenus tesquorum*
				Club Sedge	*Scirpus spp. (s.l.)*
		k		Black Roly-poly	*Sclerolaena muricata var. muricata*
			*	Golden Thistle	*Scolymus hispanicus*
				Bronze Signal-moss	*Sematophyllum homomallum*
			*	Climbing Groundsel	*Senecio angulatus*
				Jagged Fireweed	*Senecio biserratus*
				Annual Fireweed	*Senecio glomeratus*
				Rough Fireweed	*Senecio hispidulus s.l.*
				Rough Fireweed	*Senecio hispidulus s.s.*
				Shrubby Fireweed	*Senecio minimus*
				Lanceleaf Coast Groundsel	*Senecio pinnatifolius var. lanceolatus*
				Cotton Fireweed	*Senecio quadridentatus*
				Groundsel	*Senecio spp.*
				Slender Fireweed	*Senecio tenuiflorus spp. agg.*
			*	Common Groundsel	*Senecio vulgaris*
			*	Downy Senna	*Senna multiglandulosa*
			*	Slender Pigeon-grass	*Setaria gracilis var. pauciseta*
			*	Slender Pigeon-grass	*Setaria parviflora*
			*	Pigeon-grass	*Setaria spp. (naturalised)*
			*	Whorled Pigeon-grass	*Setaria verticillata*
			*	French Catchfly	*Silene gallica*
			*	Spotted Catchfly	*Silene gallica var. quinquevulnera*
			*	Variegated Thistle	*Silybum marianum*
			*	Hedge Mustard	*Sisymbrium officinale*
			*	Mustard	*Sisymbrium spp.*
			*	Blue Scour-weed	*Sisyrinchium aff. iridifolium (small blue flowers)*
			*	Glossy Nightshade	*Solanum americanum*
				Kangaroo Apple	*Solanum aviculare*
				Cut-leaved Night-shade	*Solanum laciniatum*
			*	Potato Climber, Jasmine Nightshade	*Solanum laxum*
			*	Tomato	*Solanum lycopersicum*
			*	Wild Tobacco Tree	*Solanum mauritianum*
			*	Black Nightshade	*Solanum nigrum s.l.*
			*	Black Nightshade	*Solanum nigrum s.s.*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
			*	Madeira Winter-cherry	*Solanum pseudocapsicum*
				Nightshade	*Solanum spp.*
				Cut-leaf Nightshade	*Solanum triflorum*
			*	Baby's Tears	*Soleirolia soleirolii*
				Smooth Solenogyne	*Solenogyne dominii*
				Hairy Solenogyne	*Solenogyne gunnii*
			*	Seaside Goldenrod	*Solidago sempervirens*
			*	Rough Sow-thistle	*Sonchus asper s.l.*
			*	Rough Sow-thistle	*Sonchus asper s.s.*
			*	Common Sow-thistle	*Sonchus oleraceus*
				Sow Thistle	*Sonchus spp.*
			*	Harlequin Flower	*Sparaxis bulbifera*
			*	Harlequin Flower	*Sparaxis spp.*
			*	Tricolor Harlequin-flower	*Sparaxis tricolor*
			*	Spanish Broom	*Spartium junceum*
			*	Red Sand-spurrey	*Spergularia rubra s.s.*
			*	Rat-tail Grass	*Sporobolus africanus*
			*	Chickweed	*Stellaria media*
			*	Buffalo Grass	*Stenotaphrum secundatum*
				Green algae	*Stigeoclonium*
				Green algae	*Stigeoclonium farctum Berthold*
				Green algae	*Stigeoclonium tenue (C.Agardh) Kuetz.*
				Fennel Pondweed	*Stuckenia pectinata*
				Grass Trigger Plant	*Stylidium graminifolium*
				Grass Trigger Plant	*Stylidium graminifolium s.l.*
				Triggerplant	*Stylidium spp.*
			*	Garden Dandelion	*Taraxacum officinale spp. agg.*
			*	Garden Dandelion	*Taraxacum Sect. Ruderalia*
				Dandelion	*Taraxacum spp.*
				Moss	*Taxiphyllum spp.*
				Pink Sun-orchid	*Thelymitra carnea*
				Slender Sun-orchid	*Thelymitra pauciflora s.l.*
				Slender Sun-orchid	*Thelymitra pauciflora s.s.*
				Salmon Sun-orchid	*Thelymitra rubra*
				Sun-orchid sp.	*Thelymitra spp.*
				Kangaroo Grass	*Themeda triandra*
				Golden Weft-moss	*Thuidiopsis furfurosa*
				Weft-moss	*Thuidiopsis sparsa*
				Weft-moss sp.	*Thuidium spp.*
				Twining Fringe-lily	*Thysanotus patersonii*
				Crisp Moss	*Tortella cirrhata*
				Flamingo Moss	*Tortula atrovirens*
				Common Wall-moss	*Tortula muralis*
				Screw Moss	*Tortula pagorum*
				Screw Moss	*Tortula papillosa*
				Moss	*Tortula truncata*
			*	Wandering Tradescantia	*Tradescantia fluminensis*
			*	Salsify	*Tragopogon porrifolius 73ubsp.. Porrifolius*
				Green algae	*Trentepohlia*
			*	Subterranean Cape-sedge	*Trianoptiles solitaria*
				Moss	*Trichostomum austrocrispum*
				Yellow Rush-lily	*Tricoryne elatior*
			*	Narrow-leaf Clover	*Trifolium angustifolium var. angustifolium*
			*	Hare's-foot Clover	*Trifolium arvense var. arvense*
			*	Hop Clover	*Trifolium campestre var. campestre*
			*	Hop Clover	*Trifolium dubium*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
			*	Strawberry Clover	*Trifolium fragiferum var. fragiferum*
			*	Cluster Clover	*Trifolium glomeratum*
			*	White Clover	*Trifolium repens var. repens*
			*	Shaftal Clover	*Trifolium resupinatum var. resupinatum*
			*	Clover	*Trifolium spp.*
			*	Knotted Clover	*Trifolium striatum*
			*	Subterranean Clover	*Trifolium subterraneum*
				Alcock's Water-ribbons	*Triglochin alcockiae*
				Nareli	*Triglochin procera*
				Water Ribbons	*Triglochin procera s.l.*
				Common Water-ribbons	*Triglochin procera s.s.*
				Common Twine-moss	*Triquetrella papillata*
			*	Wheat	*Triticum aestivum*
			*	Lined Tritonia	*Tritonia gladiolaris*
			*	Nasturtium	*Tropaeolum majus*
				Narrow-leaf Cumbungi	*Typha domingensis*
			*	Lesser Reed-mace	*Typha latifolia*
				Broad-leaf Cumbungi	*Typha orientalis*
				Bulrush	*Typha spp.*
				Fungus	*Tyromyces spp.*
			*	Gorse	*Ulex europaeus*
			*	Elm	*Ulmus spp.*
				Scrub Nettle	*Urtica incisa*
			*	Stinging Nettle	*Urtica urens*
			#	Floating Bladderwort	*Utricularia gibba*
			*	White Cudweed	*Vellereophyton dealbatum*
			*	Moth Mullein	*Verbascum blattaria*
				Blue-top	*Verbena bonariensis*
			*	Purple-top Verbena	*Verbena bonariensis s.l.*
				Verbena	*Verbena spp.*
			*	Blue Water-Speedwell	*Veronica anagallis-aquatica*
			*	Wall Speedwell	*Veronica arvensis*
				Slender Speedwell	*Veronica gracilis*
			*	Ivy-leaf Speedwell	*Veronica hederifolia*
			*	Wandering Speedwell	*Veronica peregrina*
			*	Persian Speedwell	*Veronica persica*
				Pond Moss	*Vesicularia reticulata*
			*	Tiny Vetch	*Vicia hirsuta*
			*	Common Vetch	*Vicia sativa*
			*	Narrow-leaf Vetch	*Vicia sativa subsp. nigra*
			*	Common Vetch	*Vicia sativa subsp. sativa*
			*	Vetch	*Vicia spp.*
			*	Slender Vetch	*Vicia tetrasperma*
			*	Blue Periwinkle	*Vinca major*
				Showy violet	*Viola betonicifolia subsp. betonicifolia*
				Ivy-leaf Violet	*Viola hederacea* sensu Willis (1972)
				Ivy-leaf Violet	*Viola hederacea subsp. hederacea*
			*	Common Violet	*Viola odorata*
				Narrow-leaf New Holland Daisy	*Vittadinia muelleri*
			*	Brome Fescue	*Vulpia bromoides*
			*	Wall Fescue	*Vulpia muralis*
			*	Rat's-tail Fescue	*Vulpia myuros*
			*	Rat's-tail Fescue	*Vulpia myuros f. myuros*
			*	Fescue	*Vulpia spp.*
				Tufted Bluebell	*Wahlenbergia communis s.l.*
				Annual Bluebell	*Wahlenbergia gracilenta s.l.*

EPBC	FFG	VROT	Origin	Common Name	Scientific Name
				Branching Bluebell	*Wahlenbergia multicaulis*
				Bluebell	*Wahlenbergia spp.*
				Tall Bluebell	*Wahlenbergia stricta subsp. stricta*
			*	Bulbil Watsonia	*Watsonia meriana var. bulbillifera*
			*	Watsonia	*Watsonia spp.*
			*	Japanese Wisteria	*Wisteria floribunda*
				Tiny Duckweed	*Wolffia australiana*
				Common Early Nancy	*Wurmbea dioica*
				Common Early Nancy	*Wurmbea dioica subsp. dioica*
			*	White Arum-lily	*Zantedeschia aethiopica*

Appendix 4. EVC Summaries

The information below comprises extracts from Frood and Papas (2016), except for detail relating to Plains Grassy Woodland which is from Bull (2014). Note that the lists of indicator species provided for each EVC are generalized to assist identifying the EVC and do not necessarily imply that all of these species occur/occurred in this portion of the Yarra River Floodplain.

Aquatic Herbland (EVC 653)

Defining characteristics: Semi-permanent to seasonal wetland vegetation, lacking woody species (or nearly so), dominated by herbaceous aquatic species (often with at least rootstocks tolerant of dry periods). Widespread, but rare in mountains and north-west.

Indicator species: *Myriophyllum* spp., *Cycnogeton procerum* s.l., variously with *Villarsia reniformis*, *Ludwigia peploides* subsp. *montevidensis*, *Nymphoides* spp. and *Ranunculus inundatus* (or related aquatic species). Often occurs in mosaic or complex with other wetland EVCs.

Ecological overview and management considerations: Inundation events when EVC expresses are generally at least several months and generally closer to six or more. Inundation is rarely greater than 2 m depth, but possible in some protected situations with very clear water. If supplying environmental water, best to prime with early smaller event.

Aquatic Sedgeland (EVC 308)

Defining characteristics: Very species-poor vegetation dominated by one to several species of robust inundation-tolerant rhizomatous sedges, typically with culms septate or otherwise including large air-spaces, with vegetative growth extending into virtually permanent water. Widespread, but rare in mountains and drier north.

Indicator species: Various combinations of one or more of *Eleocharis sphacelata*, *Chorizandra australis* (or sometimes *Chorizandra cymbaria* s.l.), *Baumea articulata* and robust forms of *Baumea rubiginosa* s.l. Often occurs in association with Aquatic Herbland (EVC 653).

Ecological overview and management considerations: If inundation less than six months duration, generally towards higher end of this duration (i.e. average events not much less than six months duration), however EVC is relatively resilient over drier periods. If hyposaline, then towards lower end of range. *Baumea articulata* probably more salt tolerant than other structurally dominant species. Apart from relatively durable variants dominated by *Eleocharis sphacelata*, delivery of environmental water is generally unlikely to be particularly relevant to this EVC, with most communities being more dependent on protection of catchment and groundwater

Billabong Wetland Aggregate (EVC 334)

Defining Characteristics: Collective label for the various zones of vegetation associated with lagoons/billabongs on floodplains. Relevant EVCs are Floodplain Wetland Aggregate (EVC 172) and wetter versions of the primarily terrestrial Floodplain Riparian Woodland (EVC 56). Other relevant EVC mapping units include Floodplain Riparian Woodland/Floodplain Wetland Mosaic and Floodplain Riparian Woodland/Billabong Wetland Mosaic. Recognisable wetland components of Billabong Wetland Aggregate include Aquatic Herbland (EVC 653), Aquatic Sedgeland (EVC 308), Tall Marsh (EVC 821), Dwarf Floating Aquatic Herbland (EVC 949) and Floodway Pond Herbland (EVC 810). Major river systems, principally cooler areas.

Indicator species: See descriptions of component wetland EVCs.
Ecological overview and management considerations: The base level of wetlands in this ecological context can be sustained by a combination of groundwater and local runoff. There is a high variability of water regime across the topographical profile. Potentially with a high variability in filling due to seasonal variability in rainfall and flooding, also the relative nature of connectivity on floodplain (i.e. how readily flooded by various sized increases in stream flow). Shallow inundation, especially during warmer weather, can lead to dense regeneration of River Red-gum on the floor of the wetland. Artificially sustained inundation also can have undesirable impacts. In urban contexts, run-off and delivery of storm-water into wetlands can be highly damaging to the vegetation

Dwarf Floating Aquatic Herbland (EVC 949)

Defining characteristics: Surface layer of dwarf free-floating plants, usually as component of more diverse aquatic systems, but sometimes comprising the only life-form present, and potentially expanding over broad areas during inundation. Widespread in lowland areas, but rarely as sole component of wetland.

Indicator species: *Lemna* spp., *Landoltia punctata*, *Wolffia* spp., *Azolla* spp. and the liverwort *Ricciocarpus natans*.
Ecological overview and management considerations: This EVC is often opportunistic and potentially of transitory occupation. In general it is not useful to manage specifically for this EVC (i.e. generally use any associated EVCs as a guide to optimal hydrological regimes).

Floodplain Riparian Woodland (EVC 56)

Defining characteristics: Eucalypt dominated woodland of well-developed floodplains of less arid areas, often including treeless wetland areas (referable to Floodplain Wetland Aggregate [EVC 172]). At maximum development, Floodplain Riparian Woodland represents the vegetation of a mosaic of terraces, active floodways and former channels and consequently a number of communities indicative of a range of hydrological conditions. Parts of the floodplain which typically lack obligate wetland species (e.g. levees which are only intermittently and briefly subject to flooding if at all) may support vegetation referable to the non-wetland EVC Riparian Woodland. This internal variation within the EVC has led to the additional mapping labels Floodplain Riparian Woodland/Billabong Wetland Mosaic and Floodplain Riparian Woodland/Floodplain Wetland Mosaic. It is rare that the more distinctive wetland components within Floodplain Riparian Woodland are at a sufficient scale to allow comprehensive separation during vegetation mapping exercises. In functional terms, all three potential labels are usually equivalent, though in instances it may be possible to distinguish the larger areas of better developed wetland within the relevant area of floodplain. Floodplains of less arid southern and eastern parts.

Indicator species: *Eucalyptus camaldulensis*, *Eucalyptus viminalis* (sometimes with *Eucalyptus ovata* and/or *Eucalyptus radiata*), *Acacia mearnsii*, *Acacia dealbata*, *Acacia melanoxylon. Poa labillardierei* and *Carex* spp.
Ecological overview and management considerations: The majority of the extent of this EVC is subject to only intermittent and brief inundation during floods and does not constitute wetlands in the stricter sense. However, the wooded zone around the outer edge of billabongs or other wetlands on floodplains can represent the wetter extremes of this EVC. On low-lying parts of floodplains, Floodplain Riparian Woodland can be represented within transitions into Tall Marsh (EVC 821) or Swamp Scrub (EVC 53) that can constitute marginal wetland. Within Floodplain

Riparian Woodland, flooding is usually irregular and mostly free-draining, with areas prone to more prolonged inundation generally determined by the bathymetry of the associated wetlands.

The general habitat may include substantial dry periods and can also be influenced by groundwater. The water requirements of the portions of the EVC that represent marginal wetland habitat (including zones transitional to wetter EVCs) are best established by setting inundation regimes for the adjacent wetter habitats.

Floodplain Wetland Aggregate (EVC 172)

Defining characteristics: Collective label for the various zones of vegetation associated with wetlands of riparian floodplains, best developed in association with Floodplain Riparian Woodland. Potentially includes mosaics of scrub/shrubland, reedbed, sedgeland, rushland, grassland and/or herbland zones. The following components are variously recognisable within Floodplain Wetland Aggregate: Aquatic Herbland (EVC 653), Aquatic Sedgeland (EVC 308), Tall Marsh (EVC 821), Swamp Scrub (EVC 53), Wet Verge Sedgeland (EVC 932), Floodway Pond Herbland (EVC 810) and Dwarf Floating Aquatic Herbland (EVC 849). Billabong Wetland Aggregate (EVC 334) is also an aggregate EVC including many of these components. Floodplains of major streams, principally in less arid areas.

Indicator species: See descriptions of component EVCs.

Ecological overview and management considerations: This aggregate EVC represents a range of wetland habitats present on floodplains, and is highly variable according to position on the floodplain, likelihood of inundation and local topography. These wetlands can be maintained by combinations of runoff, flooding and groundwater. If environmental water is delivered, it would be ideal to set the inundation regime according to the component EVCs where possible and would be best done during cool seasons. While summer floods occur, these do not necessarily promote maintenance of diversity. Caution (and perhaps a staged approach) is important if restoring an original flooding regime, requiring assessment to determine if the vegetation patterns have changed under reduced flow regimes, and whether the proposed new regime poses any threats to the residual biodiversity values.

Floodway Pond Herbland (EVC 810)

Defining characteristics: Low herbland on the drying mud of floors of ponds on floodway systems (mainly riverine floodplains). The floristics (and diversity) can be quite variable (both spatially and temporally), according to the traits of the relevant individual pond. The floristics also vary in temporal cycles with the unvegetated unit (EVC 990) and probably between seasons at some locations. Widely dispersed along major riparian floodplains, especially of Murray River and tributaries.

Indicator species: *Centipeda* spp., *Stellaria caespitosa*, *Dysphania glomulifera* subsp. *glomulifera*, *Fimbristylis* spp., *Polygonum plebeium*, *Glinus* spp., *Persicaria* spp., *Alternanthera* spp., *Lachnagrostis filiformis* s.s.; sometimes with narrow fringes of *Pseudoraphis spinescens*, *Eleocharis acuta* and/or *Carex gaudichaudiana*. Semi-arid versions can include an increased component of species shared with the lacustrine habitat (notably *Glycyrrhiza acanthocarpa*, *Heliotropium* spp. *and Glossostigma elatinoides*).

Ecological overview and management considerations: The habitat of this EVC occurs in highly variable systems, which can remain inundated well into summer, with frequency of inundation variable between and at sites. In general, seed reserves of at least most species appear to be able to tolerate sequences of dry years (e.g. intermittent conditions) as well as prolonged flooding.

Water should not be retained artificially, particularly for protracted periods, with expression of species during the natural drawdown process considered critical.

Plains Grassy Woodland (EVC 55)

An open eucalypt woodland to 20 m high with occasional small non-eucalypt trees. Medium-sized monocots and herbs predominate in the ground-storey. It occurs on low undulating to flat plains on fertile Quaternary sediments. Soils are poorly drained clays with a shallow layer of sand, silt or loams. Previously widespread and locally extensive but now largely cleared for agriculture. Remnants are generally heavily grazed or altered by fire regimes.

Typical Species: Dicots: *Acacia. mearnsii, A. melanoxylon, A. paradoxa, A. verticillata, Banksia marginata* (tree form- not seen much now), *Bossiaea prostrata, Eucalyptus camaldulensis (*dominant*), Hypericum gramineum, Leptorhynchos squamatus, Leptospermum continentale, Oxalis* spp*., Poranthera microphylla*
Monocots: *Arthropodium* spp, *Austrostipa rudis, Carex breviculmis, Hemarthria uncinata, Microlaena stipoides, Rytidosperma geniculatum, R. racemosum, Schoenus apogon, Themeda triandra*
Ecological overview and management considerations: This EVC is now highly restricted on the Gippsland Plain and where present, is often of poor quality. In particular understorey components are degraded and the dominant canopy species, River Red Gums suffer from lack of opportunity to regenerate or disturbed water regimes.

Red Gum Swamp (EVC 292)

Defining characteristics: Woodland of swampy depressions of lowland plains, with sedgy-herbaceous understorey including aquatic species. Scattered on lowland plains, principally in the Riverina and south-west of Wimmera, extremely rare on the western volcanics.

Indicator species: *Eucalyptus camaldulensis* (or occasionally *Eucalyptus tereticornis* subsp. *mediana*), *Carex tereticaulis* (or rarely *Baumea arthrophylla* and *Lepidosperma longitudinale*), *Eleocharis acuta*, *Marsilea drummondii* and *Myriophyllum crispatum*.
Ecological overview and management considerations: This EVC is relatively tolerant of long dry periods. Examples towards the lower rainfall limits to the distribution of this EVC may be inundated as infrequently as one in five years. Inundation of deeper parts of the relevant wetlands can exceed six months, but naturally dries out within a year. Obviously inundation is shallower and occurs for shorter periods in the zones towards the outer edges of this EVC. Care is required if supplying environmental water to this EVC. Inundation up to eight months is perhaps suitable if events are spaced, but can be compromised by subsequent natural flooding if this occurs before the wetland dries out, resulting in a period of inundation exceeding the tolerance of the structural dominant of this EVC. It is vital that natural drawdown is allowed, and that water is not artificially impounded. Priming with smaller flows (e.g. to one third depth) prior to filling wetlands to capacity is desirable, especially in deeper systems.

Submerged Aquatic Herbland (EVC 918)

Defining characteristics: Extensive submerged beds of Eel Grass (*Vallisneria australis*) in lakes and watercourse ponds. Restricted, mainly in west to north-west, apparently depleted by carp.

Indicator species: *Vallisneria australis* is typically dominant as a submerged sward. *Myriophyllum* spp. may also be present. Submerged Aquatic Herbland can occur in association with a range of

wetland components, including Tall Marsh (EVC 821), Aquatic Herbland (EVC 653), Brackish Aquatic Herbland (EVC 537) and (rarely) Saline Aquatic Meadow (EVC 842).

Ecological overview and management considerations: The ecological characteristics of this EVC are inadequately understood. Submerged aquatics appear to have declined severely during recent years.

The impacts of carp potentially add a risk factor for species such as *V. australis* in sites subject to long-term inundation. Minimum inundation periods of not much less than six months are required. More or less permanent inundation may no longer be suitable for this EVC if the relevant site is accessible to carp. The deeper ranges of potential inundation (i.e. over around one metre) apply only to situations with very non-turbid water (e.g. *Myriophyllum* spp. in sinkholes), and will be unsuitable for *V. australis* which extends its flowers to the water surface for pollination. If the water is hyposaline, then it will be only at concentrations at the lower end of the range. The rate of drawdown and clarity of water is important. In general depth of inundation should be to less than one metre except in situations of very low turbidity. If environmental watering is conducted in wetlands supporting this EVC, the sites should be primed, e.g. to a level of one third full first, during spring or autumn.

Swamp Scrub (EVC 53)

Defining characteristics: Dense (and potentially up to 10–15 m) shrubby vegetation of relatively fertile swampy flats, dominated by Myrtaceous shrubs (to small trees), ground-layer often sparse, aquatic species conspicuous, *Sphagnum* and/or ferns tolerant of waterlogging sometimes present. Formerly widespread in cooler lowland southern areas of Victoria. Note that much of the prior EVC mapping has included the drier (non-wetland) EVC 948 Damp Melaleuca Scrub, and the saline EVC 953 Estuarine Scrub within a broader circumscription of Swamp Scrub. Damp Melaleuca Scrub is distinguished by a ground-layer dominated by terrestrial species (e.g. grasses and forbs with bryophytes and lichens) and Estuarine Scrub by a ground-layer dominated by salt-tolerant to halophytic species.

Indicator species: *Melaleuca ericifolia*, *Leptospermum lanigerum*, *Isolepis inundata* and *Cycnogeton procerum* s.l., *Villarsia* spp. Swamp Scrub can interface with a range of EVCs, including Riparian Forest, Swampy Woodland, Swampy Riparian Woodland, Riparian Scrub and Seasonally Inundated Shrubby Woodland, and local floristics can reflect these transitions.

Ecological overview and management considerations: The degree of wetness varies within the EVC, but it is frequently waterlogged for extensive periods (sometimes more or less to the extent of shallow inundation). The extent of elevated water-tables and groundwater seepage varies with seasonal/annual conditions and flood events. The dominant woody species can sometimes be pedestalled, with the adjacent deeper areas retaining more prolonged inundation (e.g. six to nine months). The EVC occurs in both calcareous and non-calcareous sites, with conditions sometimes extending into the lower end of the range of hyposaline. Consideration of the composition of the ground-layer vegetation of this EVC should influence any potential delivery of environmental water, and any water delivery should occur over the winter-spring period and remain very shallow. It can be deleterious to diversity to sustain elevated inundation for lengthy periods.

Tall Marsh (EVC 821)

Defining characteristics: Wetland dominated by tall emergent graminoids, typically in thick, species-poor swards. The structure is variously rushland, sedgeland or reedbed, locally closed or in association or fine-scale mosaic with Aquatic Herbland (EVC 653), e.g. along floodway lagoons. The

vegetation is typically treeless, but sparse *Eucalyptus camaldulensis* (or in higher rainfall areas, *Eucalyptus ovata*) are dispersed through some sites where sufficient dry periods occur to allow their survival. Scattered across lowland Victoria.

Indicator species: Variously with *Phragmites australis*, *Typha* spp., *Juncus ingens*, *Juncus procerus*, *Schoenoplectus tabernaemontani* and in more marginal sites sometimes also *Bolboschoenus* spp., *Cyperus* spp. or (locally) *Cladium procerum*. Associated species are quite variable and can include aquatics such as *Potamogeton* spp., *Myriophyllum* spp., *Rumex bidens*, *Stellaria caespitosa*, *Amphibromus fluitans*, *Pseudoraphis spinescens*, *Calystegia sepium*, *Azolla* spp., *Landoltia punctata* and *Lemna* spp. In cooler or more reliably inundated areas, frequent associated species include *Wolffia* spp. and *Urtica incisa*.

Ecological overview and management considerations: Outside of during major floods, the water depth in the habitat of this EVC is rarely maintained in excess of one metre for any substantial duration. The species composition of the EVC varies with the general duration of inundation. Stabilisation of water levels for the purposes of hunting or storage of irrigation water can result in excessive growth of the structural dominants and loss of habitat values. Periodic drawdown and drying out is generally favourable if this doesn't trigger problems with acid sulphate soils. In planning a regime for water delivery to this EVC, it is vital to consider the environmental requirements and responses of the relevant species. Delivery of environmental water should consider desired vegetation structure and in general allow summer drawdown where this is feasible. Shallow summer flushes can trigger potentially unwanted effects such as mass germination of *Juncus ingens* (Giant Rush).

Unvegetated (open water/bare soil/mud)(EVC 990)

Defining characteristics: Low lying areas which are unvegetated (or nearly so), at least in relation to vascular flora, including relevant habitat on intertidal mudflats. Widespread wetland component, which may or may not alternate across time with various vegetated EVCs.

Indicator species: Lacking vascular flora (but sometimes with sparse opportunistic species).

Ecological overview and management considerations: This EVC descriptor is not relevant to emergent vegetation or maintenance of a specific EVC supporting vascular vegetation. The relevant wetlands should be managed according to other habitat values/requirements or any EVCs which occur in spatial or temporal mosaics with EVC 990.

Wet Verge Sedgeland (EVC 932)

Defining characteristics: Tussock sedge dominated wetland component of cooler areas, occasionally occurring as the main wetland vegetation present, typically dominated by *Carex appressa*. Scattered, mostly in south but extending (as a component of aggregate EVCs) to montane elevations in East Gippsland.

Indicator species: *Carex appressa*, with associated species variously including *Carex fascicularis*, *Juncus* spp. (notably *J. amabilis*, *J. gregiflorus*, *J. holoschoenus*), *Poa labillardierei*, *Glyceria australis* (pale green less upright forms), *Amphibromus nervosus*, *Crassula helmsii* and *Persicaria* spp. (e.g. *P. decipiens*, *P. lapathifolia*, *P. praetermissa*, *P. prostrata*), *Centella cordifolia*, *Eleocharis acuta*, *Epilobium billardierianum*, *Epilobium hirtigerum*, *Goodenia humilis*, *Lobelia pratioides* and *Hemarthria uncinata* var. *uncinata*.

Ecological overview and management considerations: Outside of flood conditions, the depth of inundation of the habitat of this EVC is mostly shallow and not greatly exceeding 30 cm, and rarely persisting above this value for long. This EVC is potentially tolerant of variation in the frequency of inundation, according to climatic conditions, and is at least in part maintained by elevated water-tables.

The season of inundation through flooding will naturally vary, but winter-spring is generally more favourable. This EVC occurs in a range of contexts, some of which could be available for environmental watering while others would not. If water is delivered to wetlands supporting this EVC, natural drawdown should be allowed, and artificial impoundment or change to bathymetry should be avoided – these types of modification can easily kill the structural dominants and deplete the diversity of plant species present within the wetland.

Appendix 5. Water regimes for wetland EVCS

The following table provides the phase context of EVC representation, frequency of inundation, duration of waterlogging and/or inundation, and water depth and salinity ranges. Codes in brackets indicate the EVC occasionally enters this range.

EVC No.	EVC Name (BCS in brackets)	Wetland attribute			
		Phase context	Frequency of inundation	Duration of waterlogging and/or inundation	Water depth
653	Aquatic Herbland (E)	C2, (C3)	F3, F4, (F5)	D5, D6, D7	(WD2), WD3, (WD4)
308	Aquatic Sedgeland (V)	C1	F3, F4	D5, D6, D7	WD1, WD2, (WD3)
334	Billabong Wetland Aggregate (E)	C1, C2, C3	F3, F4, F5	D5, D6, D7	WD3, WD4
949	Dwarf Floating Aquatic Herbland (LC)	C2	F3, F4, F5, F6	D4, D5, D6, D7	WD2, WD3, (WD4)
56	Floodplain Riparian Woodland (E)	C1	(F5, F6), F8	D1	WD1
172	Floodplain Wetland Aggregate (E)	C1, C2, C3	F4, F5, F6	D2, D3, D4, D5, D6	WD1, WD2, WD3
810	Floodway Pond Herbland (E)	C3	F4, F5	D5, D6	WD2, WD3, WD4
292	Red Gum Swamp (E)	C1	F4, F5, (F6)	D5, D6	WD2
918	Submerged Aquatic Herbland (E)	C2	F3, F5, F6	D5, D6, D7	WD2, WD3, WD4
53	Swamp Scrub (E)	C1	F4	D3, D5, D6	WD1
821	Tall Marsh (E)	C1	F3, F4	D6, D7	WD2, (WD3)
990	Unvegetated (open water / bare soil /mud) (LC)	C1, C2, C3	F3, F5, F6	D3, D6, D7	WD2, WD3, WD4
932	Wet Verge Sedgeland (V)	C1	F3, F4, F5	D4, D5	WD1, WD2

Key to codes for frequency of inundation, maximum duration of waterlogging and inundation, depth, phase or context of EVC representation used over page.

Phase context of EVC representation	Phase context category	Phase context category description	Category code
	Continuous	EVC always expressed	C1
	Inundated	EVC expressed when the wetland is inundated	C2
	Drying	EVC expressed during or extending into the drying phase	C3
Frequency of inundation	Frequency of inundation category	Frequency of inundation category description	
	Permanent	Constant, annual or less frequently but before wetland dries	F3
	Seasonal	Annual or near annual inundation (e.g. 8–10 years in every 10)	F4
	Intermittent	Inundated 3–7 years in every 10	F5
	Episodic	Inundated less than 3 years in every 10	F6
	Fringing	Inundation periodic but brief	F8
Duration of waterlogging and inundation (per usual event)	Waterlogging maximum	Inundation maximum	
	Variable (fringing wetland)	Variable, usually brief	D1
	1–6 months	<1 month	D2
	>6 months	<1 month	D3
	1–6 months	1–6 months	D4
	>6 months	1–6 months	D5
		>6 months (but not permanent)	D6
		permanent	D7
Maximum depth of regular or sustained inundation	Category	Depth range (cm)	
	Very shallow	<30	WD1
	Shallow to medium	30–100	WD2
	Medium to deep	100–200	WD3
	Deep	>200	WD4

Appendix 6. Fauna recorded within study area

The following table lists the fauna recorded within the study area or that recorded as occurring within the study area by Loyn, Easton and Guy (2016) (identified as RL).

Treaty: JAMBA / CAMBA, ROKAMBA and/or Bonn Convention Listed Species

M1-2: M1: Migratory species; M2: Marine species

EPBC Act 1999 conservation status

EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant.

FFG Act 1988 status

L: Listed, N: Nominated, X: Invalid, ineligible or delisted

Victorian Rare or Threatened Species (VROTS) (DSE 2013)

EX: Extinct, RX: Regionally Extinct, WX: Extinct in the Wild,

CR: Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near Threatened, DD: Data Deficient

Lifeform	Common Name	Scientific Name	Origin	EPBC	FFG	VROT	WP recs	BF recs
Amphibians	Common Froglet	*Crinia signifera*					3	4
Amphibians	Eastern Dwarf Tree Frog	*Litoria fallax*	#				2	2
Amphibians	Peron's Tree Frog	*Litoria peronii*					2	2
Amphibians	Southern Brown Tree Frog	*Litoria ewingii (southern)*						2
Amphibians	Spotted Marsh Frog	*Limnodynastes tasmaniensis*					1	1
Amphibians	Striped Marsh Frog	*Limnodynastes peronii*					1	5
Amphibians	Verreaux's Tree Frog	*Litoria verreauxii*					3	2
Bird	Australasian Darter	*Anhinga novaehollandiae*						RL
Bird	Australasian Grebe	*Tachybaptus novaehollandiae*						9
Bird	Australasian Shoveler	*Anas rhynchotis*				vu		RL
Bird	Australian Hobby	*Falco longipennis*						RL
Bird	Australian King-Parrot	*Alisterus scapularis*						RL
Bird	Australian Magpie	*Gymnorhina tibicen*					11	24
Bird	Australian Painted Snipe	*Rostratula australis*		VU	L	cr	RL	
Bird	Australian Pelican	*Pelecanus conspicillatus*						RL
Bird	Australian Reed-Warbler	*Acrocephalus australis*						RL
Bird	Australian Shelduck	*Tadorna tadornoides*						RL
Bird	Australian Spotted Crake	*Porzana fluminea*						RL
Bird	Australian White Ibis	*Threskiornis molucca*						5
Bird	Australian Wood Duck	*Chenonetta jubata*					6	7
Bird	Azure Kingfisher	*Alcedo azurea*				nt		RL
Bird	Baillon's Crake	*Porzana pusilla*			L	vu		RL
Bird	Banded Lapwing	*Vanellus tricolor*						RL
Bird	Bassian Thrush	*Zoothera lunulata*						RL
Bird	Bell Miner	*Manorina melanophrys*						RL
Bird	Black Kite	*Milvus migrans*						RL
Bird	Black Swan	*Cygnus atratus*						3
Bird	Black-faced Cuckoo-shrike	*Coracina novaehollandiae*					2	1
Bird	Black-fronted Dotterel	*Elseyornis melanops*						5
Bird	Black-shouldered Kite	*Elanus axillaris*						1
Bird	Black-tailed Native-hen	*Gallinula ventralis*						RL
Bird	Black-winged Stilt	*Himantopus himantopus*						5

Lifeform	Common Name	Scientific Name	Origin	EPBC	FFG	VROT	WP recs	BF recs
Bird	Blue-billed Duck	*Oxyura australis*			L	en		RL
Bird	Blue-winged Parrot	*Neophema chrysostoma*						RL
Bird	Brown Goshawk	*Accipiter fasciatus*						RL
Bird	Brown Quail	*Coturnix ypsilophora*						RL
Bird	Brown Songlark	*Cincloramphus cruralis*						RL
Bird	Brown Thornbill	*Acanthiza pusilla*					3	6
Bird	Buff-banded Rail	*Gallirallus philippensis*						4
Bird	Cattle Egret	*Ardea ibis*						3
Bird	Chestnut Teal	*Anas castanea*						15
Bird	Cockatiel	*Nymphicus hollandicus*						RL
Bird	Collared Sparrowhawk	*Accipiter cirrhocephalus*						1
Bird	Common Blackbird	*Turdus merula*	*				1	6
Bird	Common Bronzewing	*Phaps chalcoptera*					1	9
Bird	Common Greenfinch	*Chloris chloris*	*					RL
Bird	Common Myna	*Acridotheres tristis*	*				4	14
Bird	Common Starling	*Sturnus vulgaris*	*				2	8
Bird	Crested Pigeon	*Ocyphaps lophotes*					4	7
Bird	Crested Shrike-tit	*Falcunculus frontatus*						RL
Bird	Crimson Rosella	*Platycercus elegans*					1	5
Bird	Dollarbird	*Merops ornatus*						RL
Bird	Domestic Muscovy Duck		#					RL
Bird	Dusky Moorhen	*Gallinula tenebrosa*						22
Bird	Dusky Woodswallow	*Artamus cyanopterus*						RL
Bird	Eastern Barn Owl	*Tyto javanica*						RL
Bird	Eastern Great Egret	*Ardea modesta*			L	vu	RL	1
Bird	Eastern Rosella	*Platycercus eximius*						10
Bird	Eastern Spinebill	*Acanthorhynchus tenuirostris*						1
Bird	Eastern Yellow Robin	*Eopsaltria australis*						RL
Bird	Eurasian Coot	*Fulica atra*						5
Bird	Eurasian Skylark	*Alauda arvensis*	*					RL
Bird	European Goldfinch	*Carduelis carduelis*	*					1
Bird	Fairy Martin	*Hirundo ariel*						RL
Bird	Fan-tailed Cuckoo	*Cacomantis flabelliformis*					RL	RL
Bird	Flame Robin	*Petroica phoenicea*						RL
Bird	Freckled Duck	*Stictonetta naevosa*			L	en		RL
Bird	Galah	*Cacatua roseicapilla*					2	6
Bird	Gang-gang Cockatoo	*Callocephalon fimbriatum*						1
Bird	Golden Whistler	*Pachycephala pectoralis*						RL
Bird	Golden-headed Cisticola	*Cisticola exilis*						RL
Bird	Great Cormorant	*Phalacrocorax carbo*						1
Bird	Grey Butcherbird	*Cracticus torquatus*					2	10
Bird	Grey Currawong	*Strepera versicolor*					1	4
Bird	Grey Fantail	*Rhipidura fuliginosa*					1	3
Bird	Grey Goshawk	*Accipiter novaehollandiae*			L	vu		RL
Bird	Grey Shrike-thrush	*Colluricincla harmonica*					1	1
Bird	Grey Teal	*Anas gracilis*						11
Bird	Hardhead	*Aythya australis*				vu		2
Bird	Hoary-headed Grebe	*Poliocephalus poliocephalus*						3

Lifeform	Common Name	Scientific Name	Origin	EPBC	FFG	VROT	WP recs	BF recs
Bird	Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*						RL
Bird	Intermediate Egret	*Ardea intermedia*			L	en		RL
Bird	Latham's Snipe	*Gallinago hardwickii*				nt		5
Bird	Laughing Kookaburra	*Dacelo novaeguineae*					2	7
Bird	Leaden Flycatcher	*Myiagra rubecula*						RL
Bird	Little Black Cormorant	*Phalacrocorax sulcirostris*						3
Bird	Little Corella	*Cacatua sanguinea*						9
Bird	Little Eagle	*Hieraaetus morphnoides*						RL
Bird	Little Egret	*Egretta garzetta*			L	en		RL
Bird	Little Friarbird	*Philemon citreogularis*						RL
Bird	Little Grassbird	*Megalurus gramineus*						RL
Bird	Little Lorikeet	*Glossopsitta pusilla*						RL
Bird	Little Pied Cormorant	*Phalacrocorax melanoleucos*						3
Bird	Little Raven	*Corvus mellori*					4	13
Bird	Little Wattlebird	*Anthochaera chrysoptera*						1
Bird	Long-billed Corella	*Cacatua tenuirostris*						1
Bird	Magpie-lark	*Grallina cyanoleuca*					7	21
Bird	Mallard/Domestic Duck	*Anas platyrhynchos*	*				RL	RL
Bird	Masked Lapwing	*Vanellus miles*					1	10
Bird	Masked Woodswallow	*Artamus personatus*						RL
Bird	Mistletoebird	*Dicaeum hirundinaceum*						RL
Bird	Musk Lorikeet	*Glossopsitta concinna*						4
Bird	Nankeen Kestrel	*Falco cenchroides*						RL
Bird	Nankeen Night Heron	*Nycticorax caledonicus*				nt		3
Bird	New Holland Honeyeater	*Phylidonyris novaehollandiae*						RL
Bird	Noisy Friarbird	*Philemon corniculatus*						RL
Bird	Noisy Miner	*Manorina melanocephala*					9	29
Bird	Olive Whistler	*Pachycephala olivacea*						RL
Bird	Olive-backed Oriole	*Oriolus sagittatus*						RL
Bird	Pacific Black Duck	*Anas superciliosa*						24
Bird	Pallid Cuckoo	*Cuculus pallidus*						RL
Bird	Peregrine Falcon	*Falco peregrinus*						RL
Bird	Pied Cormorant	*Phalacrocorax varius*				nt		RL
Bird	Pied Currawong	*Strepera graculina*					1	6
Bird	Pink Robin	*Petroica rodinogaster*						RL
Bird	Pink-eared Duck	*Malacorhynchus membranaceus*						1
Bird	Powerful Owl	*Ninox strenua*			L	vu		RL
Bird	Purple Swamphen	*Porphyrio porphyrio*						12
Bird	Purple-crowned Lorikeet	*Glossopsitta porphyrocephala*						RL
Bird	Rainbow Lorikeet	*Trichoglossus haematodus*					5	18
Bird	Red Wattlebird	*Anthochaera carunculata*					9	24
Bird	Red-backed Kingfisher	*Todiramphus pyrrhopygius*				nt		RL
Bird	Red-browed Finch	*Neochmia temporalis*					RL	RL
Bird	Red-capped Plover	*Charadrius ruficapillus*						1
Bird	Red-capped Robin	*Petroica goodenovii*						RL
Bird	Red-kneed Dotterel	*Erythrogonys cinctus*						RL
Bird	Red-rumped Parrot	*Psephotus haematonotus*					2	9
Bird	Rock Dove	*Columba livia*	*					1

Lifeform	Common Name	Scientific Name	Origin	EPBC	FFG	VROT	WP recs	BF recs
Bird	Rose Robin	*Petroica rosea*						RL
Bird	Royal Spoonbill	*Platalea regia*				nt		RL
Bird	Rufous Fantail	*Rhipidura rufifrons*						RL
Bird	Rufous Songlark	*Cincloramphus mathewsi*						RL
Bird	Rufous Whistler	*Pachycephala rufiventris*						RL
Bird	Sacred Kingfisher	*Todiramphus sanctus*					1	1
Bird	Satin Flycatcher	*Myiagra cyanoleuca*						RL
Bird	Scaly-breasted Lorikeet	*Trichoglossus chlorolepidotus*						RL
Bird	Scarlet Honeyeater	*Myzomela sanguinolenta*						RL
Bird	Scarlet Robin	*Petroica multicolor*						RL
Bird	Sharp-tailed Sandpiper	*Calidris acuminata*						RL
Bird	Shining Bronze-Cuckoo	*Chrysococcyx lucidus*						RL
Bird	Silver Gull	*Larus novaehollandiae*						14
Bird	Silvereye	*Zosterops lateralis*						2
Bird	Song Thrush	*Turdus philomelos*	*					RL
Bird	Southern Boobook	*Ninox boobook*						RL
Bird	Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*						RL
Bird	Spotless Crake	*Porzana tabuensis*						6
Bird	Spotted Dove	*Streptopelia chinensis*	*				1	12
Bird	Spotted Pardalote	*Pardalotus punctatus*						1
Bird	Straw-necked Ibis	*Threskiornis spinicollis*						RL
Bird	Striated Pardalote	*Pardalotus striatus*						RL
Bird	Striated Thornbill	*Acanthiza lineata*						1
Bird	Sulphur-crested Cockatoo	*Cacatua galerita*					5	5
Bird	Superb Fairy-wren	*Malurus cyaneus*						3
Bird	Swamp Harrier	*Circus approximans*						RL
Bird	Tawny Frogmouth	*Podargus strigoides*					4	5
Bird	Tree Martin	*Hirundo nigricans*						2
Bird	Wedge-tailed Eagle	*Aquila audax*						RL
Bird	Weebill	*Smicrornis brevirostris*						RL
Bird	Welcome Swallow	*Hirundo neoxena*						13
Bird	Whiskered Tern	*Chlidonias hybrida*				nt		RL
Bird	Whistling Kite	*Haliastur sphenurus*						1
Bird	White-breasted Woodswallow	*Artamus leucorynchus*						RL
Bird	White-browed Scrubwren	*Sericornis frontalis*					2	2
Bird	White-eared Honeyeater	*Lichenostomus leucotis*						RL
Bird	White-faced Heron	*Egretta novaehollandiae*					1	8
Bird	White-necked Heron	*Ardea pacifica*						RL
Bird	White-plumed Honeyeater	*Lichenostomus penicillatus*					RL	RL
Bird	White-throated Gerygone	*Gerygone olivacea*						RL
Bird	White-throated Needletail	*Hirundapus caudacutus*				vu		RL
Bird	White-throated Treecreeper	*Cormobates leucophaeus*						RL
Bird	White-winged Chough	*Corcorax melanorhamphos*						RL
Bird	White-winged Triller	*Lalage tricolor*						RL
Bird	Willie Wagtail	*Rhipidura leucophrys*					RL	RL
Bird	Yellow Thornbill	*Acanthiza nana*						RL
Bird	Yellow-billed Spoonbill	*Platalea flavipes*						1
Bird	Yellow-faced Honeyeater	*Lichenostomus chrysops*						RL

Lifeform	Common Name	Scientific Name	Origin	EPBC	FFG	VROT	WP recs	BF recs
Bird	Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*						RL
Bird	Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*						RL
Crustacean	Australian Freshwater Shrimp	*Paratya australiensis*					1	1
Crustacean	Common Yabby	*Cherax destructor*					1	
Fish	Eastern Gambusia	*Gambusia holbrooki*	*				1	
Fish	Goldfish	*Carassius auratus*	*				1	7
Fish	Oriental Weatherloach	*Misgurnus anguillicaudatus*	*					1
Invert	Cabbage White Butterfly	*Pieris rapae*					1	3
Invert	Common Brown Butterfly	*Heteronympha merope*						2
Mammal	Chocolate Wattled Bat	*Chalinolobus morio*						7
Mammal	Common Brushtail Possum	*Trichosurus vulpecula*					3	3
Mammal	Common Ringtail Possum	*Pseudocheirus peregrinus*					2	3
Mammal	Common Wombat	*Vombatus ursinus*					1	3
Mammal	Dog	*Canus lupus familiaris*	*				1	
Mammal	Eastern Falsistrellus	*Falsistrellus tasmaniensis*						1
Mammal	Eastern Grey Kangaroo	*Macropus giganteus*					3	10
Mammal	European Rabbit	*Oryctolagus cuniculus*	*					9
Mammal	Gould's Wattled Bat	*Chalinolobus gouldi*						24
Mammal	Grey-headed Flying-fox	*Pteropus poliocephalus*		VU	L	vu	3	1
Mammal	Large Forest Bat	*Vespadelus darlingtoni*						29
Mammal	Little Forest Bat	*Vespadelus vulturnus*						21
Mammal	Platypus	Ornithorhynchus anatinus						RL
Mammal	Red Fox	*Vulpes vulpes*	*				3	3
Mammal	Short-beaked Echidna	Tachyglossus aculeatus						RL
Mammal	Southern Freetail bat	*Mormopterus planiceps*						4
Mammal	Sugar Glider	*Petaurus breviceps*						1
Mammal	Swamp Wallaby	*Wallabia bicolor*						4
Mammal	Unidenfied microbat						2	3
Mammal	Water Rat	Hydromys chrysogaster						RL
Mammal	White-striped Freetail Bat	*Tadarida australis*						17
Reptile	Blotched Blue-tongue	*Tiliqua nigrolutea*						1
Reptile	Common Blue-tongued Lizard	*Tiliqua scincoides*					1	
Reptile	Eastern Snake-necked Turtle	*Chelodina longicollis*				dd		
Reptile	Garden Skink	*Lampropholis guichenoti*						1
Reptile	Southern Water Skink	*Eulamprus tympanum tympanum*						RL
Reptile	Tiger Snake	*Notechis scutatus*						RL

Appendix 7. Potentially occurring national or state significant fauna

Treaty: JAMBA / CAMBA, ROKAMBA and/or Bonn Convention Listed Species

M1-2: M1: Migratory species; M2: Marine species

EPBC Act 1999 conservation status
EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant.

FFG Act 1988 status
L: Listed, N: Nominated, X: Invalid, ineligible or delisted

Victorian Rare or Threatened Species (VROTS) (DSE 2013)
ex: Extinct, rx: Regionally Extinct, wx: Extinct in the Wild, cr: Critically Endangered, en: Endangered, vu: Vulnerable, nt: Near Threatened, dd: Data Deficient

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	vu	*Accipiter novaehollandiae*	Grey Goshawk	24	2008	High	The Grey Goshawk has a stronghold in Victoria, particularly the white form, in the Otway Ranges, where wet forests and gullies containing Mountain Grey Gum adjoin partly cleared farmlands. They occur in lower densities in similar habitats in the Strzelecki Ranges, Gippsland Plains and Otway Plains. Elsewhere in the State they are occasionally seen in woodlands, dry forests, suburban parks and wooded farmlands (Marchant and Higgins 1993).	Lots of records / has been seen recently, and suitable habitat is present
B	M1, M2				*Acrocephalus stentoreus*	Australian Reed Warbler	113	2007	High	Typically dense, low, aquatic or riparian vegetation, vegetation with a vertical structure, in and round nearly any type of fresh, brackish or saline wetlands, reeds, cumbungi, pencil rush, over water, river red gum regrowth, weeping willows, bamboos, crops near irrigation channels, public gardens, widespread E Australia, mostly south of tropics, clings to stems, forages on floating vegetation. In Vic, occur throughout lowlands and foothills and only rarely in highlands, most common in wetlands and irrigation areas of mid and upper Murray valley. Largely absent from mountainous areas of North-East and Gippsland Districts (Pizzey and Knight 2007) (Higgins, Peter and Cowling 2006)	Lots of records / has been seen recently, and suitable habitat is present.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
B, C, J, R	M1, M2			vu	*Actitis hypoleucos*	Common Sandpiper	1	1967	Low	Regular, widespread but mostly uncommon summer migrant to Australia (Aug–May) (Pizzey and Knight 2007). Wide range of coastal or inland wetlands, with varying levels of salinity. Mainly muddy margins of rocky shores of wetlands; often around estuaries and deltas of streams; also lakes, pools, billabongs, reservoirs, dams and claypans; associated with mangroves. Large coastal mudflats are not favoured (Higgins and Davies 1996).	Species requires suitable wetland conditions for foraging and/or roosting. Rather uncommon in Victoria Likely to be under-reported due to lack of familiarity with waders in general, amongst birdwatchers.
				nt	*Alcedo azurea*	Azure Kingfisher	28	2008	High	This species is usually found near well vegetated wetlands. Uses root-festooned banks of fresh or tidal creeks, rivers, streams, lakes, swamps, estuaries or mangroves for perching. It forages by plunge-diving from perches to below surface of still or slow moving water, which may sometimes be only a few centimetres deep (Higgins 1999). Nesting occurs in small burrows in creek banks (Pizzey and Knight 2007).	Lots of records / has been seen recently, and suitable habitat is present
				vu	*Anas rhynchotis*	Australasian Shoveler	43	2011	Moderate	The Australasian Shoveler occurs mainly on large well vegetated wetlands and lakes, occasionally including areas with saline waters. Populations are found in higher numbers on permanent, well-vegetated freshwater swamps with areas of open water. This species nests in grass nests on the ground, usually in dense cover and near water (Marchant and Higgins 1990; Pizzey and Knight 2007).	Lots of records / has been seen recently, and suitable habitat is present
			L	nt	*Anseranas semipalmata*	Magpie Goose	5	2008	Low	Most of the populations of this species have been re-introduced. They breed colonially and build platform nests over water, usually among tall rushes or reedbeds. The Magpie Goose feeds by digging in mud or by up-ending in shallow water, they have also been see grazing and digging well away from water (Marchant and Higgins 1990).	Few records. Could potentially occur as a vagrant, or occasional visitor from recently established populations (i.e. Serendip Sanctuary).
J	M1	EN	L	cr	*Anthochaera phrygia*	Regent Honeyeater	27	2001	Low	Occurs mainly in box-ironbark forests and woodlands north of the Great Divide. There are historical and recent isolated records from drier parts of south-eastern Victoria. Highly nomadic, their movements are determined by the flowering of eucalypts (DSE 2003a).	Few records within study area, with more in broader local area, could occur in suitable habitat during passage.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
C, J, R	M1, M2				*Apus pacificus*	Fork-tailed Swift	6	1995	Low	The Fork-tailed Swift is a migratory species occurring throughout Australia between October-April. This insectivorous species is almost entirely aerial. Occur over inland plains, often over cliffs or beaches, also over settled areas. Feed aerially, and probably also roost aerially, although rarely seen to land (Higgins 1999; Pizzey and Knight 2007).	Likely to be an occasional visitor during summer, but unlikely to be common as study area is south of species' main distribution area. Only one record within study area.
C, J	M1, M2				*Ardea ibis*	Cattle Egret	320	2013	High	The Cattle Egret is widespread throughout coastal and hinterland Australia, with a stronghold in SE Australia. It is a winter-spring migrant in Victoria, where it frequents stock paddocks/pasture, croplands, wetlands/drains, coastal mudflats, and tips (Pizzey and Knight 2007).	Lots of records / has been seen recently, and suitable habitat is present.
			L	en	*Ardea intermedia*	Intermediate Egret	5	2008	Low	The Intermediate Egret occurs in the shallows of mainly grassy inland wetlands, flooded pastures or grasslands. They only occasionally visit coastal wetlands and are generally rare in Victoria. They are sometimes seen foraging in pastures with grazing cattle. This species builds platform nests which are built in trees in riverine forest, swamp woodland and mangroves (Pizzey and Knight 2007).	Some suitable habitat present, species generally rare in Victoria, so would likely only occur as an occasional visitor. No records within study area.
C, J	M1, M2		L	vu	*Ardea modesta*	Eastern Great Egret	272	2013	High	Eastern Great Egret is widespread in Australia and has been observed in a wide range of wetland habitats including swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes; salt marshes; estuarine mudflats, tidal streams; mangrove swamps; coastal lagoons; and offshore reefs (DEWHA 2010).	Lots of records / has been seen recently, and suitable habitat is present.
J. R	M1, M2				*Ardenna tenuirostris*	Short-Tailed Shearwater	2	1994	Nil-Low	Marine, pelagic, Common to very abundant in summer off E. Australia, migrates May – Aug to N.Pacific, nest sparse, of grass, leaves, burrow 0.5-2m long, usually under tussocks, typically in island colony, breeding habitat in native and modified grasslands, herb fields, bracken, scrubland, open forest, occasionally ion cliffs of consolidated sand or on bare ground (Pizzey and Knight 2007) (Marchant and Higgins 1990)	Unlikely to occur - well outside species' normal habitat and distribution - may occur as a vagrant due to inclement weather systems

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
				vu	*Aythya australis*	Hardhead	125	2014	High	Hardheads inhabit deep to shallow wetlands with open water and fringing emergent vegetation (Pizzey and Knight 2007). The species feeds by diving in deep water and occasionally by dabbling just under the water surface (Rogers 1990). Nests are built in thick vegetation (e.g. reeds, lignum, cumbungi), usually over water (Halse *et al.* 2005; Rogers 1990). These birds are most common in the wetland systems of inland Australia (Halse *et al.* 2005). Birds do visit Victoria from these areas in spring and summer, returning as the northern wetlands is replenished by rain (Halse *et al.* 2005). However, some birds are present in Victoria all year round depending on the suitability of the wetland (Pizzey and Knight 2007).	Lots of records / has been seen recently, and suitable habitat is present.
				vu	*Biziura lobata*	Musk Duck	11	2013	Moderate	Usually seen in small numbers on the deep waters of well vegetated fresh to saline lakes, swamps and occasionally shallow inlets and bays. Nests formed in low vegetation in areas sheltered by surrounding vegetation (Marchant and Higgins 1990; Pizzey and Knight 2007).	Some suitable habitat would be present when wetland water levels are suitable, but not many local records.
		EN	L	en	*Botaurus poiciloptilus*	Australasian Bittern	10	2007	Low-Moderate	This species is part nocturnal and forages over water in dense cover, sometimes from platforms in wetland vegetation. Habitat is usually tall reedbeds, sedges, rushes, cumbungi or lignum. Also occurs on rice fields, drains in tussocky paddocks and occasionally on saltmarshes and brackish wetlands. Nests are shallow saucers on trampled water plants (Pizzey and Knight 2007).	Some suitable habitat would be present when wetland water levels are suitable, but not many local records. Likely to be under-reported due to cryptic nature.
			L	en	*Burhinus grallarius*	Bush Stone-curlew	3	2001	Nil-Low	Inhabit open grassy woodlands and wooded farmlands in northern and w. Vic. Most often found in remnants of woodland (particularly Bulokes Allocasuarina luehmannii) among pasture or crops, and on golf courses. They forage on dry open ground, mainly at night. During the day they rest inconspicuously on the ground among trees. They lay their eggs in scrapes on bare ground.	Unlikely to occur within study area, this species' distribution within Victoria is now largely limited to a couple of known populations near Seymour and in northern Victoria.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
B,C J,R	M1, M2				*Calidris acuminata*	Sharp-tailed Sandpiper	6	1999	Moderate	Tidal mudflats, saltmarshes, mangroves, shallow fresh, brackish or saline inland wetlands, floodwaters, irrigated pastures and crops, sewage ponds, minefields. Breeds Arctic Siberia, migrates to s and se. Asia, widespread summer migrant to coastal and inland Aust and Tas (Aug – April), mostly se. Aust, Murray Darling Basin and W.Vic, coastal and inland (Pizzey and Knight 2007)	Species requires suitable foraging conditions, usually after wetlands have dried after a flooding event, with wet mud fringing shallow waters / adjacent to fringing vegetation. Likely to be under-reported due to lack of familiarity with waders in general, amongst birdwatchers.
			L	dd	*Chelodina longicollis*	Common Long-necked Turtle	8	2012	Moderate-High	Distributed throughout south eastern Australia, Coastal Rivers of Victoria, occurs in a broad range of habitats including permanent riverine waterholes, lakes, farm dams and shallow temporary ponds, greatest abundance in shallow, ephemeral waterholes or in bodies of water that are remote from remanent rivers, often in the absence of other turtle species. Able to distribute overland. (Kennet *et al.* 2009)	Likely to occur, but probably is under-reported. Most records are from the Yarra River. Often seen basking on riverbanks during sunny days in summer (Alice Ewing, pers. obs.).
				nt	*Chlidonias hybridus*	Whiskered Tern	4	1991	Moderate	This is mainly a summer migrant to Victoria, although some remain here over winter. They inhabit shallow freshwater swamps and fresh or brackish lakes, favouring areas with emergent vegetation. The Whiskered Tern build nests on the water in colonies among flooded or emergent vegetation (Pizzey and Knight 2007).	While some suitable habitat is present, there are few local records. Probably likely to only occur while on passage.
				nt	*Chrysococcyx osculans*	Black-eared Cuckoo	6	2003	Low	Summer migrants to Vic from northern wintering areas. Occur in mallee scrubs, dry woodlands and box-ironbark forests, mainly north of the Great Divide. They feed in low shrubs and from open ground among trees; lay their eggs in nests of other birds. Occasional or irregular visitor south of the Great Divide (Higgins 1999).	Likely to be an occasional visitor during summer, but unlikely to be common as study area is south of species' main distribution area. No records within study area.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	vu	*Chthonicola sagittata*	Speckled Warbler	3	1969	Low	Mainly grassy ground layer of dry sclerophyll forests and woodlands, often with scattered shrubs in under-storey, mainly forests dominated by eucalyptus, especially box-ironbark forests and woodlands e.g. near Chiltern, ne E Victoria, Near Bendigo recorded in red stringybark, red box and long leaved box with a grassy ground layer and well-spaced shrubs in understorey, but not in red ironbark or yellow gum forests, occasionally occur in mallee habitats, sometimes with native pine, in Vic, mostly confined to n. foothills of great divide but scattered on S. slopes S of great divide, (Higgins and Peter 2002)	While last local record is quite old, more recent records of this species have been reported in outer Melbourne. However, this species is likely to be only an occasional visitor, and unlikely to be common as study area is south of species' main distribution area. One record within Banyule Flats area.
				nt	*Circus assimilis*	Spotted Harrier	1	2013	High	This species occurs in open grasslands, open shrublands, saltbush, open woodlands, crops and similar low vegetation that allow hunting. Their stick nests are built in low trees (Pizzey and Knight 2007).	Recent record within Banyule Flats study area, probably under-reported, but species is unlikely to be common in area.
				nt	*Climacteris picumnus victoriae*	Brown Treecreeper (south-eastern ssp.)	2	1978	Low	Occurs in eucalypt woodlands, particularly open woodland lacking a dense understorey (Higgins, Peter and Steele 2001). It is sedentary and nests in tree hollows within permanent territories, breeding in pairs or communally in small groups. Birds forage on tree trunks and on the ground amongst leaf litter and on fallen logs for ants, beetles and larvae (Higgins, Peter and Steele 2001).	Only two older records, including one within Banyule Flats area. Some suitable habitat present, but study area is south of species' normal distribution range.
			L	en	*Coturnix chinensis*	King Quail	1	1970	Low	Most recent reports are from French Island, where found in low treeless heaths with moist rushy depressions. Feed and nest on the ground among dense low vegetation. There are few breeding records for Victoria but in 19th century they nested in areas which are now suburbs of Melbourne. Some past sightings were from coastal heaths where they might still occur, e.g. Mallacoota, Wilsons Promontory and near Portland. The draining of wet heaths in the past has eliminated King quail from some areas e.g. near Melbourne.	Limited suitable habitat present, and only one old record.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	rx	*Dasyurus viverrinus*	Eastern Quoll	7	1948	Nil	A range of open forests, woodlands and grasslands, where they would build a den amongst fallen logs or rock piles (DSE 2009). Found in open forest, scrubland and heath habitats, especially where interspersed with grassy clearings. Dens in burrow, hollow log or rock crevice.	Species is regionally extinct. Very old records only.
					Dromaius novaehollandiae	Emu	4	2012	Nil-Low	Plains, scrublands, open woodlands, coastal heaths, alpine pastures, semi-deserts, margins of lakes, pastoral and cereal growing areas, mostly absent from closely settled parts, common in pastoral and cropping regions, state forests and national parks (Pizzey and Knight 2007)	Unlikely to occur within study area, due to proximity to residential zones. No records from within study area.
			L	en	*Egretta garzetta*	Little Egret	13	2000	Moderate	Inhabits terrestrial wetlands and shallow margins of tidal estuaries and inland lakes and rivers. Feed in shallow water and nest colonially, often with other waterbirds. Stick-nests are usually built in trees over water, although occasionally in reedbeds (Marchant and Higgins 1990).	Some suitable habitat present, but not many local records.
			L	en	*Falco hypoleucos*	Grey Falcon	1	1977	Low	Inhabit grasslands, lightly wooded plains and scrublands of interior Australia. Birds occur sporadically on the periphery of their range, such as nw. Vic. More common in Vic during or after droughts. They surprise their prey on the ground while flying low and fast over open country and also catch prey in flight. Nest in trees, in disused stick-nests of other birds.	Considered rare/uncommon throughout Australia, and with nomadic distribution, this species is unlikely to be a frequent visitor to the study area. Only one old record.
				vu	*Falco subniger*	Black Falcon	10	2013	Low-Moderate	The Black Falcon has a stronghold in inland Australia. Most Victorian records come from the lowlands and only occasionally from the foothills. It occurs mainly over croplands, grasslands and wooded farmlands. To catch flushed prey, they sweep low over croplands and grasslands and are often attracted by smoke from grassfires and late-summer burning off. This species nests in trees in old stick-nests of other birds (Marchant and Higgins 1993; Pizzey and Knight 2007).	While unlikely to be common, this species is likely to be under-reported, and could occur with greater frequency than current reports suggest.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
		VU	L	en	*Galaxiella pusilla*	Dwarf Galaxias	4	1994	Low	Occurs in vegetated margins of slow-flowing coastal creek backwaters, drains and swamps, often with dense aquatic macrophytes. Ephemeral sites require seasonal flooding and linkages to other more permanent populations for population replenishment, therefore wetland connectivity may be critical to survival. They occur across most of southern Victoria, however are sparse in the landscape and more abundant in the south-east of the state, most specifically in Mornington Peninsula & Western Port areas (Allen, Midgley and Allen 2002; Museum Victoria 2006).	Some limited suitable habitat present, only a few local records, with none within the study area.
B, C, J, R	M1, M2		N	nt	*Gallinago hardwickii*	Latham's Snipe	163	2013	High	Latham's Snipe is a migratory species. The species migrates to Victoria from breeding grounds in Japan. In Victoria this species is widely distributed in a range of habits including heavily vegetated freshwater swamps, and pools or ditches in heaths or subalpine herblands (Pizzey and Knight 2007). Also occurs in small ephemeral wetlands such as wet depressions after floods recede. Generally roosts in thick vegetation during the day, sometimes under shrubs away from wetlands, and will feed in swamps at night. They are occasionally seen feeding during the day. This species feeds by probing in soft mud and rarely moves far from concealing vegetation (Higgins and Davies 1996).	Lots of records / has been seen recently, and suitable habitat is present.
			L	nt	*Geopelia cuneata*	Diamond Dove	1	2001	Low	Occurs mostly in arid or semi-arid grassland savannah, often of Spinifex Triodia or other grasses such as Themeda. Rarely recorded in heathland and wet sclerophyll forest. Nearly always near water (Higgins, Peter and Steele 2001).	Unlikely to occur – study area is to the south and well outside species' normal habitat and distribution range.
			L	vu	*Grantiella picta*	Painted Honeyeater	2	2013	Low	The Painted Honeyeater is a summer migrants to Victoria. They are generally found to inhabit box-ironbark, Broad-leaved Peppermint and Red Stringybark forests and box-buloke woodlands in the northern foothills of the great Divide. May also occur in Red Ironbark, Red Box forests in southern Victoria. They are occasionally found along Murray River valley to Hattah-Kulkyne NP where they inhabit Black Box woodlands. This species is usually found in open stands of old eucalypts that are infested with mistletoes (Higgins, Peter and Steele 2001).	Likely to be only an occasional visitor, during southern migration, but unlikely to be common as study area is south of species' main distribution area. Two records within Banyule Flats area.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	vu	*Grus rubicunda*	Brolga	2	1991	Nil-Low	The Brolga is a large light grey crane with males reaching over and females up to 1 meter tall. It is generally found in tropical, subtropical and temperate freshwater terrestrial wetlands. It is an omnivorous bird eating tubers, grains, insects and molluscs. Numbers in Victoria have reduced due to draining of freshwater wetlands for agriculture (Marchant and Higgins 1993). Occur in the Northern Plains and along adjacent parts of the Murray river as well as on the plains and adjacent foothills of w. Vic. Uses shallow wetlands, farm dams, flooded areas, margins of large lakes, pastures, grasslands, crops and stubbles. Obtains food from the surface of the ground or by digging in moist areas. Nests are usually made on the ground on islands or as isolated mounds within wetlands. Drainage and grazing of wetlands and other human activities have contributed to reductions in numbers.	This species is uncommon in Victoria, with most records being in northern, or western Victoria. Could occur on passage, or during dispersal of juvenile birds.
C, J, R	M1, M2			vu	*Hirundapus caudacutus*	White-throated Needletail	101	2013	High	In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable. In Australia, White-throated Needletails almost always forage aerially, at heights up to 'cloud level', above a wide variety of habitats ranging from heavily treed forests to open habitats, such as farmland, heathland or mudflats (Higgins 1999).	Lots of records / has been seen recently, and suitable habitat is present.
			L	nt	*Hydroprogne caspia*	Caspian Tern	1	1970	Low	Mostly sheltered coastal embayments, including harbours, lagoons, inlets, bays, estuaries and river deltas, usually with sandy or muddy margins. Will use artificial wetlands, including reservoirs, sewage ponds and saltworks (Higgins and Davies 1996).	Could occur, as species does occasionally visit inland wetlands. Would require suitable wetland conditions, and likely to occur only on passage. Only one local record, not within study area.
		EN	L	nt	*Isoodon obesulus obesulus*	Southern Brown Bandicoot	1	1948	Nil-Low	The Southern Brown Bandicoot is both active during the day and night. It is found in forest, heath and shrub communities. It shelters in a nest of vegetation beneath dense cover, it eats fungi, tubers and arthropods (Menkhorst and Knight 2001; Paull 2008).	One very old record, not from within study area.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	en	*Ixobrychus dubius*	Little Bittern	16	2004	Moderate	Occurs mainly in dense emergent vegetation in freshwater swamps, lakes and watercourses, where forage in shallow water or from supporting emergent or aquatic vegetation over deep water. Tolerate brackish-saline waters in mangrove swamps, Juncus-dominated saltmarsh, and wooded margins of coastal lagoons. Nests in densely vegetated freshwater wetlands; invariably over water; in sedge, reeds or rush, either in pure stands or interspersed in woodland thickets. Most records from the Murray-Darling Basin (Marchant and Higgins 1990, p. 1040).	Some suitable habitat would be present when wetland water levels are suitable, but not many local records. Likely to be under-reported due to cryptic nature.
				nt	*Larus pacificus pacificus*	Pacific Gull	4	2002	Low	The Pacific Gull is one of the largest gulls within the Australian and New Zealand territories, confined to the coast where flocks occur on intertidal mudflats and nearby rubbish tips in Port Phillip Bay, Western Port and Corner Inlet, with smaller numbers elsewhere on estuaries, along beaches and on other intertidal habitats (Higgins and Davies 1996). This species breeds mainly on islands in Bass Strait and off Tasmania. Some smaller numbers breed on islands off Wilsons Promontory. Their nests are built on the ground on the tops of steep-sided islands (Higgins and Davies 1996).	Most likely to occur while on passage. One record for Warringal Parklands.
		EN	L	en	*Lathamus discolor*	Swift Parrot	50	2012	Moderate	The Swift Parrot is a winter migrant to Victoria (Swift Parrot Recovery Team 2001). Arriving from their breeding areas in Tasmania, however small numbers of non-breeding birds may remain here during summer (Higgins 1999; Swift Parrot Recovery Team 2001). They are nomadic, and follow the flowering of trees and psyllid infestations. In Victoria their distribution is centred on box-ironbark forests, but they are often seen in town parks and occur sporadically elsewhere in dry forests, dry woodlands and wooded farmlands but are seldom seen in treeless areas, rainforests or wet forests (Higgins 1999; Pizzey and Knight 2007). Feed mainly in winter-flowering plants, especially Red Ironbarks and ornamental trees and shrubs (Higgins 1999; Swift Parrot Recovery Team 2001).	Few records within study area, with more in broader local area, could occur in suitable habitat during passage.
			L	vu	*Lewinia pectoralis*	Lewin's Rail	6	2013	Low-Moderate	Inhabits densely vegetated, fresh, brackish or saline wetlands, usually with areas of standing water. Use long tussocky grass, reeds, rushes, sedges or bracken and are occasionally found amongst tangled clumps of weeds such as Blackberries and Lantana (Marchant and Higgins 1993).	Some suitable habitat would be present when wetland water levels are suitable, but not many local records. Likely to be under-reported due to cryptic nature.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
		VU	L	en	*Litoria raniformis*	Growling Grass Frog	45	2009	Low-Moderate	The species often inhabits water bodies with a diverse assemblage of aquatic vegetation, including emergent species such as sedges (Gahnia spp.), submergent species such as curly pondweed (Potamogeton spp.), floating species such as water ribbon (Triglochin spp.) and filamentous algae (Hamer and Organ 2006; Heard, Robertson and Scroggie 2004). The aquatic vegetation provides sites for male frogs to call from, sites for eggs to be deposited and relatively safe development, and food and shelter for tadpoles. Dense submergent vegetation is especially important to protect eggs and tadpoles from predation (Heard, Robertson and Scroggie 2004). However, it is also known to occur in ditches, dams and swamps or sheltering under discarded debris near those sites (Tyler and Knight 2009, pp. 38-39).	Only a few records within study area, however, no records since 2009.
			L	vu	*Lophocroa leadbeateri*	Major Mitchell's Cockatoo	2	2006	Nil-Low	Occur mainly in uncleared parts of the Mallee where they inhabit woodlands of Slender Cypress Pine (Callitris preissii)-Belah (Allocasuarina cristata) and Black Box (Eucalyptus largiflorens)-Buloke (Allocasuarina luehmannii), and adjacent mallee scrubs (esp. White Mallee E. gracilis and Dumosa Mallee E. dumosa). Occasionally visit nearby croplands that still have mallee and woodland remnants. Seldom occur in large areas of mallee heath. Feeds on the ground and in trees or shrubs; nests in tree hollows, often in old cypress pines	Observations are most likely of aviary escapees. Study site is well outside the normal distribution range for this species.
		VU	L	vu	*Maccullochella peelii peelii*	Murray Cod	2	2008	Low	The Murray Cod lives in a wide variety of habitats from silty slow moving rivers to clear rivers with pools and riffles. This fish prefers in stream habitat of rocks and logs with over-hanging vegetation (Allen, Midgley and Allen 2002).	Could occur. Several recent records, including within Warringal Parklands study area.
			I	nt	*Macquaria ambigua*	Golden Perch	3	2008	Low-Moderate	Occurs in a variety of riverine habitats, but prefers warm, slow-moving, turbid sections of streams. Also found in flooded lakes, backwaters and impoundments. Tolerant of temperatures between 4° and 35°C and high salinity levels (up to 35 pipit) (Allen, Midgley and Allen 2002, p. 199).	Likely to occur within study area, with relatively recent records including within Warringal Parklands.
		EN	L	en	*Macquaria australasica*	Macquarie Perch	22	2008	Moderate	The Macquarie Perch is found in the Murray River and its tributaries and is also found in parts of the Yarra River. It is most often found as a solitary individual, however can forms schools during breeding season. The Macquarie Perch is more commonly found in slow moving rivers, reservoirs and lakes (Allen, Midgley and Allen 2002).	Likely to be under-reported, and has been reported local area relatively recently – in Yarra River – could move into in wetlands during flooding events.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	nt	*Melanodryas cucullata*	Hooded Robin	3	1992	Low	Highest density in semi-arid nw. Victoria where they inhabit mallee scrubs, cypress pine woodlands, mallee heaths with scattered trees and box-ironbarks forests. Uncommon in southern Vic where they occur in a range of lightly timbered habitats containing tall shrubs. These include Box woodlands, coastal heaths and heathy woodlands. Forage on bare ground, using vantage points such as dead limbs or fence posts to detect prey (Marchant and Higgins 1993; Pizzey and Knight 2007).	Likely to be only an occasional visitor, but unlikely to be common as study area is south of species' main distribution area. Two records within Banyule Flats area.
J	M1, M2				*Merops ornatus*	Rainbow Bee-eater	4	2009	Low	The species occurs in many types of habitat including woodland, shrubland, semi-cleared land and farmland, however it mainly occurs where eucalyptus species are dominant. It is almost entirely insectivorous and mostly occurs near to permanent water (Higgins 1999).	Likely to be an occasional visitor during summer, but unlikely to be common as study area is south of species' main distribution area. No records within study area.
B	M1, M2	VU			*Myiagra cyanoleuca*	Satin Flycatcher	7	2010	Low-Moderate	The Satin Flycatcher migrates to southern parts of Victoria during the spring/summer months. It is generally found in many habitat types including wet sclerophyll and woodland particularly along watercourses (Higgins, Peter and Cowling 2006).	Likely to be an occasional visitor during passage, but unlikely to be common. Several records within study area.
			L	nt	*Neophema pulchella*	Turquoise Parrot	1	1999	Low	Usually in native grassy forests and woodlands composed of mixed assemblages of a variety of Eucalyptus species. Often in farmland, mainly pasture with remnant trees, living or dead, or tree stumps. Nest in hollow-bearing trees either dead or alive; also in hollows in tree stumps, fallen logs and fence posts. Recorded in East Gippsland and Northern and North-East districts of Victoria. Individuals have been recorded in Western Port Bay (1982) and French Island (1997) (Higgins 1999, pp. 574-75).	While some suitable habitat is present, there are few local records, and none from within the study area. Probably likely to only occur while on passage.
			L	en	*Ninox connivens connivens*	Barking Owl	18	2001	Low-Moderate	Occurs in dry woodlands, wooded farmlands and dry forests in the 500-800mm annual rainfall zone and extend into semi-arid areas in River Red Gum forests along the Murray River. Hollow dependent species (Higgins 1999; Pizzey and Knight 2007).	Some suitable habitat present, but not many local records.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	vu	*Ninox strenua*	Powerful Owl	44	2013	Present	Widespread in foothill and coastal forests where they especially favour gullies with peppermint-Manna Gum forests. Occasionally seen in wetter mountain forests, drier box-ironbark forests and woodlands, and softwood plantations. Hunts at night by flying through the forest canopy catching prey from tree branches. They nest in large holes in trees (DSE 2004b).	Known to be breeding in nearby area (Richard Loyn, pers. comm. April 2014), and has been observed roosting nearby (Alice Ewing pers. obs.).
				nt	*Nycticorax caledonicus*	Nankeen Night Heron	105	2008	High	The Nankeen Night Heron has a widespread distribution in wetlands throughout Australia, particularly in the north, south, and southwest. This species inhabits shorelines of lakes and rivers, estuaries, terrestrial wetlands and grasslands. Particularly those sheltered by tall ground vegetation and/or trees, with shallow, slow-moving water. Breeds in colonies, usually in the crown or canopy of trees, in forks or on horizontal boughs; also in reed beds or atop shrubs. In Victoria, most numerous in the Murray River region, and in smaller numbers in more coastal/near-coastal regions (Marchant and Higgins 1990; Pizzey and Knight 2007).	Lots of records / has been seen recently, and suitable habitat is present.
			L	en	*Oxyura australis*	Blue-billed Duck	19	2009	Moderate-High	This species inhabits deep, permanent, well-vegetated swamps, but at times (especially in winter) may occur in large numbers on large open wetlands. The Blue-billed Duck catches food while diving or occasionally by feeding from the water surface. Their nests are built on trampled swamp vegetation around the base of established stands of reeds/rushes, often over water or on small islands (Marchant and Higgins 1990; Pizzey and Knight 2007).	Many records within study area – requires suitable water levels in wetlands. Likely to occur on a nomadic basis.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	vu	*Paralucia pyrodiscus lucida*	Eltham Copper	10	1988	Low	This subspecies of the Dull Copper P. pyrodiscus is endemic to Victoria, with a very sparse, scattered distribution north (Eltham-Greensborough), and north-west of Melbourne (Wimmera and Castlemaine regions). In the Eltham area, it has an obligatory relationship with Notoncus spp. ants and the dwarfed form of Sweet Bursaria Bursaria spinosa. These discrete populations are found within sparse, dry woodland on well-drained gentle slopes with north to west aspects, particularly with Red Stringybark Eucalyptus macrorhyncha, Red Box E. polyanthemos, Long-leaved Box E. goniocalyx, and Late Black Wattle Acacia mearnsii and an understorey including Cherry Ballart Exocarpos cupressiformis, Hedge Wattle A. paradoxa, Drooping Cassinia Cassinia arcuata Shiny Cassinia C. longifolia, and Sweet Bursaria, and a groundcover including Small-leaf Clematis Clematis microphylla, Purple Coral-pea Hardenbergia violacea, and Common Flat-pea Platylobium obtusangulum amongst native grasses, mosses and leaf litter (DSE 2003b).	While some suitable habitat (vegetation) is present, this species occurs in rather isolated populations, and the last local record was in 1988.
		VU	L	cr	*Pedionomus torquatus*	Plains-wanderer	1	1980	Nil-Low	Main distribution is within the Riverina of NSW, patchy elsewhere, and only occurring in small numbers in northern Victoria. Inhabits open grasslands with preference towards Danthonia and Stipa species. However, vegetation structure is more important than floristic composition. Does not occur in dense grasslands and woodlands (Marchant and Higgins 1993; Pizzey and Knight 2007).	Species is now likely to be either very rare or regionally extinct in Greater Melbourne. Only one old local record, which was within the Banyule Flats area.
				vu	*Pelagodroma marina*	White-faced Storm-Petrel	1	2004	Nil-Low	Temperate and subtropical regions of Atlantic, Indian and s. Pacific Oceans. Breeds on islands around New Zealand, southern Australia and in Atlantic ocean (Marchant and Higgins 1990).	Unlikely to occur – well outside species' normal habitat and distribution – may occur as a vagrant due to inclement weather systems
		EX	L	ex	*Perameles bougainville fasciata*	Western Barred Bandicoot (E. subsp.)	1	1883	Nil	In Victoria, recently was confined to a few colonies derived from captive-bred animals and dependent on on-going control of foxes and cats. Occupied open grassland, including introduced pasture, with patches of dense vegetation for shelter (Van Dyck and Strahan 2008).	Species is now considered to be extinct in Victoria (DSE Advisory List, 2013).

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
				nt	*Phalacrocorax varius*	Pied Cormorant	23	2008	Moderate	This species is most often found along the coast, however are known to use inland wetlands including billabongs, deep and open swamps and rivers (large freshwater and saline wetlands). They nest in colonies, building platforms nests in mangroves or other trees (Marchant and Higgins 1990; Pizzey and Knight 2007).	Suitable habitat present when water levels in wetlands are high enough.
				nt	*Platalea regia*	Royal Spoonbill	65	2013	Moderate-High	The Royal Spoonbill inhabits the shallow parts of fresh and saline wetlands; these birds are gregarious in small flocks. They are mostly common on intertidal mudflats in coastal bays. Their stick-nests are built in reeds, shrubs or trees, singly or in loose colonies and are often seen with other species (Marchant and Higgins 1990).	Several records within study area – requires suitable water levels in wetlands.
B, C	M1, M2			nt	*Plegadis falcinellus*	Glossy Ibis	9	2013	Low	Found in terrestrial wetlands, occasionally wet grasslands and sheltered marine habitats. Forages in shallow water over soft substrate or on grassy or muddy verges of wetlands, preferring those that provide a variety of depths. Will use brackish and occasionally saline wetlands, mangroves and mudflats (Marchant and Higgins 1990; Pizzey and Knight 2007).	Unlikely to be a frequent visitor, as it is uncommon near Melbourne, but could occur infrequently. No records within study area.
		VU	L	en	*Polytelis swainsonii*	Superb Parrot	2	1999	Low	Found only in the Upper Murray Valley, mainly in the riverine forests and woodlands of Barmah Forest in Victoria. All other sightings have been made along or within 10 km of the Murray, Ovens and Goulburn Rivers. Nests located in hollows of very large riparian trees in River Red Gum forests. Feeds mainly in Black Box, Grey Box and Yellow Box woodlands and wooded farmlands away from their nest-trees but also within the River Red Gum forests round their nest. All nests are within 10km of major feeding areas. Forages on the ground and occasionally in eucalypts and mistletoes. The loss in range of this species is attributed to clearing and grazing of woodland feeding habitats but laying of poison baits for rabbits and Galahs, illegal trapping for the avicultural trade and logging of nest-trees are other possible causes (Higgins 1999`. pp. 287-295).	While some suitable habitat is present, there are few local records, and none from within the study area. Probably likely to only occur while on passage.
			L	vu	*Porzana pusilla*	Baillon's Crake	21	2006	Moderate	This species returns to northern Victoria in spring, but few details on migration. It inhabits freshwater wetlands and floodwaters usually containing floating plants or tall emergent vegetation. The Baillon's Crake feeds in shallow water, mud and emergent aquatic plants. It has been found to nest in clumps or tussocks of vegetation surrounded by water (Marchant and Higgins 1993; Pizzey and Knight 2007).	Some suitable habitat would be present when wetland water levels are suitable, but not many local records. Likely to be under-reported due to cryptic nature.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
		VU	L	vu	*Prototroctes maraena*	Australian Grayling	2	1932	Nil-Low	This species only spends part of its life in freshwater streams, Australian Graylings migrate between freshwater streams and the ocean. Streams where this species occur tend to be clear with gravel bottoms and a variety of in stream habitat such as pools and riffles. The upstream migration of this species has been effectively terminated in some rivers by dams (Allen, Midgley and Allen 2002).	Only two older records, none within study area. Little to no suitable habitat present.
				vu	*Pseudemoia pagenstecheri*	Tussock Skink	1	1979	Nil-Low	Tussock Skinks favour tussock grasslands with few/no trees, with a disjunct distribution within the NSW highlands, and throughout the NSW-VIC high country to VIC low altitude basalt plains, and parts of SE SA, and Tas. (Wilson and Swan 2008).	Only one old record, not from within study area. Limited suitable habitat present.
				vu	*Pseudemoia rawlinsoni*	Glossy Grass Skink	2	1991	Low	Inhabits swamp and lake edges, salt-marshes and boggy creeks with dense vegetation (Wilson and Swan 2008).	While some suitable habitat is present, there are only two older local records, none from within study area.
			L	vu	*Pseudomys novaehollandiae*	New Holland Mouse	1	1987	Nil-Low	Occurs in heathlands, woodlands, open forest and paperbark swamps and on sandy, loamy or rocky soils. Coastal populations show a preference for sandy substrates with a heath understorey, leguminous shrubs less than 1m high and sparse ground litter. Habitat for burrowing is likely to be an important factor in species distribution (Van Dyck and Strahan 2008).	Species is now rare in Victoria, with most populations now quite isolated. No recent records, only one record within study area.
			L	en	*Pseudophryne bibronii*	Brown Toadlet	7	2005	Low	Frequent dry forest, woodland, shrubland and grassland; sheltering under leaf-litter and other debris in moist soaks and depressions. Eggs are spawned in shallow burrows (or nets) under litter, in low areas, near water, that will later be flooded. Tadpoles are aquatic in ponds, flooded grassland and roadside ditches (Hero, Littlejohn and Marantelli 1991).	Few local records, and none being recent. Suitable habitat is present, so could occur.
				vu	*Pseudophryne semimarmorata*	Southern Toadlet	5	1988	Low	The Southern Toadlet can be found in dry forest, woodland, shrubland, grassland and heaths. It shelters under leaf litter and other debris in moist soaks and depressions. Their eggs are spawned in shallow burrows under organic litter in low areas close to water (Hero, Littlejohn and Marantelli 1991).	Few older local records. Some suitable habitat is present, so could theoretically occur.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
		VU	L	vu	*Pteropus poliocephalus*	Grey-headed Flying-fox	28	2008	High	Eastern coastal Australia from Gladstone in Qld to South Gippsland and Melbourne in Vic, rare influxes further west and south. Rarely more than 200km inland. In warmer months gathers in very large camps, usually in dense forest in gullies; population more dispersed in winter. Size of camps fluctuates in response to local food supplies; in south numbers fluctuate in regular pattern, being highest in late summer-autumn and lowest in winter (Menkhorst and Knight 2001).	Likely to be under-reported, and has been seen in local area recently (roost is just downstream on the Yarra River at Bellbird Park), and suitable habitat is present.
B	M1, M2				*Rhipidura rufifrons*	Rufous Fantail	16	2013	Moderate	In Victoria, the Rufous Fantail mainly inhabits the undergrowth of temperate rainforests, and wetter eucalypt forests and gullies, but also occurs in paperbark thickets, sub-inland/coastal scrub, along watercourses and within parks/gardens. On migration it is seen at a wide range of locations from farmland to built up streets (Pizzey and Knight 2007).	Likely to occur mostly only on passage during seasonal altitudinal migration.
C	M1, M2	VU	L	cr	*Rostratula australis*	Australian Painted Snipe	11	2001	Moderate	Generally uncommon in Australia and scattered records in Victoria. Uses terrestrial shallow freshwater (occasionally brackish) wetlands; ephemeral and permanent: lakes, swamps, claypans, inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps lignum, canegrass or tea-tree (Marchant and Higgins 1993).	Some suitable habitat would be present when wetland water levels are suitable, but not many local records. Likely to be under-reported due to cryptic nature.
			L	dd	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail Bat	1	1990	Low	Summer migrants to southern Australia, between January and April, the Yellow-bellied Sheathtail Bat is found in a wide variety of habitat types, including; wet and dry sclerophyll forests, open woodland, Acacia shrubland, mallee, grasslands and deserts. They generally roost in large tree hollows (Churchill 2008). Common in N. Australia but rare late-summer autumn visitors to South, occurs in most environments from wet forests to deserts, roosts singly or in small groups in tree hollows, in treeless areas known to roost in burrows of terrestrial mammals (Menkhorst and Knight 2001)	Species' distribution during summer is largely to the east and north of Melbourne. Could be under-reported.
				nt	*Sminthopsis crassicaudata*	Fat-tailed Dunnart	1	1959	Nil-Low	The Fat-tailed Dunnart is found in a wide range of habitats throughout southern and central Australia. Habitats include open grasslands, gibber plains, low shrublands, claypans, and also rough farmland and stubble field margins (Menkhorst and Knight 2001; Van Dyck and Strahan 2008).	One very old record, not from within study area.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
			L	nt	*Stagonopleura guttata*	Diamond Firetail	2	2001	Low	Inhabit woodlands, open forests and other lightly timbered habitats, such as farmland with remnant trees, or grasslands with scattered trees. Often occurs in vegetation along watercourses and very occasionally near settlements. Habitat usually has open or sparse understorey of shrubs, small trees or regrowth, and grass ground cover (Higgins, Peter and Cowling 2006).	While some suitable habitat is present, species is uncommon near Melbourne in general. Could be an occasional visitor.
			L	en	*Stictonetta naevosa*	Freckled Duck	2	2013	Low	Terrestrial wetlands with shallow productive waters or soft mud at wetland edges. In breeding range (Lake Eyre and Murray-Darling Basin) densely vegetated waters, particularly flood water swamps and creeks vegetated with lignum. In coastal regions , prefer swamps and lakes with dense thickets of Melaleuca, Casuarina or Leptospermum (Marchant and Higgins 1990).	Requires suitable wetland conditions, but could occur in low numbers, when suitable conditions prevail (and quite likely dependant on where drought conditions may limit wetland choices elsewhere), two records both from Banyule Swamp.
			L	vu	*Thinornis rubricollis*	Hooded Plover	1	1978	Nil-Low	The Hooded Plover is endemic to south-eastern and western Australia. This species is mainly a bird of open sandy ocean beaches, and is occasionally found on bay beaches and coastal/inland salt lakes. It prefers broad, flat beaches with wide wash zone, with seaweed wrack and jetsam, and backed by sparsely vegetated dunes. It sometimes uses tidal flats and estuaries, rocky or sand-covered platforms and reefs, generally those near sandy beaches. In Victoria, it is widespread through all coastal areas (Marchant and Higgins 1993; Pizzey and Knight 2007).	Unlikely to occur – well outside species' normal coastal habitat and distribution – may occur as a vagrant during passage. Only one record – perhaps a mistaken identity with the more common Red-kneed Dotterel, which frequents inland wetlands?
				nt	*Todiramphus pyrrhopygius*	Red-backed Kingfisher	1	1985	Low	An Australian endemic, the Red-backed Kingfisher is a summer migrant to northern Victoria from wintering grounds in the arid interior. Usually observed in dry woodlands and River Red Gum forest margins of the Murray River Valley, sporadic sightings elsewhere generally occur in dry forests, dry woodlands and mallee scrub remnants. Rarely seen south of the Great Divide. They pounce upon prey from elevated perches such as tree limbs or overhead wires. They usually dig nesting burrows in cliffs and creek banks but occasionally nest in hollow limbs in trees (Higgins 1999; Pizzey and Knight 2007).	Unlikely to occur – study area is to the south and well outside species' normal southern distribution range.

Treaty	M1-2	EPBC	FFG	VROT	Scientific name	Common name	No. recs.	Last rec.	Likelihood of occurrence	Habitat	Likelihood Reasoning
B,C J,R	M1, M2			vu	*Tringa stagnatilis*	Marsh Sandpiper	4	2004	Low	Salt, brackish, or freshwater wetlands, sewage ponds, commercial salt fields, bore drains, mangroves, tidal mudflats, estuaries, regular summer migrant (Aug – May), mostly to coastal Aust, widespread but very scattered throughout inland (Pizzey and Knight 2007).	Species requires suitable wetland conditions for foraging and/or roosting. Likely to be under-reported due to lack of familiarity with waders in general, amongst birdwatchers.
			L	en	*Tyto novaehollandiae*	Masked Owl	3	2001	Low	Inhabits forests, woodlands and caves. Active in middle storey (Simpson and Day 2000/2001). Inhabits diverse range of wooded habitats that provide tall or dense mature trees with hollows suitable for nesting and roosting, and nearby open areas for foraging (Higgins 1999).	While some suitable habitat is present, there are few local records, and none from within the study area. Probably likely to only occur in small numbers and/or infrequently.

Appendix 8. Fauna species previously recorded within 5 km of the study site

Data collated for a five-kilometre search area, from the following databases: DEPI's Victorian Biodiversity Atlas, Viridans' Victorian Fauna Database, BirdLife Australia's Australian Bird Atlas (in conjunction with Eremaea's Birdline / eBird scheme, which has recently become a joint collaboration in early 2014), Atlas of Living Australia, and Melbourne Water's aquatic fauna database (Frogs). For a key to abbreviations and significance categories, refer to end of table.

Migratory/Marine (EPBC Act)
M1: Migratory Listed Species under the EPBC Act;
M2: Marine Listed Species under the EPBC Act.

FFG Act 1988 status
L: Listed, N: Nominated, I: Invalid or ineligible and D: Delisted

EPBC Act 1999 conservation status
EX: Extinct, CR: Critically endangered, EN: Endangered, VU: Vulnerable and CD: Conservation dependant.

DELWP Victorian Advisory Listing (DSE 2013)
ex: Extinct, rx: Regionally Extinct, wx: Extinct in the Wild, cr: Critically Endangered, en: Endangered, vu: Vulnerable, nt: Near Threatened, dd: Data Deficient

species is native to Australia, but outside natural distribution range

AMPHIBIANS

EPBC	FFG	DELWP	Origin	Common Name	Scientific Name	Family
				Southern Brown Tree Frog	*Litoria ewingii*	Hylidae
			#	Eastern Dwarf Tree Frog	*Litoria fallax*	Hylidae
				Lesueur's Frog	*Litoria lesueuri*	Hylidae
				Peron's Tree Frog	*Litoria peronii*	Hylidae
VU	L	en		Growling Grass Frog	*Litoria raniformis*	Hylidae
				Verreaux's Tree Frog	*Litoria verreauxii*	Hylidae
				Common Froglet	*Crinia signifera*	Myobatrachidae
				Victorian Smooth Froglet	*Geocrinia victoriana*	Myobatrachidae
				Southern Bullfrog	*Limnodynastes dumerilii*	Myobatrachidae
				Striped Marsh Frog	*Limnodynastes peronii*	Myobatrachidae
				Spotted Marsh Frog	*Limnodynastes tasmaniensis*	Myobatrachidae
				Common Spadefoot Toad	*Neobatrachus sudelli*	Myobatrachidae
	L	en		Brown Toadlet	*Pseudophryne bibronii*	Myobatrachidae
		vu		Southern Toadlet	*Pseudophryne semimarmorata*	Myobatrachidae

BIRDS

EPBC	LLG	DELWP	Origin	Common Name	Scientific Name	Family
				Collared Sparrowhawk	*Accipiter cirrhocephalus*	Accipitridae
				Brown Goshawk	*Accipiter fasciatus*	Accipitridae
	L	vu		Grey Goshawk	*Accipiter novaehollandiae*	Accipitridae
				Wedge-tailed Eagle	*Aquila audax*	Accipitridae
				Swamp Harrier	*Circus approximans*	Accipitridae
		nt		Spotted Harrier	*Circus assimilis*	Accipitridae
				Black-shouldered Kite	*Elanus axillaris*	Accipitridae
				Whistling Kite	*Haliastur sphenurus*	Accipitridae
				Little Eagle	*Hieraaetus morphnoides*	Accipitridae
				Australian Owlet-nightjar	*Aegotheles cristatus*	Aegothelidae
		nt		Azure Kingfisher	*Alcedo azurea*	Alcedinidae
				Laughing Kookaburra	*Dacelo novaeguineae*	Alcedinidae

EPBC	LLG	DELWP	Origin	Common Name	Scientific Name	Family
				Sacred Kingfisher	*Todiramphus sanctus*	Alcedinidae
				Chestnut Teal	*Anas castanea*	Anatidae
				Grey Teal	*Anas gracilis*	Anatidae
			*	Northern Mallard	*Anas platyrhynchos*	Anatidae
		vu		Australasian Shoveler	*Anas rhynchotis*	Anatidae
				Pacific Black Duck	*Anas superciliosa*	Anatidae
		vu		Hardhead	*Aythya australis*	Anatidae
				Australian Wood Duck	*Chenonetta jubata*	Anatidae
				Black Swan	*Cygnus atratus*	Anatidae
				Pink-eared Duck	*Malacorhynchus membranaceus*	Anatidae
	L	en		Freckled Duck	*Stictonetta naevosa*	Anatidae
				Australian Shelduck	*Tadorna tadornoides*	Anatidae
				Darter	*Anhinga novaehollandiae*	Anhingidae
				White-throated Needletail	*Hirundapus caudacutus*	Apodidae
				Cattle Egret	*Ardea ibis*	Ardeidae
	L	vu		Eastern Great Egret	*Ardea modesta*	Ardeidae
				White-necked Heron	*Ardea pacifica*	Ardeidae
	L	en		Little Egret	*Egretta garzetta*	Ardeidae
				White-faced Heron	*Egretta novaehollandiae*	Ardeidae
		nt		Nankeen Night Heron	*Nycticorax caledonicus*	Ardeidae
				Dusky Woodswallow	*Artamus cyanopterus*	Artamidae
				White-breasted Woodswallow	*Artamus leucorynchus*	Artamidae
				White-browed Woodswallow	*Artamus superciliosus*	Artamidae
				Australian Magpie	*Cracticus tibicen*	Artamidae
				Grey Butcherbird	*Cracticus torquatus*	Artamidae
				Pied Currawong	*Strepera graculina*	Artamidae
				Grey Currawong	*Strepera versicolor*	Artamidae
				Sulphur-crested Cockatoo	*Cacatua galerita*	Cacatuidae
				Little Corella	*Cacatua sanguinea*	Cacatuidae
				Long-billed Corella	*Cacatua tenuirostris*	Cacatuidae
				Gang-gang Cockatoo	*Callocephalon fimbriatum*	Cacatuidae
				Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*	Cacatuidae
				Galah	*Eolophus roseicapilla*	Cacatuidae
				Cockatiel	*Nymphicus hollandicus*	Cacatuidae
				Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	Campephagidae
				White-winged Triller	*Lalage sueurii*	Campephagidae
				Black-fronted Dotterel	*Elseyornis melanops*	Charadriidae
				Red-kneed Dotterel	*Erythrogonys cinctus*	Charadriidae
				Masked Lapwing	*Vanellus miles*	Charadriidae
				White-throated Treecreeper	*Cormobates leucophaeus*	Climacteridae
			*	Rock Dove	*Columba livia*	Columbidae
				Crested Pigeon	*Ocyphaps lophotes*	Columbidae
				Common Bronzewing	*Phaps chalcoptera*	Columbidae
			*	Spotted Dove	*Streptopelia chinensis*	Columbidae
				White-winged Chough	*Corcorax melanorhamphos*	Corcoracidae
				Little Raven	*Corvus mellori*	Corvidae
				Fan-tailed Cuckoo	*Cacomantis flabelliformis*	Cuculidae
				Brush Cuckoo	*Cacomantis variolosus*	Cuculidae
				Horsfield's Bronze-Cuckoo	*Chrysococcyx basalis*	Cuculidae
				Shining Bronze-Cuckoo	*Chrysococcyx lucidus*	Cuculidae
				Pallid Cuckoo	*Cuculus pallidus*	Cuculidae
				Eastern Koel	*Eudynamys orientalis*	Cuculidae
				Mistletoebird	*Dicaeum hirundinaceum*	Dicaeidae
				Magpie-lark	*Grallina cyanoleuca*	Dicruridae
				Satin Flycatcher	*Myiagra cyanoleuca*	Dicruridae
				Grey Fantail	*Rhipidura albiscapa*	Dicruridae
				Willie Wagtail	*Rhipidura leucophrys*	Dicruridae
				Rufous Fantail	*Rhipidura rufifrons*	Dicruridae
				Brown Falcon	*Falco berigora*	Falconidae
				Australian Hobby	*Falco longipennis*	Falconidae
				Peregrine Falcon	*Falco peregrinus*	Falconidae

EPBC	LLG	DELWP	Origin	Common Name	Scientific Name	Family
		vu		Black Falcon	*Falco subniger*	Falconidae
			*	European Goldfinch	*Carduelis carduelis*	Fringillidae
			*	European Greenfinch	*Carduelis chloris*	Fringillidae
				Fairy Martin	*Hirundo ariel*	Hirundinidae
				Welcome Swallow	*Hirundo neoxena*	Hirundinidae
				Tree Martin	*Hirundo nigricans*	Hirundinidae
				Silver Gull	*Chroicocephalus novaehollandiae*	Laridae
				Superb Fairy-wren	*Malurus cyaneus*	Maluridae
				Eastern Spinebill	*Acanthorhynchus tenuirostris*	Meliphagidae
				Red Wattlebird	*Anthochaera carunculata*	Meliphagidae
				Little Wattlebird	*Anthochaera chrysoptera*	Meliphagidae
				Blue-faced Honeyeater	*Entomyzon cyanotis*	Meliphagidae
	L	vu		Painted Honeyeater	*Grantiella picta*	Meliphagidae
				Yellow-faced Honeyeater	*Lichenostomus chrysops*	Meliphagidae
				Fuscous Honeyeater	*Lichenostomus fuscus*	Meliphagidae
				White-eared Honeyeater	*Lichenostomus leucotis*	Meliphagidae
				White-plumed Honeyeater	*Lichenostomus penicillatus*	Meliphagidae
				Noisy Miner	*Manorina melanocephala*	Meliphagidae
				Bell Miner	*Manorina melanophrys*	Meliphagidae
				White-naped Honeyeater	*Melithreptus lunatus*	Meliphagidae
				Scarlet Honeyeater	*Myzomela sanguinolenta*	Meliphagidae
				New Holland Honeyeater	*Phylidonyris novaehollandiae*	Meliphagidae
				Crescent Honeyeater	*Phylidonyris pyrrhoptera*	Meliphagidae
			*	Common Blackbird	*Turdus merula*	Muscicapidae
			*	Song Thrush	*Turdus philomelos*	Muscicapidae
				Bassian Thrush	*Zoothera lunulata*	Muscicapidae
				Olive-backed Oriole	*Oriolus sagittatus*	Oriolidae
				Grey Shrike-thrush	*Colluricincla harmonica*	Pachycephalidae
				Crested Shrike-tit	*Falcunculus frontatus*	Pachycephalidae
				Golden Whistler	*Pachycephala pectoralis*	Pachycephalidae
				Rufous Whistler	*Pachycephala rufiventris*	Pachycephalidae
				Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*	Pardalotidae
				Striated Thornbill	*Acanthiza lineata*	Pardalotidae
				Yellow Thornbill	*Acanthiza nana*	Pardalotidae
				Brown Thornbill	*Acanthiza pusilla*	Pardalotidae
				Spotted Pardalote	*Pardalotus punctatus*	Pardalotidae
				Striated Pardalote	*Pardalotus striatus*	Pardalotidae
				White-browed Scrubwren	*Sericornis frontalis*	Pardalotidae
				Weebill	*Smicrornis brevirostris*	Pardalotidae
				Red-browed Finch	*Neochmia temporalis*	Passeridae
			*	House Sparrow	*Passer domesticus*	Passeridae
			*	Eurasian Tree Sparrow	*Passer montanus*	Passeridae
				Australian Pelican	*Pelecanus conspicillatus*	Pelecanidae
				Eastern Yellow Robin	*Eopsaltria australis*	Petroicidae
				Scarlet Robin	*Petroica boodang*	Petroicidae
				Flame Robin	*Petroica phoenicea*	Petroicidae
				Rose Robin	*Petroica rosea*	Petroicidae
				Little Pied Cormorant	*Microcarbo melanoleucos*	Phalacrocoracidae
				Great Cormorant	*Phalacrocorax carbo*	Phalacrocoracidae
				Little Black Cormorant	*Phalacrocorax sulcirostris*	Phalacrocoracidae
				Stubble Quail	*Coturnix pectoralis*	Phasianidae
		nt		Brown Quail	*Coturnix ypsilophora*	Phasianidae
				Tawny Frogmouth	*Podargus strigoides*	Podargidae
				Hoary-headed Grebe	*Poliocephalus poliocephalus*	Podicipedidae
				Australasian Grebe	*Tachybaptus novaehollandiae*	Podicipedidae
				Australian King-Parrot	*Alisterus scapularis*	Psittacidae
				Musk Lorikeet	*Glossopsitta concinna*	Psittacidae
				Little Lorikeet	*Glossopsitta pusilla*	Psittacidae
				Crimson Rosella	*Platycercus elegans elegans*	Psittacidae
				Eastern Rosella	*Platycercus eximius*	Psittacidae
				Red-rumped Parrot	*Psephotus haematonotus*	Psittacidae

EPBC	LLG	DELWP	Origin	Common Name	Scientific Name	Family
				Scaly-breasted Lorikeet	*Trichoglossus chlorolepidotus*	Psittacidae
				Rainbow Lorikeet	*Trichoglossus haematodus*	Psittacidae
			*	Red-whiskered Bulbul	*Pycnonotus jocosus*	Pycnonotidae
				Eurasian Coot	*Fulica atra*	Rallidae
				Dusky Moorhen	*Gallinula tenebrosa*	Rallidae
				Buff-banded Rail	*Gallirallus philippensis*	Rallidae
	L	vu		Lewin's Rail	*Lewinia pectoralis*	Rallidae
				Purple Swamphen	*Porphyrio porphyrio*	Rallidae
				Australian Spotted Crake	*Porzana fluminea*	Rallidae
	L	vu		Baillon's Crake	*Porzana pusilla*	Rallidae
				Spotless Crake	*Porzana tabuensis*	Rallidae
				Black-winged Stilt	*Himantopus himantopus*	Recurvirostridae
VU	L	cr		Australian Painted Snipe	*Rostratula australis*	Rostratulidae
				Sharp-tailed Sandpiper	*Calidris acuminata*	Scolopacidae
		nt		Latham's Snipe	*Gallinago hardwickii*	Scolopacidae
		vu		Marsh Sandpiper	*Tringa stagnatilis*	Scolopacidae
				Southern Boobook	*Ninox novaeseelandiae*	Strigidae
	L	vu		Powerful Owl	*Ninox strenua*	Strigidae
			*	Common Myna	*Sturnus tristis*	Sturnidae
			*	Common Starling	*Sturnus vulgaris*	Sturnidae
				Australian Reed Warbler	*Acrocephalus stentoreus*	Sylviidae
				Rufous Songlark	*Cincloramphus mathewsi*	Sylviidae
				Golden-headed Cisticola	*Cisticola exilis*	Sylviidae
				Little Grassbird	*Megalurus gramineus*	Sylviidae
				Yellow-billed Spoonbill	*Platalea flavipes*	Threskiornithidae
		vu		Royal Spoonbill	*Platalea regia*	Threskiornithidae
				Australian White Ibis	*Threskiornis molucca*	Threskiornithidae
				Straw-necked Ibis	*Threskiornis spinicollis*	Threskiornithidae
				Painted Button-quail	*Turnix varia*	Turnicidae
				Silvereye	*Zosterops lateralis*	Zosteropidae

FISH

EPBC	FFG	DELWP	Origin	Common Name	Scientific Name	Family
				Short-finned Eel	*Anguilla australis*	Anguillidae
			*	Oriental Weatherloach	*Misgurnus anguillicaudatus*	Cobitidae
			*	Goldfish	*Carassius auratus*	Cyprinidae
			*	Carp	*Cyprinus carpio var. mirror*	Cyprinidae
			*	Roach	*Rutilus rutilus*	Cyprinidae
			*	Tench	*Tinca tinca*	Cyprinidae
				Flat-headed Gudgeon	*Philypnodon grandiceps*	Eleotrididae
				River Blackfish	*Gadopsis marmoratus*	Gadopsidae
				Broad-finned Galaxias	*Galaxias brevipinnis*	Galaxiidae
				Common Galaxias	*Galaxias maculatus*	Galaxiidae
				Spotted Galaxias	*Galaxias truttaceus*	Galaxiidae
VU	L	vu		Dwarf Galaxias	*Galaxiella pusilla*	Galaxiidae
				Blue-spot Goby	*Pseudogobius olorum*	Gobiidae
				Southern Pygmy Perch	*Nannoperca australis*	Kuhliidae
VU	L	en		Murray Cod	*Maccullochella peelii peelii*	Percichthyidae
		vu		Golden Perch	*Macquaria ambigua*	Percichthyidae
EN	L	en		Macquarie Perch	*Macquaria australasica*	Percichthyidae
			*	Redfin Perch	*Perca fluviatilis*	Percidae
				Pouched Lamprey	*Geotria australis*	Petromyzontidae
				Short-headed Lamprey	*Mordacia mordax*	Petromyzontidae
				Derwent Flounder	*Taratretis derwentensis*	Pleuronectidae
			*	Eastern Gambusia	*Gambusia holbrooki*	Poecilidae
VU	L	vu		Australian Grayling	*Prototroctes maraena*	Prototroctidae
				Australian Smelt	*Retropinna semoni*	Retropinnidae
			*	Rainbow Trout	*Oncorhynchus mykiss*	Salmonidae
			*	Brown Trout	*Salmo trutta*	Salmonidae

MAMMALS

EPBC	FFG	DELWP	Origin	Common Name	Scientific Name	Family
				Feathertail Glider	*Acrobates pygmaeus*	Acrobatidae
			*	Red Fox	*Vulpes vulpes*	Canidae
				Agile Antechinus	*Antechinus agilis*	Dasyuridae
		rx		Eastern Quoll	*Dasyurus viverrinus*	Dasyuridae
		nt		Fat-tailed Dunnart	*Sminthopsis crassicaudata*	Dasyuridae
	L	dd		Yellow-bellied Sheathtail Bat	*Saccolaimus flaviventris*	Emballonuridae
			*	Cat	*Felis catus*	Felidae
			*	European Hare	*Lepus europeaus*	Leporidae
			*	European Rabbit	*Oryctolagus cuniculus*	Leporidae
				Eastern Grey Kangaroo	*Macropus giganteus*	Macropodidae
				Black Wallaby	*Wallabia bicolor*	Macropodidae
				White-striped Freetail Bat	*Tadarida australis*	Molossidae
				Water Rat	*Hydromys chrysogaster*	Muridae
		dd		Broad-toothed Rat	*Mastacomys fuscus*	Muridae
			*	House Mouse	*Mus musculus*	Muridae
	L	vu		New Holland Mouse	*Pseudomys novaehollandiae*	Muridae
				Bush Rat	*Rattus fuscipes*	Muridae
				Swamp Rat	*Rattus lutreolus*	Muridae
			*	Brown Rat	*Rattus norvegicus*	Muridae
			*	Black Rat	*Rattus rattus*	Muridae
				Platypus	*Ornithorhynchus anatinus*	Ornithorhynchidae
EN	L	nt		Southern Brown Bandicoot	*Isoodon obesulus obesulus*	Peramelidae
EX	L	ex		Western Barred Bandicoot (E. ssp.)	*Perameles bougainville fasciata*	Peramelidae
				Sugar Glider	*Petaurus breviceps*	Petauridae
				Common Brushtail Possum	*Trichosurus vulpecula*	Phalangeridae
				Koala	*Phascolarctos cinereus*	Phascolarctidae
				Common Ringtail Possum	*Pseudocheirus peregrinus*	Pseudocheiridae
VU	L	vu		Grey-headed Flying-fox	*Pteropus poliocephalus*	Pteropodidae
				Short-beaked Echidna	*Tachyglossus aculeatus*	Tachyglossidae
				Gould's Wattled Bat	*Chalinolobus gouldii*	Vespertilionidae
				Chocolate Wattled Bat	*Chalinolobus morio*	Vespertilionidae
				Lesser Long-eared Bat	*Nyctophilus geoffroyi*	Vespertilionidae
				Eastern Broad-nosed Bat	*Scotorepens orion*	Vespertilionidae
				Large Forest Bat	*Vespadelus darlingtoni*	Vespertilionidae
				Southern Forest Bat	*Vespadelus regulus*	Vespertilionidae
				Little Forest Bat	*Vespadelus vulturnus*	Vespertilionidae
				Common Wombat	*Vombatus ursinus*	Vombatidae

REPTILES

EPBC	FFG	DELWP	Origin	Common Name	Scientific Name	Family
				Tree Dragon	*Amphibolurus muricatus*	Agamidae
		dd		Common Long-necked Turtle	*Chelodina longicollis*	Chelidae
				Lowland Copperhead	*Austrelaps superbus*	Elapidae
				Tiger Snake	*Notechis scutatus*	Elapidae
				Red-bellied Black Snake	*Pseudechis porphyriacus*	Elapidae
				Eastern Brown Snake	*Pseudonaja textilis*	Elapidae
				Eastern Small-eyed Snake	*Rhinoplocephalus nigrescens*	Elapidae
				Little Whip Snake	*Suta flagellum*	Elapidae
				Marbled Gecko	*Christinus marmoratus*	Gekkonidae
				Eastern Three-lined Skink	*Bassiana duperreyi*	Scincidae
				Large Striped Skink	*Ctenotus robustus*	Scincidae
				Cunningham's Skink	*Egernia cunninghami*	Scincidae
				White's Skink	*Egernia whitii (group)*	Scincidae
				Southern Water Skink	*Eulamprus tympanum tympanum*	Scincidae
				Delicate Skink	*Lampropholis delicata*	Scincidae
				Garden Skink	*Lampropholis guichenoti*	Scincidae
				Bougainville's Skink	*Lerista bougainvillii*	Scincidae
				Southern Grass Skink	*Pseudemoia entrecasteauxii*	Scincidae
				Tussock Skink	*Pseudemoia pagenstecheri*	Scincidae

EPBC	FFG	DELWP	Origin	Common Name	Scientific Name	Family
		vu		Glossy Grass Skink	*Pseudemoia rawlinsoni*	Scincidae
				Spencer's Skink	*Pseudemoia spenceri*	Scincidae
				Weasel Skink	*Saproscincus mustelinus*	Scincidae
				Blotched Blue-tongued Lizard	*Tiliqua nigrolutea*	Scincidae
				Stumpy-tailed Lizard	*Tiliqua rugosa*	Scincidae
				Common Blue-tongued Lizard	*Tiliqua scincoides*	Scincidae

Appendix 9. Annotated list of fauna (mammals, reptiles and birds) observed at and near Banyule Flats Reserve and Warringal Parklands 1980–2015

As prepared by Richard Loyn, Lyn Easton and Guy Dutson, in conjunction with Fleur Anderson (former Environmental Officer of Banyule City Council) – dated November 2016 (26 pages).

List of Fauna (mammals, reptiles and birds) observed at and near Banyule Flat and Warringal Parklands 1980 to 2015

Compiled by Richard H. Loyn (Eco Insights), Lyn Easton and Guy Dutson for Alice Ewing (Practical Ecology) and Fleur Anderson (City of Banyule).

November 2016

with additional historical records from the notebooks of Anthea Fleming, a published report of Beardsell (1997), a booklet on Birds of Heidelberg and the Yarra Valley (Warringal Conservation Society 1981), historical publications (Keartland 1900; Tarr 1948) and other observations that became known to us.

Introduction

This list includes all bird, mammal, reptile and frog species that we know have occurred at Banyule Flat, Warringal Parklands and nearby publicly accessible areas from 1980 to 2015. It is mainly a compilation of our own observations. RHL has made intermittent observations mainly of birds and mammals since moving to Viewbank in 1987; LE has made almost daily morning walks since 2005, and a detailed study of the resident owls and frogmouths; and GD made frequent visits from 2009 to 2014, including searches for reptiles and frogs. AE has conducted formal surveys in 2014-15 as part of a project for the City of Banyule, and has also extracted data from the Atlas of Victorian Wildlife and BirdData (the database run by BirdLife Australia).

We have also included selected records from the notebooks of Anthea Fleming, who has made intermittent observations since the 1970s. The list builds on an earlier list produced in 2005 by Celia Browne et al. We did not have time to make a broader search of the literature, or of historical data held by particular individuals. Such searches could add detail and records of vagrant species. However, we doubt that they will alter the general picture presented by this list, for the period since 1980. We would like to know much more about the earlier history of the area and its fauna.

The area covered by this list includes all of the Shire Reserves of Warringal Parklands and Banyule Flat, plus associated land managed by Parks Victoria along the Yarra River from Heidelberg to Bonds Road. The near-daily walks conducted by LE usually extend from Somerset Road to the confluence of the Plenty and Yarra Rivers, continuing east along the main Yarra trail to the powerlines. Named land marks include the horse beach (~50m downstream from where the Yarra Trail meets the Yarra River west of the Plenty River), and a windmill ~300m further downstream from there. Observations have also been made in the Rosanna Golf Course near the Plenty River confluence, and in former farmland (now managed by Parks Victoria) on the hill north of Banyule Flat. LE included the main wetland at Banyule Flat in recent years, and we have collated many records from that wetland as it has been a popular destination for birders since it was re-flooded by the Shire in 1999. We have spent much less time in the Warringal Parklands, because the important habitats there (including newly constructed wetlands) are generally small and less diverse than the main wetland at Banyule Flat. BirdLife Australia has conducted annual

"Breakfast with the Birds" public events in spring from 1999 with support from the City of Banyule (through Fleur Anderson, John Milkins et al.) and bird lists were provided by the organiser (Janet Hand): these lists included separate information for Banyule Flat and the Warringal Parklands.

Land use changes affecting habitat values

Much of this area was cleared for farming in the 19th century (from ~1856 when the Banyule Homestead was built) and used for cattle grazing during much of the 19th century. The main wetland at Banyule Flat (commonly known as Banyule Swamp) was partly drained during this period, and fences built across it although it continued to flood in most winters (Fleming 2010). Cattle were removed from the swamp area in ~1985 but continued to be grazed around the billabong to the east. A windmill was used to pump water from the Yarra River to keep the billabong full as a source of water for the cattle and in the 1990s for conservation purposes. The billabong was the main water body in the area during the 1980s and 1990s (Cowling 1991; Fleming 2010). Fish were occasionally released into the billabong, and at times it was popular with local anglers. A bird hide was built overlooking the billabong, but was burned by vandals in the late 1990s. The water level fluctuated in the billabong despite the pumping, and was very low in 1980-81 before Melbourne Water pumped water in at the request of the WCS.

Cattle were removed from the billabong in the later 1990s, and large numbers of trees and shrubs were planted in the former paddocks (Fleming 2010). Previously the WCS had organised a Megaplanting of native plants in spring 1989, with help from other environmental groups. Melbourne Water also undertook revegetation initiatives at this time. Along with natural regeneration and follow-up infill plantings, this has produced a substantial area of planted eucalypts and wattles on the east side of the billabong. Many revegetation efforts have been made in various parts of the whole area. Substantial areas of grassland remain near the main wetland and in the centre of the billabong, and are mown periodically to maintain amenity values. Cattle continue to be grazed on farmland east of the Rosanna Golf Club, extending to Bonds Road and beyond.

When cattle were removed water pumping also ceased and the billabong dried out in 1998 and the early 2000s and remained dry for most of the "millennium drought" to 2009. A dense regrowth of River Red Gum seedlings was produced as the flood receded at that time. The seedlings were then large enough to survive a major early-summer flood in 2005, which lasted several months despite the drought conditions. The billabong flooded again in spring 2010, held water for much of 2011 and dried out in the following months. A few smaller ephemeral wetlands also exist near the billabong, and fill for short periods following heavy rain or floods.

As part of the same management initiative, the Shire raised the level of the drain from the main wetland (Banyule Swamp) in 1999, and established a small settling pond where a stormwater drain enters the swamp in its north-east corner. The pond does a very effective job of trapping rubbish before it enters the main wetland. In consequence, the pond is often dotted with rubbish and this has earned it the unfortunate local name of "the grotty pond" (previously "the grubby pool", Fleming 2010). This nickname evolved when the pond hosted an extremely rare bird, an Australian Painted-Snipe that

inhabited the area in 2001. Despite this label, the pond has become an excellent small habitat for cryptic waterbird species, and a popular place for observing these birds.

The raising of the level of the drain from the main wetland did a very effective job in expanding and restoring this large wetland, described as the most important in the middle floodplain of the Yarra River (Beardsell 1997). It became transformed from a small near-permanent swamp next to a larger seasonally filled swamp of rushes and hardy aquatic plants to an attractive wetland, with a large expanse of open water backed by rush beds on the north and west sides, and a healthy growth of Water Ribbons below the water surface. It dries out in some summers, and during the drying process it attracts more shorebirds than when it is completely full. Nest boxes have been placed in this wetland during the 2000s, but some were then blocked off when they were found to attract Common Starlings and Common Mynas rather than native ducks. A pair of seats has been placed at one of the best vantage points, and they are popular with visitors (including walkers and cyclists as well as birders). Some local people began feeding ducks from this point in the early 2000s, with the unfortunate effect of attracting some introduced domestic ducks. Signs were erected to discourage this practice and there has been no return of the practice or the domestic ducks.

Several changes have been observed in the ecology of this wetland in recent years, as are to be expected from dynamic ecosystems of this sort. For example, it dried out completely at least twice during the Millennium Drought, and low water levels were observed in most summers. There was an extensive growth of algae (Net Weed *Hydrodictyon* sp.) from January to May 2012, accompanied by disappearance of the previously healthy growth of Water Ribbons: it has also been suggested that the Water Ribbons may have suffered from the second drying event, and has been slow to recover. Numbers of dead or dying fish (introduced carp and native eels) were left stranded each time the wetland and billabong dried out. Such changes may contribute to the special nature and diversity of ephemeral wetlands over time.

Acknowledgements

Many thanks to Fleur Anderson and colleagues from the City of Banyule for commissioning this work, and Alice Ewing of Practical Ecology for her contribution. We are also very grateful to Anthea Fleming for providing historical material and her notebooks from the 1970s to the present, Celia Browne for her leading contribution to the previous (2005) list, Cam Beardsell for discussions when we made that list and Peter Menkhorst, Geoff Easton, Janet Hand, Daphne Hards, Anne Kennedy, Neil Murray, James Deane and Debbie Tully for additional records.

Observers are indicated in particular cases by their initials including FTHS (the late Fred Smith), PB (Pat Bingham), CB (Celia Browne), DM (Denise Moore), EM (the late Ellen McCulloch), BO'K (Bernie O'Keefe), the observers mentioned above and the authors.

1. Mammals of Banyule Flats, Warringal Parklands and associated areas 1980-2015.

BF=Banyule Flat (main wetland); WP=Warringal Parklands; river=Yarra River. See map (Fig 1 at end) for other abbreviations. [I] indicates species that were introduced to Australia. [D] indicates domestic animals. [Square brackets indicate species for which further confirmation is needed.] Species names follow Menkhorst and Knight (2001).

Platypus *Ornithorhynchus anatinus*	Regular along the river; surveys by LE revealed 39-76 observations per year 2003-08, rising to 100 in 2011 and falling to 17-34 in 2012-14. Often seen in Yarra at Plenty River confluence, or in next km downstream to horse-beach
Short-beaked Echidna *Tachyglossus aculeatus*	Singles seen on rare occasions; one seen drinking at swamp (JD); one found long-dead
Common Wombat *Vombatus ursinus*	Small numbers resident along river, with scats commonly found (burrows and animals at night occasionally seen) - the closest to Melbourne that this species is resident; has become more common since early 2000s
Koala *Phascolarctos cinereus*	Small numbers occasionally seen but not resident; surveys suggest a decrease since 2011
Common Brushtail Possum *Trichosurus vulpecula*	Common especially where old River Red Gums provide hollows, and in nearby suburbs and golf courses
Sugar Glider *Petaurus breviceps*	Small numbers occasionally seen or heard, mainly along river, perhaps more in 2015-16
Common Ringtail Possum *Pseudocheirus peregrinus*	Common especially where there are thickets of mid-storey shrubs near river, and in nearby suburbs
Eastern Grey Kangaroo *Macropus giganteus*	Mobs often seen in nearby grassland, and sometimes in tall grass beside wetland BF2; rare before 2000s and annual number of observations by LE has risen from 19 in 2003 to 202 in 2014
Black (Swamp) Wallaby *Wallabia bicolor*	Small numbers resident mainly near billabong, max 6 in BF5 and between BF5 and river in 2013; surveys by LE show a rapid increase from no observations 2003-05 to 78 in 2014
Grey-headed Flying-fox *Pteropus poliocephalus*	Regular visitor to flowering trees and to flowering or fruiting trees in nearby suburbs, from downstream roost ~5 km away; numbers increased in 1980s or 90s at same time as Rainbow Lorikeets (thought by some to be in response to drought in NSW, AF).
insectivorous bat spp.	Fairly common but not surveyed. A moribund Lesser Long-eared Bat was found on one occasion, and a dead Chocolate Wattled Bat on another.
Water Rat (Rakali) *Hydromys chrysogaster*	Probably regular, but infrequently seen, along the Yarra River, and occasionally in billabongs (max 3 in Feb 2014)

House Mouse [I] *Mus musculus*	Undoubtedly present but not surveyed; common in nearby suburbs; one photographed on western bike path in 2014 (AF)
Black Rat [I] *Rattus rattus*	Occasionally recorded and likely to be widespread; fairly common in nearby suburbs
Red Fox [I] *Vulpes vulpes*	Regularly recorded especially around wetlands, where up to 3 at a time have been seen patrolling the shores as water levels drop
Domestic Dog [D] *Canis familiaris*	Rarely observed except for pets with their owners
House Cat [D] *Felis catus*	Rarely observed, e.g. a white cat seen hunting near billabong on 29 Jun 1990 (AF), and most are likely to be wandering domestic pets from suburbs where they are common
European Rabbit [I] *Oryctolagus cuniculus*	Common, especially on sandy banks along the escarpment
European Hare [I] *Lepus europeaus*	Singles often seen in wooded grassland BF1 and BF5 in mid 2000s (RHL) but not in recent years

2. Reptiles of Banyule Flats, Warringal Parklands and associated areas 1980-2015.

BF=Banyule Flat (main wetland); WP=Warringal Parklands; river=Yarra River. See map (Fig 1 at end) for other abbreviations. [Square brackets indicate species for which further confirmation is needed.]

Eastern Snake-necked Turtle *Chelodina longicollis*	Several resident BF and in the Yarra River, often basking on logs in water; surveys by LE suggest a recent increase, with 4-9 annual observations 2003-09, 35 in 2010 and 12-26 in 2011-14; seen burying eggs at least twice (AF, RHL). [We know of no records of the Murray Turtle *Emydura macquarii*, an inland species which has been found at some sites near Melbourne, perhaps as a result of introductions.]
Southern Water Skink *Eulamprus tympanum*	One record of two on rocks beside the outflow channel of BF in Sep 2009
Pale-flecked Garden Sunskink *Lampropholis guichenoti*	Abundant and widespread in rank grass and woodland. [The superficially similar Dark-flecked Garden Sunskink L. delicata is recorded from the general area, as is the Weasel Skink *Saproscincus mustelinus*.]
Blotched Blue-tongued Lizard *Tiliqua nigrolutea*	Several observations between Somerset Road carpark and billabong, including slow-moving individuals in cold weather
Eastern Blue-tongued Lizard *Tiliqua scincoides*	Singles recorded several times each year in wooded habitats and sometimes in nearby suburban gardens
Tiger Snake *Notechis scutatus*	Singles recorded most years around BF, other wetlands and the River Yarra corridor; surveys by LE show decrease since 2009 (max 10 observations in 2006; none seen 2011-15, one 25 Oct 2016 (LE) and another 11 Nov 2016 (RHL)

3. Birds of Banyule Flats, Warringal Parklands and associated areas 1980-2015.

BF=Banyule Flat (main wetland); WP=Warringal Parklands; river=Yarra River. [I] indicates species that were introduced to Australia. [E] indicates species that may be escapees or free-flying captive birds. [E+] indicates species that may be descended from escaped captive birds, now breeding wild in parts of Melbourne. {Curly brackets indicate species that have been observed close to the area but not in it.} [Square brackets indicate species for which further confirmation would be useful.] Species order follows Christidis and Boles (2008).

Species	**Notes**
Stubble Quail *Coturnix pectoralis*	Rare visitor to nearby grasslands, mainly in summer; also seen in suburban gardens on rare occasions; previously common in 1970s when area was mainly grazed grassland (Warringal Conservation Society 1981; Fleming 2010.
Brown Quail *Coturnix ypsilophora*	A few heard and seen in rank vegetation BF1&2 for periods of a few months June 2004, Jul 2005, Nov 2008, Oct 2010, Nov 2012, Feb 2013 and Jan 2014; reared 10 young BF2 in Feb 2013. Also recorded breeding 1991-92 (Beardsell 1997), and drinking at nearby gardens in 2000s (per AF).
Freckled Duck *Stictonetta naevosa*	A few BF on rare occasions from 2011 (1 on 4 Nov 2011; 1, Jan 2013; 1 on 4 Feb 2013; 1, Nov 2013; 1 and sometimes 2 for 12 days Dec 2014)
Black Swan *Cygnus atratus*	Pairs breed BF in most years when it contains water, generally excluding other adult swans (including a pair of swans carrying collars from Albert Park Lake, which spent a few weeks on the river and nearby wetlands Sep 2006). Rarely seen on billabong, even when it was regularly flooded in the 1990s, but two were seen there on 1 Mar 1997 (RHL). Rarely seen on the river, except for the pair with collars mentioned above. Began breeding on main wetland in 1999, the year it was first flooded. Another collared swan (F14) spent 3 weeks at the main wetland Jun to Jul 2016 in company with an uncollared bird, but they were then driven off by the resident pair.
Australian Shelduck *Tadorna tadornoides*	Surprisingly rare, but occasionally observed on the flooded billabong in 1970s or 80s (Beardsell 1997) and on main wetland BF2 in recent years: one Aug 2003; 1, 2 or 3 Jan, Apr, May, Jun, Jul, Aug, Sep, Oct and Dec 2005; one Sep 2009; one on fence post 2 Oct 2011, remaining at BF2 into Dec 2011; 4, Nov 2012 and 4, 5, 6, 7 for 10 days in Dec 2012; 2, Aug 2014; surprisingly rare
Australian Wood Duck *Chenonetta jubata*	Common on small wetlands and dams, or sometimes along river, nesting in hollow trees nearby and feeding mainly from short grass in golf course or grazed pasture (but rarely on mown sports ovals); a few sometimes visit BF but usually the species is notable by its absence on that wetland, and much more likely to be seen on the river or in small dams and wetlands including WP. Max 78 BF2 on 4 Feb 2012, 55 on river bend BF5 on 4 Mar 2007 and 65 Warringal Parklands near Sills Bend WP1b May 2015. Rare in Melbourne area before 1983 drought.
Pink-eared Duck *Malacorhynchus membranaceus*	Occasional visitor BF2, typically staying a few days, max 9, Sep 2012 and Jan 2013; 2 seen in Yarra River Sep 2007.

Australasian Shoveler *Anas rhynchotis*	Occasional visitor BF2, typically staying a few days or weeks, max 7 Jun-Jul 2001; 7 on 21 Jul 2002; 6, Jul 2005; a female with 11 new ducklings on 8 Oct 2006, and 6 (2 male 4 female) on 28 Aug 2011. Also seen in ephemeral wetland BF5 several times in Feb 2005; Nov 2008.
Grey Teal *Anas gracilis*	Often present BF2 (max 75 on 6 Feb 2013 and 16, Dec 2013, usually <10) and small wetlands; often dives for food in recent years when water levels are high (instead of dabbling as usual); rare or absent after rains in inland Australia. A pair bred 2009, rearing 4 young in Dec, still present & well grown in Jan 2010.
Chestnut Teal *Anas castanea*	Usually present BF2 (max 25 on 18 Mar 2000; 32 on 28 Feb 2002; 35 on 23 June 2007; 43 on 27 Jan 2013) and a few on small wetlands, especially the grotty pond; breeds locally (broods up to 5 young seen BF). Rarely seen diving for food BF vs the usual dabbling (3 on 10 July 2014; a few Mar-Jul 2015).
Mallard [I]/Domestic Duck [E+] *Anas platyrhynchos*	A small group of domestic ducks (of Mallard or Pekin Duck origin) inhabited BF for a few months in early 2000s while people fed them, but disappeared when this practice was terminated; 1 Khaki Campbell duck seen on 14 days in Feb-Mar 2008; a pair of Khaki Campbell ducks seen on Yarra River in Warringal Parklands on 14 June 2015. These ducks usually associate with their own kind but AF reports a male Mallard paired with a Pacific Black Duck in the flooded billabong on 15 Oct 1980.
Domestic Muscovy Duck [E] Cairina moschata	A white bird on river Nov 2013 and occasionally to Sep 2016, often near Warringal Parklands
Pacific Black Duck *Anas superciliosa*	Usually present BF2 (max 70 on 23 Apr 2003; 75 on 27 Apr 2009; 76 on 7 May 2011; 135 on 7 May 2013; 102 on 1 Apr 2015; 91 on 24 Mar 2013; 50 May 2011 and Mar 2015; usually <30). Also regular on small wetlands and along river, with a regular concentration on riverbend BF5 in mid 2000s, max 45 in Mar 2008 (RHL), and in Warringal Parklands more regularly, eg 30 at Sills Bend on 25 Aug 2008 when there were also 20 on the WP wetlands (RHL); breeds locally, with several broods BF each year but very few broods 2014/2015. One seen diving for food on 10 May 2008 (instead of dabbling as usual).
Hardhead *Aythya australis*	Small numbers BF when water levels are high, max 19 on 24 Sep 2011; 15-20 Jul-Aug 2012; a record 41 on 10 Nov 2012 and 25 still there on 24 Nov 2012. Very low numbers early 2000s (but up to 14 Aug-Sep 2001) with increased frequency and numbers since 2005.
Blue-billed Duck *Oxyura australis*	Singles BF on rare occasions: a female on 18 Nov 2009; a female 1 & 3 Nov 2011 (LE); a female 25 Aug and several days in Sep 2012; 3 females Dec 2012; 1 male Sep 2012; unrecorded sexes Nov 2011 and Aug 2012.
Australasian Grebe *Tachybaptus novaehollandiae*	Usually present BF, max 26 on 28 Feb 2010 (13 adult 13 young, RHL), 20 in May 2010 and 20 on 3 June 2012 and sometimes on small wetlands (eg breeds Martins Lane dam when it contains water); one or more pairs breed at wetlands each year, max 3 pairs in 2009-10. Three seen dabbling for food along vegetated shore on 10 May 2008 (instead of diving as usual). Observed on river only on rare occasions, but two birds flew out separately from riverbank near horse-beach Aug 2009.

Hoary-headed Grebe *Poliocephalus poliocephalus*	Often present BF when water levels are high, max 15 on 1 Sep 2002 and 14 on Dec 2012. seen building a nest on 3 Jan 2013, and a pair bred Jan 2015; absent after rains in inland Australia. Rare in 1990s when the billabong was the main open water, but one seen there on 5 Mar 1995.
Rock Dove [I] *Columba livia*	A flock of these feral birds is resident in nearby farmland, nesting and roosting in the old silos and feeding mainly in horse paddocks nearby. A pair bred under Plenty River bridge at the Rosanna Golf Course spring 2013 and 2014.
Spotted Dove[I] *Streptopelia chinensis*	Common in suburbs and also regular in wooded parkland BF, WP and along river, sometimes drinking at shores of small wetlands (eg often at grotty pond)
Common Bronzewing *Phaps chalcoptera*	Increasingly common in woodland and wooded parkland, often in pairs feeding below wattles (max 20, Jun 2014 and an amazing concentration of 59 feeding below Tree Violets in Aug 2016, LE). Nestlings suffer high predation rates in early breeding season, much more successful in subsequent nestings (Feb and Mar).
Crested Pigeon *Ocyphaps lophotes*	This species was rare in Melbourne till the early 2000s but then became common, feeding mainly in open areas including horse paddocks and sports ovals; 10-20 often on sports oval BF and in other open habitats
Peaceful Dove *Geopelia striata*	One on several days late Nov 2007, beside Yarra from horse-beach to power-lines (PV1) (LE).
Tawny Frogmouth *Podargus strigoides*	An extraordinary density of this species in local woodland and along river, e.g. 8 pairs nesting within 500m of the Somerset Road carpark in 2014; also common in suburbs and farmland nearby (max 23, Dec 2007, and some resident birds were missed that day). Decreased slightly 2015-16.
Australian Owlet-nightjar *Aegotheles cristatus*	A few records mainly from River Red Gum woodland near the Plenty/Yarra confluence east of BF5; one regularly roosted in a hollow there (observed four times Apr 2009; once Aug 2009; four times Sep 2009; twice Oct 2009; 30 times Nov 2009; and 23 times Dec 2009, LE).
White-throated Needletail *Hirundapus caudacutus*	Flocks often seen overhead or flying low over BF in late summer each year until the late 1990s (e.g. 40 feeding low over BF4 on 25 Jan 1993, RHL) but now rare: seen once only in each of Jan 2004, 2007, 2015 (LE).
{Fork-tailed Swift} *Apus pacificus*	Flocks occasionally seen over nearby suburbs in late summer, mainly before thunderstorms; has always been scarce and erratic in this area, and no definite records from BF or WP.
Australasian Darter *Anhinga novaehollandiae*	Singles often present along the river (more frequently from mid 2000s); singles BF on rare occasions (roosting on trees or stumps, not seen feeding there); one record of a recent fledgling in river at Plenty River confluence Jan 2001 (AF).
Little Pied Cormorant *Phalacrocorax melanoleucos*	Often present BF (usually 0-3), on small wetlands and along the river; an unusually large group of 27 was seen circling the wetland and flying over on 17 Oct 2005 (LE)
Great Cormorant *Phalacrocorax carbo*	Occasional visitor along river and BF, where 0-5 sometimes roost in dead trees; sometimes more frequent for a few weeks; an unusually large flock of 50 was seen flying overhead on 17 Oct 2011 (LE)

Little Black Cormorant *Phalacrocorax sulcirostris*	Occasional visitor BF (max 16, Aug 2006 and 14, Apr 2013), where sometimes roosts in dead trees, and along river; small flocks sometimes on billabong during 1990s, and began nesting activity there one winter in 1990s; a flock of 20 flew over on 17 Oct 2011 (LE)
Pied Cormorant *Phalacrocorax varius*	Rare vagrant: singles in river 18 May 2004, 20 Dec 2010 and 20 Jan 2011; one in wetland on the next day 21 Jan 2011; one flying over wetland on 8 Nov 2014, and then seen flying with a Great Cormorant on 13 Nov 2014, at wetland on 16 & 17 Nov 2014 and on snag in river 5 Dec 2014 (LE)
Australian Pelican *Pelecanus conspicillatus*	A few often BF, in the billabong before it dried out and along river early 2000s, sometimes perching on dead River Red Gums BF and roosting at night on crossbar of a nearby power pole (May 1998, RHL), but rarely seen since 2008, with just one record of one on 14 Apr 2014 (LE)
[Australasian Bittern] *Botaurus poiciloptilus*	One heard calling from a seasonal wetland near Banyule swamp on 28 Dec 1991 (Beardsell 1997). Keartland (1900) says that the species was sometimes encountered in lagoons near Heidelberg in late 1800s.
White-necked Heron *Ardea pacifica*	Occasionally seen BF, WP and small wetlands, mostly singles but 7 seen circling Oct 2011; was regular at billabong in 1970s (AF).
Eastern Great Egret *Ardea modesta*	One or two regular in billabong in 1990s. Occasionally seen BF, WP and small wetlands, mostly singles but max 12, Jul 2013; numbers vary, more records in 2012-13 than other years (recorded on 56dates in 2012, 66 in 2013, vs only one date in 2009)
[Intermediate Egret] *Ardea intermedia*	One with Great Egrets at billabong in early 1970s (AF). Single birds believed to be of this species were seen in Jul 2003; Mar, Apr, Sep, Dec 2005; Sep 2007 and Apr 2008 (LE), along Yarra River between horse-beach and windmill. This species is not easy to distinguish from Eastern Great Egret and further confirmation is needed.
Cattle Egret *Ardea ibis*	Winter visitor, often feeding in nearby grazed pasture and roosting in trees BF, or sometimes feeding in wetland BF: max 100 feeding on sports oval WP on 16 July 1995; 100, Sep-Oct 2005 (LE); increased to mid 2000s but then declined (e.g. max 20 in 2009); some stayed into late spring in some years, acquiring various degrees of breeding plumage
White-faced Heron *Egretta novaehollandiae*	At least one resident pair breeds in River Red Gums beside river, feeding on small animals such as skinks in long grass and along shores of BF or small wetlands (max 8, Jan 2010)
Little Egret *Egretta garzetta*	Rare vagrant: one on shores of billabong 3 Apr 1992 (Beardsell 1997) and one BF2 on 2 Feb 2013, following a group of 4 Yellow-billed Spoonbills presumably to catch prey that they disturbed (RHL)
Nankeen Night Heron *Nycticorax caledonicus*	One or two often adults or immatures visit BF and smaller wetlands for a few weeks mainly in spring-summer, feeding among emergent vegetation in wetland (at all times of day) and roosting in trees nearby or along river, or along billabong BF5 if flooded. Nesting along Yarra River in BF5 produced 2 young.
Australian White Ibis *Threskiornis molucca*	A few feed along exposed shores BF, max 16, Feb 2009 and 15, Aug 2012 or at smaller wetlands; occasionally join flocks of Straw-necked Ibis in nearby pasture, or roosting in dead trees BF; larger flocks seen occasionally in farmland north-east of Bonds Road.

Straw-necked Ibis *Threskiornis spinicollis*	Flocks often feed in nearby pasture and ovals 100, Jun 2013 and roost in dead trees BF (max 90, July 2013), sometimes gathering there at any time of day
Royal Spoonbill *Platalea regia*	Occasionally seen BF and small wetlands (including billabong and WP), mostly singles but 4 on 17 Feb 2013
Yellow-billed Spoonbill *Platalea flavipes*	Occasionally seen BF and billabong, mostly singles but 5 together with a Royal Spoonbill in Nov 2011and 4, Feb-Apr 2013.
Black-shouldered Kite *Elanus axillaris*	Singles occasionally seen over rank grassland but mainly in nearby farmland. Nested on pylon Oct 2006 producing 3 young. More frequent in 1980s and 90s than in 2000s.
Whistling Kite *Haliastur sphenurus*	Up to 14 gathered at billabong to feed on trapped carp when it was drying in April-May 2013; otherwise seen occasionally in many years. One bird seen going to ground and returning to perch with remains of Common Ringtail Possum, Jan 2016.
Black Kite *Milvus migrans*	One soaring over BF on 28 May 2015 (LE). The species was common near Melbourne in the 19th century (Keartland 1900) but absent for most of the 20th century, and is now staging a revival.
Brown Goshawk *Accipiter fasciatus*	Breeding resident in wooded habitats, also hunting for birds and rabbits in a range of habitats including nearby suburbs.
Collared Sparrowhawk *Accipiter cirrhocephalus*	Seen in most years, mostly hunting for birds in wooded habitats; a pair regularly nested in clump of pine trees WP3 during 2000s, eg Dec 2005.
Grey Goshawk *Accipiter novaehollandiae*	Singles of the white form observed BF 13 Mar 1990 (one hunting near billabong, RHL), 2004 (one resident near river, e.g. 3 observations May -Jun 2004, LE), 2007 (3 observations May & Aug 2007, LE) and Feb 2015 (LE).
Spotted Harrier *Circus assimilis*	One on 23 Mar 2014 near small wetland in farmland east of Banyule Flats, perched in wattle being harassed by Brown Goshawk, then took flight eastward harassed by ravens and magpies.
Swamp Harrier *Circus approximans*	Singles over BF on rare occasions, e.g. one attacking waterbirds on 12 Oct 2001 (RHL); 2 observations Jan 2005; 1 , Nov 2005; 1 , Apr 2010 (LE); 1 over BF5 June 2013.
Wedge-tailed Eagle *Aquila audax*	Pair often resident in farmland east of BF (near power-lines), nesting in some years at Westerfolds Park; occasionally seen hunting throughout area. Number of annual observations by LE: 1, 2004; 1, 2005; 10, 2006; 1, 2007; 71, 2008; 31, 2009; 7, 2010; 1, 2011; 5, 2013; 5, 2014; none in 2015 or 2016.
Little Eagle *Hieraaetus morphnoides*	Singles sometimes seen hunting BF and open country (most years but not resident or regular); usually flying high but sometimes low over BF and probably actively hunting rabbits.
Nankeen Kestrel *Falco cenchroides*	Singles rarely over open country and perched on dead trees at wetlands. Nested in hollow of dead tree in open farmland east of Banyule Flats spring 2011.
Brown Falcon *Falco berigora*	Singles rarely over open country. Believed to have nested in clump of trees under powerlines in open farmland east of Banyule Flats 2008 (18 observations by LE Aug-Oct)

Australian Hobby *Falco longipennis*	Singles and pairs often seen hunting for birds over wetlands and nearby suburbs: probably breeding resident. Seen occasionally at wetlands on dead trees launching to catch dragonflies, returning to perch and feeding, with dragonflies' wings floating away. Fewer records since 2013 than previously.
Black Falcon *Falco subniger*	One over pasture just east of BF Dec 2015, landing in eucalypt (LE)
Peregrine Falcon *Falco peregrinus*	Singles observed several times each year in general area, hunting for large flying birds over all habitats
Purple Swamphen *Porphyrio porphyrio*	Breeding resident BF and small wetlands when they contain water; mainly inhabits vegetated western and northern shores of BF, often seen well at grotty pond
Buff-banded Rail *Gallirallus philippensis*	Pairs breed in most years, eg in ephemeral swamps near Somerset Road carpark; often seen along shores of BF, grotty pond or WP (max 9 around BF, Nov 2013; 3 pairs BF, Dec 2012; 2 at WP3, Sep 2012) when suitable muddy shores are exposed, and foraging in nearby open grassland including golf course
Baillon's Crake *Porzana pusilla*	Several BF most summers (Sep-Mar, every year 2005-9 and 2012-13), often feeding among emergent vegetation close to shore or along exposed muddy shores (max 2, Dec 2012). One seen feeding from edge of Black Swans' nest on 12 Sep 1999, the first year the wetland was reflooded. Rarely seen since Water Ribbons disappeared in 2012.
Australian Spotted Crake *Porzana fluminea*	A few visit BF (max 4 on 9 Jan 2013) and small wetlands many summers, feeding along exposed muddy shores; can sometimes be seen well at grotty pond
Spotless Crake *Porzana tabuensis*	A few BF in most recent years (mainly at or near the grotty pond), feeding below dense vegetation and from exposed muddy shores; successfully reared two young at the grotty pond in 2012-13 (2 adults 2 juveniles on 17 Jan 2013, RHL).
Black-tailed Native-hen *Tribonyx ventralis*	Rare vagrant; one bird BF on 24 Sep 2009 (LE). (An earlier second-hand report of one nearby at Annulus Billabong south of Bourke Road Mar-Jul 1986 (per AF))
Dusky Moorhen *Gallinula tenebrosa*	Breeding resident BF (vegetated shores and grotty pond,) max 52 BF on 28 Feb 2002; 42 BF on 9 Apr 2012 (RHL), along river and on small wetlands including WP
Eurasian Coot *Fulica atra*	Often present BF (max 234 on 25 Feb and 240 on 24 Nov 2012, LE) and sometimes on small wetlands including WP; occasionally breeds BF, e.g. pairs with 2 young Feb 2009, Nov 2009 and Oct 2010; several pairs bred 2009-10. The high numbers in 2012 coincided with a temporary bloom of algae, followed by disappearance of Water Ribbons from the wetland: both plants are eaten by coot. In 2014-15, a flock of up to 16 took to grazing from golf greens on Rosanna Golf Course. Individuals have occasionally been seen feeding from bankside vegetation along river.
Black-winged Stilt *Himantopus himantopus*	One, two or three pairs often present BF and WP when water levels are high and falling, often breeding in spring BF; occasionally present at smaller wetlands. Max on main wetland BF 14, Nov 2006.
Black-fronted Dotterel *Elseyornis melanops*	Pairs sometimes present and breeding BF, WP and smaller wetlands; more gather BF as water levels drop, max 11, Feb 2014; 10, Apr 2005, and 6, Feb 2013. More common in 1990s when billabong was regularly filled.
Red-kneed Dotterel	A few on shore BF as water dries out leaving exposed mud, max 5, Jan-Feb 2013.

Erythrogonys cinctus	
Masked Lapwing *Vanellus miles*	Many pairs resident in general area, including suburbs (nesting on flat rooves & feeding on sports ovals, schoolyards and grass verges), wetlands (BF, WP and smaller wetlands) and golf courses. Often a pair or two BF2, occasionally up to ~12; larger flocks more frequent previously, max 24 on 11 Feb 1976 (AF).
Banded Lapwing *Vanellus tricolor*	One on 30 Jan 2015 on western edge of wetland BF2
Australian Painted Snipe *Rostratula australis*	One immature female of this endangered species took up residence at and near grotty pond (BF2), Oct-Dec 2001
Latham's Snipe *Gallinago hardwickii*	Regular summer visitor BF2, e.g. 10 on 6 Jan 2003; 16, Dec 2006; 25 on 31 Dec 2006 (RHL); 13, Jan 2008; 5, 2009 and 2012; 23 on 25 Jan 2013 (RHL); 19, Feb 2013; 9, Jan 2014 and less often on other wetlands; mainly seen when water levels drop away from vegetation and these birds may feed openly from exposed mud, resting on roots of Water Ribbons, even seen higher on dead trees at wetlands; can often be viewed well at grotty pond. Higher numbers were recorded in the 1980s and 1990s when the billabong was regularly flooded, e.g. 37 on 26 Nov 1980 (AF), 30 on 30 Dec 1994 and up to 50 during snipe surveys at both wetlands (Beardsell 1997).
Sharp-tailed Sandpiper *Calidris acuminata*	Rare vagrant: two at BF2 26-28 Oct 1999 soon after the water level was raised (AF & FTHS)]
{Painted Button-quail} *Turnix varia*	Not recorded in actual area but a few records nearby: one in River Red Gum woodland Martins Lane on 19 Oct 2003 (RHL); one in nearby suburban garden 16th & 17th April 2009 (LE); and one at Rosanna Golf Links Primary School, March 2009 (DT), the latter caught and released at Martins Lane.
Whiskered Tern *Chlidonias hybrida*	One in wetland BF2 5 Nov 1999, and found dead on bank two days later (FTHS, AF); two perching on posts in wetland 1 Nov 2015 (LE)
Silver Gull *Chroicocephalus novaehollandiae*	Small numbers feed from exposed mud BF when water levels drop to low levels, e.g. one on 4 Dec 2002 and two, Nov 2005; otherwise surprisingly rare until late 2000s when a pair took up residence and began nesting each year from 2009 when water levels were high, either in fork of dead River Red Gum or in open-topped nest-box from 2009 and failing to fledge any young despite numerous attempts; it successfully reared young in Dec 2010; 2011 x 3; 2012; 2013; and in 2014 two pairs fledged young and aggressively excluded other gulls. The second pair became established in 2014 when broods of 1 and 3 fledged successfully from nests in the tree-fork and nest-box respectively. The species then became more regular even when water level was high, eg 12, Feb 2014, and 18 on 12 Oct 2014.
Yellow-tailed Black-Cockatoo *Calyptorhynchus funereus*	Regular small numbers of non-breeding birds, max 100, May 2009, often feeding on grubs under bark of wattles. Flocks of 40-60 regularly in years 2005 to 2009, containing dependent young; 70 in poplars June 2011. As wattles have died off in plantations along river and surrounds numbers have declined markedly since ~2010.

Gang-gang Cockatoo *Callocephalon fimbriatum*	One or two, occasionally three (June 2013) are erratic but regular winter visitors, sometimes feeding on Hawthorn berries along north of BF5. Small flocks of 8 to 12 birds; 70 feeding in Hawthorn bushes along Yarra Trail 100 metres east of PV1, Mar 2009.
Galah *Cacatua roseicapilla*	Common in lightly wooded open country (from 1970s), often feeding in pairs on sports ovals and along grass verges of suburban roads
Long-billed Corella *Cacatua tenuirostris*	Common in lightly wooded open country (from early 1990s), often feeding in small flocks in horse paddocks or in pairs on sports ovals. Flocks of 130, Jun 2005 and 200, Apr 2009 flying over. [Who saw these? Are we sure they were long-billed?]
Little Corella *Cacatua sanguinea*	Common in lightly wooded open country (from mid 1990s), and flocks regularly use red gums BF for perching and drinking; seen feeding on wattle blossom BF Nov 2014; max 60 pre-roost BF 9 Dec 2012 (GD); ~100, May 2011; 74, Oct 2012; 200, Aug 2014 on dead trees at wetland
Sulphur-crested Cockatoo *Cacatua galerita*	Common in lightly wooded open country (from 1980s) and in red gums along river; flocks feeding mainly in pasture, less often from sports ovals. Nest in large riverside River Red Gums.
Cockatiel [E] *Nymphicus hollandicus*	One or two birds often on wires Banyule Road, and occasionally along river or elsewhere; one of them is banded and both are believed to be escaped or free-flying cage-birds
Rainbow Lorikeet *Trichoglossus haematodus*	Abundant (from early 1990s) along river and in all treed areas including suburbs, feeding from blossom of eucalypts and on fruit (also on wattle blossom Nov-Dec 2014) and nesting in tree hollows mainly along river. Rare in Melbourne for most of the 20th century (Loyn and Menkhorst 2011); local records were considered noteworthy as late as 1991 (AF)
Scaly-breasted Lorikeet [E+] *Trichoglossus chlorolepidotus*	A few seen occasionally along Yarra Trail, nearby suburbs (gardens & street trees), often as pairs among groups of Rainbow Lorikeets
Musk Lorikeet *Glossopsitta concinna*	Common visitor to flowering eucalypts or fruiting trees, in varying numbers with influxes often in December or Jul-Aug, max ~50
Little Lorikeet *Glossopsitta pusilla*	A few records most years, mainly of 1 or 2 birds in riverside trees , flying over or nearby gardens, max 10 on 10 Mar 2007 (RHL); 3 BF3 Dec 2013 (GD) and over 100 records , but 3 or 4 max usually flying over or in riverside eucalypts near Yarra/ Plenty confluence (LE).
Purple-crowned Lorikeet *Glossopsitta porphyrocephala*	Flocks up to 6 or 8 flying over BF3, BF5 and PV1 in flowering Sugar Gums and other eucalypts, mainly in suburbs. Attempted to nest in a small hollow in a River Red Gum near golf course, but driven away by Red-rumped Parrots (which proceeded to nest there).
Australian King-Parrot *Alisterus scapularis*	Pairs seen along river and in nearby suburbs from ~2005, probably now resident in very small numbers. Nesting near confluence of Yarra and Plenty Rivers 2007 and 2008.
Crimson Rosella *Platycercus elegans*	Mainly winter visitor to riverside forest (max 10 on 18 & 26 July 2003 (RHL) and 20, June 2013 (GD)) with a few also in suburban gardens; a few pairs remain over summer and probably breed locally in riverside forest

Eastern Rosella *Platycercus eximius*	Common resident in open woodland including golf courses
Red-rumped Parrot *Psephotus haematonotus*	Common resident in open woodland including golf courses. In mid 2000s often seen in flocks of 40-106, but somewhat fewer in recent years. Two known nest sites along Yarra River now inhabited by Rainbow Lorikeets. Three nest sites at wetlands, one being investigated by Rainbow Lorikeet Feb 2015.
Budgerigar [E] *Melopsittacus undulatus*	Occasional records of escaped cage-birds (blue)
Blue-winged Parrot *Neophema chrysostoma*	Flock of 10 seen feeding beside swamp and billabong on 3 Apr 1992 (Beardsell 1997); one seen on dead wattle near river PV1, Oct 2003 (LE) and two near powerlines Oct 2015 (LE); also reported in 1947 (Tarr 1948).
Rose-ringed Parakeet [E] *Psittacula krameri*	One flying over July 2016, presumed escapee (this species is native to Asia & Africa, but is often kept as pets)
Australian Koel *Eudynamys cyanocephala*	A male seen on riverside dead tree near powerlines 1 km east of Banyule Flats on 14 Mar 2011 (LE); others heard nearby in spring of several recent years
Horsfield's Bronze-Cuckoo *Chrysococcyx basalis*	Singles in woodland mainly Aug-Oct; some remained later in previous decades when generally more common
Black-eared Cuckoo *Chrysococcyx osculans*	Singles seen in riverside vegetation east of powerlines 1 km east of Banyule Flats Nov 2006 and Feb 2008 (LE).
Shining Bronze-Cuckoo *Chrysococcyx lucidus*	Summer visitor mainly to riverside forest, calling Sep-Dec and silent individuals sometimes seen later
Pallid Cuckoo *Cuculus pallidus*	Irregular summer visitor to open woodland and adjacent riverside forest Aug-Dec, or juveniles through to March; more in some years than others (many in 2005, 2007, 2008, 2009, 2010 and none 2012, 2013, 2014.) A juvenile seen fed by Bell Miners near Plenty River 5 Mar 1995.
Fan-tailed Cuckoo *Cacomantis flabelliformis*	Fairly common in riverside forest and nearby woodland Aug-Nov, and a few at other times of year. Still present till Jan but often silent. At least one calling in winter some years including 2015. May have declined somewhat in recent years.
Brush Cuckoo *Cacomantis variolosus*	One calling in riverside forest 8 Nov 2016, in morning and evening (LE, AK); one recorded next day near Bulleen.
Powerful Owl *Ninox strenua*	Pair breeds in riverside forest and nearby woodland, feeding on possums and large birds; a few other adults seen occasionally from 2002 to 2005, not since; 12 young birds reared from this female 2005-16 from four different nests, with nesting attempted in nine of the eleven years (all except 2010 or 2013), and failed three times including one year when they tried twice (in 2006).

Southern Boobook *Ninox boobook*	Has bred in open woodland near Rosanna Golf Course 2009 and near Banyule ovals 2015 (3 young); individuals sometimes inhabit riverside forest for a few weeks, but surprisingly scarce
Eastern Barn Owl *Tyto javanica*	Singles found roosting in trees near billabong on rare occasions: 16 times Sep-Oct 2005; May, Aug, Sep 2011; Jun-Sep 2012; May & Jul 2014 (LE)
Azure Kingfisher *Alcedo azurea*	Occasionally seen along river, where bred successfully Feb 2004; once seen fishing in billabong (June 2012), once at main wetland and once at WP3 (Sep 2012); recording rates along river have declined from 8 to 12 observations per year from 2002 to 2010; only 4, 1 or 2 records in 2011, 2012, 2014 and 2015 and no records in 2013 (LE).
Laughing Kookaburra *Dacelo novaeguineae*	Fairly common in riverside forest and open woodland including golf courses. Breeding along river in hollows in eucalypts but also records of breeding in Poplar and Willow trees.
Red-backed Kingfisher *Todiramphus pyrrhopygius*	One perched on sanctuary notice-board on 17 Nov 1985 (AF); detailed description provided
Sacred Kingfisher *Todiramphus sanctus*	Fairly common summer visitor (Sep-Mar) to riverside forest, where it nests (in holes in riverbank, or hollow tree spouts), feeding mainly on insects and skinks; possibly declined in recent years
Dollarbird *Eurystomus orientalis*	One bird seen perched in River Red Gum 120 metres from PV1 on 6 Nov 2009 (LE, NM)
White-throated Treecreeper *Cormobates leucophaeus*	One took up residence in riverside forest from corner of PV1 near horse-beach to downstream 220 metres ; with 83 observations by LE and some by RHL, GD et al. between 23 Dec 2010 and Dec 2013, mostly feeding from trunks of wattles and dead eucalypts.
Satin Bowerbird *Ptilonorhynchus violaceus*	One in eucalypt near powerlines 1 km east of Banyule Flats on 16 Nov 2009 (LE).
Superb Fairy-wren *Malurus cyaneus*	Common in riverside forest and in scrub near wetlands; declined in drought 2000-09, eg disappearing from Martins Lane dam, but still reasonably common near wetlands and river.
White-browed Scrubwren *Sericornis frontalis*	Common in riverside forest and in other shrubby woodland (mostly near streams or wetlands, occasionally in gardens)
Weebill *Smicrornis brevirostris*	Up to 6 in regrowth eucalypts BF during drought Mar to Sep 2007 (RHL, LE) and groups seen once in Mar 2009 and once in Feb 2016 (LE)
White-throated Gerygone *Gerygone olivacea*	Two singing males just east of BF5 on 17 Nov 2012 were presumably passage migrants as absent a week later (GD). Another singing same area 27 Oct 2016 (LE). (One in Viewbank suburbs 4 Oct 2001 (RHL).)

Striated Thornbill *Acanthiza lineata*	Small groups occasionally in riverside forest where has bred (feeding young near windmill BF5 in Jan 2013) and nearby eucalypt stands, also up to 3 east of BF5 May and Oct 2013. Groups of 10 to 12 regularly in recent years along riverside since 2008, mostly 0-200m downstream from windmill BF5. Reported as "very common" in 1940s (Tarr 1948).
Yellow Thornbill *Acanthiza nana*	One family group PV1 often wanders into BF5; fledglings noted in 2012. Very often in eucalypt and wattle plantatations east of billabong PV1 and to powerlines 1 km east of Banyule Flats.
Yellow-rumped Thornbill *Acanthiza chrysorrhoa*	Now rare, mainly seen in cattle pasture east of power-lines; previously common (when cattle were grazed near BF); groups seen occasionally BF to late 2000s. Nested in BF5 Oct 2008
Brown Thornbill *Acanthiza pusilla*	Abundant in riverside forest, plantations of eucalypts and wattles and anywhere with tall shrubs; often in suburban gardens
Spotted Pardalote *Pardalotus punctatus*	Common in eucalypts, including riverside forest and patches of woodland elsewhere, often in gardens. Nesting regularly in burrows along riverbank and escarpment along Yarra Trail.
Striated Pardalote *Pardalotus striatus*	Often present in mature River Red Gums near river, sometimes elsewhere, nesting in tiny hollows in River Red Gums along river. Generally scarce (up to 4 birds) and no recent records of large flocks.
Eastern Spinebill *Acanthorhynchus tenuirostris*	A few all year in riverside forest; more in winter when also found in nearby gardens. Max 8, Apr 2006.
Yellow-faced Honeyeater *Lichenostomus chrysops*	In 2000s considered mainly a summer visitor (Sep-May) to riverside forest and nearby woodland; has increased in recent years and is now often present in all seasons (first June record was in 2016, LE). Visible migration evident in April/May, perhaps less often than previously. Breeding confirmed Jan 2015 and suspected in most recent years.
White-eared Honeyeater *Lichenostomus leucotis*	One in riverside eucalypt past powerlines 1 km east of Banyule Flats 19 Feb 2007 (LE) and one in same area on 1 Apr 2015 (LE)
White-plumed Honeyeater *Lichenostomus penicillatus*	Abundant in riverside forest and suburban gardens to 1990s; disappeared from gardens in early 2000s and declined in riverside forest post-drought (2010-14); now persists along river in very small numbers; formerly also occurred in plantations of eucalypts and wattles. Bred Dec 2014 (near powerlines, first for several years) (LE).
Bell Miner *Manorina melanophrys*	Colonies mainly in riverside forest; increased during drought, expanding into regrowth eucalypts BF, then vanished from whole area in early years post-drought from July 2009 with a temporary reappearance of 3 or 4 birds beside river near powerlines for seven days in Oct 2013, and at least one bird again near powerlines 1 Nov 2016.
Noisy Miner *Manorina melanocephala*	Abundant in open woodland including golf courses and margins of wetlands and sports ovals; also in suburban gardens; has increased steadily since 1990s

Spiny-cheeked Honeyeater *Acanthagenys rufogularis*	Singles in dead wattles near Yarra Trail in PV1 (in dead wattles horse-beach to windmill): Jan 2008; Apr 2008; Aug 2014; one in wattles with box mistletoes near powerlines on 11 & 12 Apr 2015
Little Wattlebird *Anthochaera chrysoptera*	Common in suburban gardens with flowering Grevilleas, Banksias, etc; occasionally seen BF in vegetation surrounding wetland or riverside forest
Regent Honeyeater *Xanthomyza phrygia*	One in riverside forest with wattles near power lines 4 Jan to ~14 Jan 1998 (PB, CB, DM, EM, AF et al.)
Red Wattlebird *Anthochaera carunculata*	Common in riverside forest, suburban gardens and most wooded areas, max 50, BF, April 2013 (GD); 100 near powerlines 1 km east of Banyule Flats Mar 2008. Flocks of 30-40 seen in Feb/Mar most years. (LE)
White-fronted Chat *Epthianura albifrons*	Small numbers occurred at billabong in 1970s and 80s, possibly as winter visitors (Beardsell 1997); fairly common in 1940s (Tarr 1948)
Scarlet Honeyeater *Myzomela sanguinolenta*	Several feeding from Box Mistletoe 2 Apr to Sep 2010; 9, Apr 2010 with 65 records by LE, max 12 Aug 2010 (RHL); this was part of an extraordinary influx of this species to southern Victoria where the species had previously been regarded as a scarce summer visitor to East Gippsland
New Holland Honeyeater *Phylidonyris novaehollandiae*	Several in shrubs near BF5 and PV1 in plantation east of billabong and on west side of main wetland (at planted flowering Grevilleas) with seasonal disappearances, eg disappeared in winter 2013, back in Nov 2013; a few in nearby gardens but generally uncommon, max 5 or 6, Feb 2014.
White-naped Honeyeater *Melithreptus lunatus*	Occasional small flocks in riverside forest and other stands of mature eucalypts, mainly in winter, eg 3 on 2 June 2001; 5 to east of BF5, June 2013; up to 7 Mar 2015, and several records of 2 or 3 birds June and Aug 2016.
Noisy Friarbird *Philemon corniculatus*	4 records: several birds in riverside eucalypts just downstream of powerlines 1km east of Banyule Flats on two days in Mar 2007; several birds in trees next to Somerset Drive carpark on one day in Mar 2007 and one at ephemeral wetlands behind billabong BF5 Mar 2007. One reported nearby (Price Park) for several weeks in early 2015.
Little Friarbird *Philemon citreogularis*	One on top of dead wattle on side of Yarra Trail near horse-beach PV1 on 29 Sep 2014 (LE)
Painted Honeyeater *Grantiella picta*	One heard, seen & photographed near powerlines east of BF5 on 14 Jan 2013 (BO'K): this species is rare south of the Great Dividing Range.
Black-faced Cuckoo-shrike *Coracina novaehollandiae*	Common in riverside forest and most other stands of tall eucalypts, especially in summer but a few remain over winter. Numbers increasing over last 5 years.

White-winged Triller *Lalage tricolor*	Erratic summer visitor to eucalypt woodland near river and billabong, in varying numbers, eg 4 males Oct 2000; up to 20 in Oct 2009; 3 nests in two adjoining eucalypts forming one canopy Nov and Dec 2009, 50 metres upstream from horse-beach; 6 in Dec 2012, rare 2014-15.
Crested Shrike-tit *Falcunculus frontatus*	One or more pairs resident in riverside forest and nearby stands of eucalypts; has declined in recent years: 24 records in 2015, none in 2016.
Olive Whistler *Pachycephala olivacea*	One, May 2013, in dense native shrubs beside billabong just east of BF5 (GD); one on 9 Sep 2013 and two subsequent dates in spring 2013 (RHL, PWM) one in Tree Violets near powerlines 1km east of Banyule Flats Sep 2014 (LE).
Golden Whistler *Pachycephala pectoralis*	Common in shrubs in riverside forest and plantations of eucalypts and wattles. Declined from 9 or 10 known territories in late 2000s to 3 or 4 in recent years.
Rufous Whistler *Pachycephala rufiventris*	Summer visitor (Sep-Apr) to open woodland and plantations of eucalypts and wattles, avoiding areas dominated by Noisy Miners; numbers declined in recent years from 5 or 6 known territories in late 2000s to 1 or 2 in recent years (2012-16), but still occupied by presumed breeding pairs (e.g. in 2012 just east of BF5, and in 2014 one pair in riverside forest near golf course and one pair near poplars and windmill).
Grey Shrike-thrush *Colluricincla harmonica*	Common in riverside forest and plantations of eucalypts and wattles.
Olive-backed Oriole *Oriolus sagittatus*	Summer visitor (Aug-Dec, then goes quiet) to riverside forest and nearby woodland including golf courses; occasional birds have stayed into early May or over-wintered; earliest record one on 30 July 2011 (GE); one overwintering near horse-beach in 2015, calling quite often.
White-breasted Woodswallow *Artamus leucorynchus*	One over BF on 10 Jun 2000 (RHL)
Masked Woodswallow *Artamus personatus*	One over billabong Oct 2002 (LE); a few with Dusky Woodswallows at powerlines Aug 2008 (LE)
White-browed Woodswallow *Artamus superciliosus*	Flock of 30 flying over billabong on 14 Oct 1994 (RHL) and small flock Oct 2009 (LE); other flocks nearby in some summers
Dusky Woodswallow *Artamus cyanopterus*	Summer visitor (Sep-Apr); a few in open woodland near power-lines where they breed most years and less often near BF though a number of observations near windmill spring 2012, 2013 and 2014.
Grey Butcherbird *Cracticus torquatus*	Common in open woodland, mainly where there are Noisy Miners
Australian Magpie *Gymnorhina tibicen*	Common in open woodland, pasture and other open areas (including sports ovals, golf courses and suburban gardens). Large groups of up to 100 have been seen occasionally in nearby farmland.

Pied Currawong *Strepera graculina*	Fairly common in forest, woodland and treed gardens, with flocks up to 50+ in winter but increasingly some pairs remaining over summer and breeding locally
Grey Currawong *Strepera versicolor*	Small numbers resident among trees including parks and golf courses and breeding locally, near wetlands.
Rufous Fantail *Rhipidura rufifrons*	Singles in riverside forest on spring or autumn passage in many years, mainly late October to early November or late March to early April, near river east of BF5, e.g. 21 Oct 2003; 27 Oct 2013 (JD); 23 Oct 2016 (DH); 4 Mar 2005; 3 Apr 2007; 21 Mar 2015.
Grey Fantail *Rhipidura fuliginosa*	Abundant in most wooded habitats except those dominated by Noisy Miners; more in summer than winter; some dark birds of Tasmanian race observed in winter; largest concentration 25 on east side of billabong on 8 Sep 2012.
Willie Wagtail *Rhipidura leucophrys*	Formerly common in open habitats but became scarce in drought 2000-09; now rare except among cattle in pasture east of study area, and sometimes a few round BF wetland and in horse paddocks nearby. Nesting observed every year until 2013, but no nests found in 2014 (though young birds were seen on 4 Jan 2015).
Little Raven *Corvus mellori*	Common in open country and suburbs, but quite rarely observed on sports ovals or golf courses. Nest in Eucalypts along river.
Leaden Flycatcher *Myiagra rubecula*	Singles in riverside forest on 14 Nov 2004; 29 & 30 Oct 2007; 2 & 11 Nov 2010 on spring passage
Satin Flycatcher *Myiagra cyanoleuca*	Singles in riverside forest on 31 Oct 2002; 15 Nov 2004; 29 to 4 Nov 2005 (female); 3 Dec 2005 (female); 22 & 23 Oct 2007 (female); 24 Oct 2010; 20, 24 & 25 Oct 2011; 30 Oct 2012; 25 & 26 Oct 2013; xx-27 Oct 2016. All on spring passage, mostly singles in late October or early November, but a female seen and male heard near horse-beach on 26 Oct 2013, the day after a male had been seen there on 25 Oct 2013.
Magpie-lark *Grallina cyanoleuca*	Common in open woodland, beside wetlands and in some gardens, often feeding from short grass on sports ovals and golf courses. Nesting near wetlands, near billabong and along river.
White-winged Chough *Corcorax melanorhamphos*	A small group nested in open woodland PV1 in spring 2012 (8 birds) but were unsuccessful (perhaps because harried by Pied Currawongs); four adults and three young were seen BF5 on 27 Oct 2016 (LE), after just occasional records in preceding months (LE, AK). Occasional records in open woodland at other times (mainly outside the study area, e.g. at end of Martins Lane). Up to 20 seen in PV1, from 16 June 2012; a dozen observations near powerlines 1 km east of Banyule Flats (20 on 12 Mar 2016) and near Plenty River bridge at confluence with Yarra River Jan 2015.
Scarlet Robin *Petroica multicolor*	One juv near billabong on 19 Jan 1999 (RHL); one male singing BF2 on 21 Jul 2002; records by LE include 10 in2003; 1 pair seen 27 times in PV1 in 2004; quite erratic observations since then, with none in 2005 or 2006; 9 in 2007; 2 in 2008; 23 in 2009; 31 in 2010; 1 in 2011; 18 in 2012; 20 in 2013 (even though LE was away Apr-Jun), 17 observations in 2014. Locations have been from BF5 behind the billabong to farmland beyond powerlines 1 km east of Banyule Flats; with many in PV1 and along Yarra Trail on fences. Max 6, May 2014 (LE) and up to 5 wintered BF5 Apr-Jul 2013 (GD).

Red-capped Robin *Petroica goodenovii*	One female or immature seen on 3 days to east of BF5, on 2, 4 & 5 Oct 2013 (LE, RHL, GD); occasional other records.
Flame Robin *Petroica phoenicea*	Winter visitor, with flocks up to ~15 in open grassland Mar-Sep; declined since 1990s, now mainly in cattle pasture east of study area. Seen occasionally along Yarra Trail dropping to path from nearby wattles and occasionally in BF5 on fence posts.
Rose Robin *Petroica rosea*	Singles on spring passage Aug-Nov, mainly in riverside forest, often in wattles, eg one on 25 Sep 2010 (LE) and a female 4 Oct 2013 (chasing with a female Red-capped Robin) (LE, RHL), mostly single males but two together in one early year near powerlines.
Pink Robin *Petroica rodinogaster*	Rare winter visitor: one female Apr 2007; two on 10 May 2013, one remaining to 28 May, feeding in dense River Red Gum regrowth over muddy drying billabong in BF5 (GD)
Eastern Yellow Robin *Eopsaltria australis*	Resident among shrubs in riverside forest and regrowth in billabongs; declined during drought 2000-09. In early 2000s LE found many nests, but no nests found for several years (although evidence of nesting behaviour in a few remaining territories).
Eurasian Skylark [I] *Alauda arvensis*	One seen flying NE over grassland near Somerset Road 18 May 1996 (RHL), and two heard flying north on 14 Sep 1997 (RHL). Many older records of birds singing in nearby farmland in 1980s and early 1990s (AF), and common in the 1940s (Tarr 1948) and 1970s when the area was grazed (Warringal Conservation Society 1981; Fleming check date).
Golden-headed Cisticola *Cisticola exilis*	Formerly a common resident in rank grassland in and near BF to late 2000s; has become scarce and erratic in recent years; LE recorded the species on 19 dates in 2003; 48 in 2004; 50 in 2005; 48 in 2006; 33 in 2007; 56 in 2008; 44 in 2009; 25 in 2010; 28 in 2011; 23 in 2012; 19 in 2013; 2 in 2014; 8 in 2015 and one in 2016 (Oct).
Australian Reed-Warbler *Acrocephalus australis*	Summer visitor (Aug-Apr) to reed-beds, rushes and adjacent shrubs; formerly regular in ornamental ponds near Banyule Road (in 1990s) but now scarce and erratic, usually just a few records each year from the main swamp (where it was never reliably common since 1990s) (e.g. GD recorded up to 4, Nov 2008 and 3, Dec 2013). LE recorded the species on four dates in 2002; two in 2003; one in 2004; four in 2005; six in 2006; none in 2007; seven in 2008; none in 2009; eleven in 2010; six in 2011; two in 2012; none in 2013 or 2014; one in 2015 and none in 2016. The species was undoubtedly present in most years but may be under-recorded.
Little Grassbird *Megalurus gramineus*	Resident in flooded billabong in 1990s. One or two occasionally establish territories in dense vegetation in main swamp, and may be present for a few months and then disappear. LE observed one bird twice in 2010; 38 times in 2012 (may have bred in ephemeral wetland near Somerset Road carpark, but disturbed by slashing); 17 times in 2013 and only once in 2014. Described as “always present” in 1940s (Tarr 1948).
Rufous Songlark *Cincloramphus mathewsi*	Regular summer visitor in 1970s (and previously, Tarr 1948), rarely found in 1990s. A few recent records in open grassland mainly near the powerlines 1 km east of Banyule Flats but once in PV1 just over the fence from BF5, e.g. one 6 Nov and 7 Dec 2008; one Oct-Nov 2009 (GD, LE); 3 Jan 2012; one on 2 Sep, 4 Oct, 2 Nov and 1 Dec 2012; 2 Sep 2013. One photographed at Sills Bend 24 Oct 2012 (AF).

Brown Songlark *Cincloramphus cruralis*	Common in 1940s (Tarr 1948) and regularly reported in 1970s and early 80s (AF), rare subsequently; just one bird on the escarpment beside Yarra Trail in PV1 Nov 2002 (LE).
Silvereye *Zosterops lateralis*	Common especially in wattles along river, with flocks visiting a range of habitats in different seasons; more in summer than winter, with brown-flanked birds (Tasmanian subspecies) observed erratically in winter. Flocks of up to 60, e.g. flock of 50 flew SW on 8 Sep 2012.
Welcome Swallow *Hirundo neoxena*	Fairly common over pasture and wetlands, with large numbers occasional at all seasons, e.g. 250 over BF on 14 May 2012; 170-200 over BF Jan 2013 and similar numbers more often in winter than summer
Fairy Martin *Hirundo ariel*	Scarce summer visitor (Aug-Apr); flocks up to 20 feeding over pasture and wetlands; bred nearby under Burke Road bridge till 2009 (e.g. 13 birds there in Sep 2009, GD) and prospecting observed more recently but no recent confirmed breeding records. Dozens of records in early 2000s, now only a few each year if at all.
Tree Martin *Hirundo nigricans*	Occasional birds over wetlands on migration (Aug-Sep and Mar-Apr); formerly more common and possibly breeding in red gums along river. No records at all since 2006.
Red-whiskered Bulbul [I] *Pycnonotus jocosus*	No known records from the actual area, but one spent a few days in nearby Viewbank suburbs 1998 (RHL).
Bassian Thrush *Zoothera lunulata*	Four records of singles in woodland PV1 (two in May 2004; one in Feb 2005 and one in Jun 2007).
Common Blackbird [I] *Turdus merula*	Common in suburban gardens and also in riverside forest and woodland near wetlands; declined during drought but still common
Song Thrush [I] *Turdus philomelos*	Scarce resident in suburban gardens & parks and in open areas of riverside forest; declined during drought 2000-09 and became locally extinct in Viewbank from ~2009 until 15 Dec 2012 when one was singing near horse-beach PV1, and then one or two pairs established territories nearby in 2013 (PV1 extending into BF5) where still present.
Common Starling [I] *Sturnus vulgaris*	Common in pasture and suburban gardens; declined during drought 2000-09; small flocks sometimes come to drink at wetlands or feed from muddy shores as water recedes (e.g. 100 feeding from mud with 100 Welcome Swallows and ~15 Willie Wagtails on 27 Jan 2013). Also found where cattle graze in farmland at the powerlines 1km east of Banyule Flats.
Common Myna [I] *Acridotheres tristis*	Common in suburban gardens and open woodland; often comes to drink at wetlands, e.g. grotty pond; nests in tree hollows along river and elsewhere
Mistletoebird *Dicaeum hirundinaceum*	Common in wooded areas, including plantations where wattles support growth of Box Mistletoe; numbers vary between years (common 2014-15)
Red-browed Finch *Neochmia temporalis*	Small numbers in riverside forest and beside wetlands; flocks in winter (e.g. 40 on 12 June 1995 and 40 on sports oval BF3 on 4 June 2000 with 30 still there on 8 July); has declined in recent years, but flocks up to 20 are still seen occasionally.
House Sparrow [I] *Passer domesticus*	Formerly abundant in suburbs but became locally extinct in Viewbank area in 2007; one recent record in suburbs (one Nov 2014); no known records from the BF study area except for some near the billabong on 7 Jan 1989 (RHL).

Eurasian Tree Sparrow [I] *Passer montanus*	Formerly resident in suburban gardens in Viewbank area and at the old Banyule High School but also became locally extinct in 2007; always rare or absent in the BF/WP study area but recorded as present with House Sparrows near billabong on 2 Apr 1985 (AF)
Australasian Pipit *Anthus novaeseelandiae*	No known records since the 1970s, when the species was reported regularly BF (grazed by cattle at the time) (AF) though listed as rare by the Warringal Conservation Society (1981).
Common Greenfinch [I] *Chloris chloris*	Small numbers resident among cypresses in nearby suburbs to mid 2000s, often visiting BF to feed on seeds of aquatic plants in main wetland or billabong (especially in autumn); declined during drought and now locally extinct; no records since one behind the billabong in Feb 2006.
European Goldfinch [I] *Carduelis carduelis*	Formerly common in open country, feeding on thistle seeds in rank grassland; declined during drought 2000-09 and now scarce, mostly seen among cattle in pasture east of study area, but flocks occasionally visit the billabong in winter, max 48 just east of BF in Apr 2013 (GD). Several juveniles in smaller flock in PV1 Feb 2015. Larger flocks previously, e.g. 60 near Somerset Road on 10 Apr 1992 (RHL).

Inconclusive (unacceptable) records have been reported for the following additional species:

Musk Duck *Biziura lobata* (one report of a possible from main wetland in 2000s: usually inhabits large open wetlands with river linkages)
Great Crested Grebe *Podiceps cristatus* (one report of a possible from billabong in 1979: usually inhabits large open wetlands)
Lewin's Rail *Lewinia pectoralis* (reports of possibles from grotty pond and other small vegetated wetlands)
Australian Little Bittern *Ixobrychus dubius* (vague reports of one or more flushed from swamp in 1970s, along with Australasian Bitterns)
Pale-headed Rosella *Platycercus adscitus* (one presumed escapee seen briefly in ~2012)
Rainbow Bee-eater *Merops ornatus* (a few second-hand reports, none substantiated)

Note that the main list includes two species for which further confirmation would be desirable (Australasian Bittern, included on the basis of one bird heard only and historical records) and Intermediate Egret (one seen a few times beside the river, an unusual habitat for this locally uncommon species, and an older record from the billabong in 1970s).

The list also mentions a few species that have been seen nearby but not to our knowledge in the actual area of interest in the specified period (Fork-tailed Swift, Painted Button-quail and the introduced Red-whiskered Bulbul and Eurasian Tree Sparrow).

Other species seen within a few km include Australian Little Bittern (has bred in Bundoora) and Swift Parrot *Lathamus discolor* (visiting many suburbs in winter and spring, including a flock of 40+ in Macleod winter 2015). Two waterbird species (Great Crested Grebe and Musk Duck) occur on large water

bodies on the edge of Melbourne, and might be expected to occur occasionally in our area, but to our knowledge have not been recorded acceptably in or near the City of Banyule: they were not listed by the Warringal Conservation Society (1981).

The list does not include extra species recorded in the 1930s and 40s by Tarr (1948), for an area along the river from Heidelberg to Ivanhoe. He reported many grassland species as common (including Stubble Quail, Brown Songlark and the introduced Eurasian Skylark, with Australian Pipits "present in fields") and recorded some important species that have not been reported in recent years or continue to be recorded as rare visitors. These include Australian Little Bittern ("rare records, once breeding"), Lewin's Rail (three records in ten years), Masked Owl (breeding noted in winter 1947), Grey Goshawk (a white bird in 1936), Blue-winged Parrot (in 1947, his first record), White-fronted Chat (common), Restless Flycatcher (odd pairs noted), Jacky Winter (occasional records) and Buff-rumped Thornbill (occasionally recorded). He lists Striated Thornbill as "very common", whereas it is now very scarce. He describes Eastern Rosella as the common parrot and mentions "occasional breeding records" by Red-rumped Parrots, which are now a much more common species. He mentions a single case of breeding by Sulphur-crested Cockatoos (in 1947) and would have been astounded by the recent proliferation of cockatoos, corellas, Rainbow Lorikeets and Crested Pigeons (which were generally absent in his time).

Keartland (1990) described the bird fauna of Melbourne in the late 1800s, and includes records of Masked Owl *Tyto novaehollandiae*, Eastern Grass Owl *Tyto longimembris* and Australasian Bittern for the "Heidelberg area". His general account might imply that several other species would have occurred in the area, including Brown Treecreeper *Climacteris picumnus*, Jacky Winter *Microeca fascinans* and Restless Flycatcher *Myiagra inquieta* (Loyn and Menkhorst 2011), two of which were apparently still present in the 1940s (Tarr 1948, see above). Some other forest bird species (e.g. Varied Sittella *Daphoenositta chrysoptera*) would have been expected to occur in the area when there was more substantial forest cover, and some birds now recorded only rarely (e.g. White-throated Treecreeper) would have been more common.

The list of birds published by the Warringal Conservation Society (1981) covers a large section of the middle Yarra Valley, not just our area of interest. Some additional species on that list include Common Greenshank *Tringa nebularia*, Eastern Curlew *Numenius madagascariensis* (heard calling overhead on migration), Spotted Nightjar *Eurostopodus argus* (more likely to have been White-throated Nightjar *Eurostopodus mystacalis*), Hooded Robin *Melanodryas cucullata*, Jacky Winter, Gilbert's Whistler *Pachycephala inornata* (unlikely), Restless Flycatcher, Yellow-tufted Honeyeater *Lichenostomus melanops*, Fuscous Honeyeater *Lichenostomus fuscus*, Yellow-rumped Pardalote (unlikely, and now lumped with Spotted Pardalote) and several species likely to have been escapes or their progeny (Major Mitchell's Cockatoo *Lophochroa leadbeateri*, Superb Parrot *Polytelis swainsonii*, Budgerigar *Melopsittacus undulatus*, Australian Ringneck *Barnardius zonarius*, Pale-headed Rosella *Platycercus adscitus*, Zebra Finch *Taeniopygia guttata*, Chestnut-breasted Mannikin *Lonchura castaneothorax*, Nutmeg Mannikin *Lonchura punctulata*).

It is likely that some of the species mentioned above, and others, will be reported in future years, probably as vagrants staying for short periods of time.

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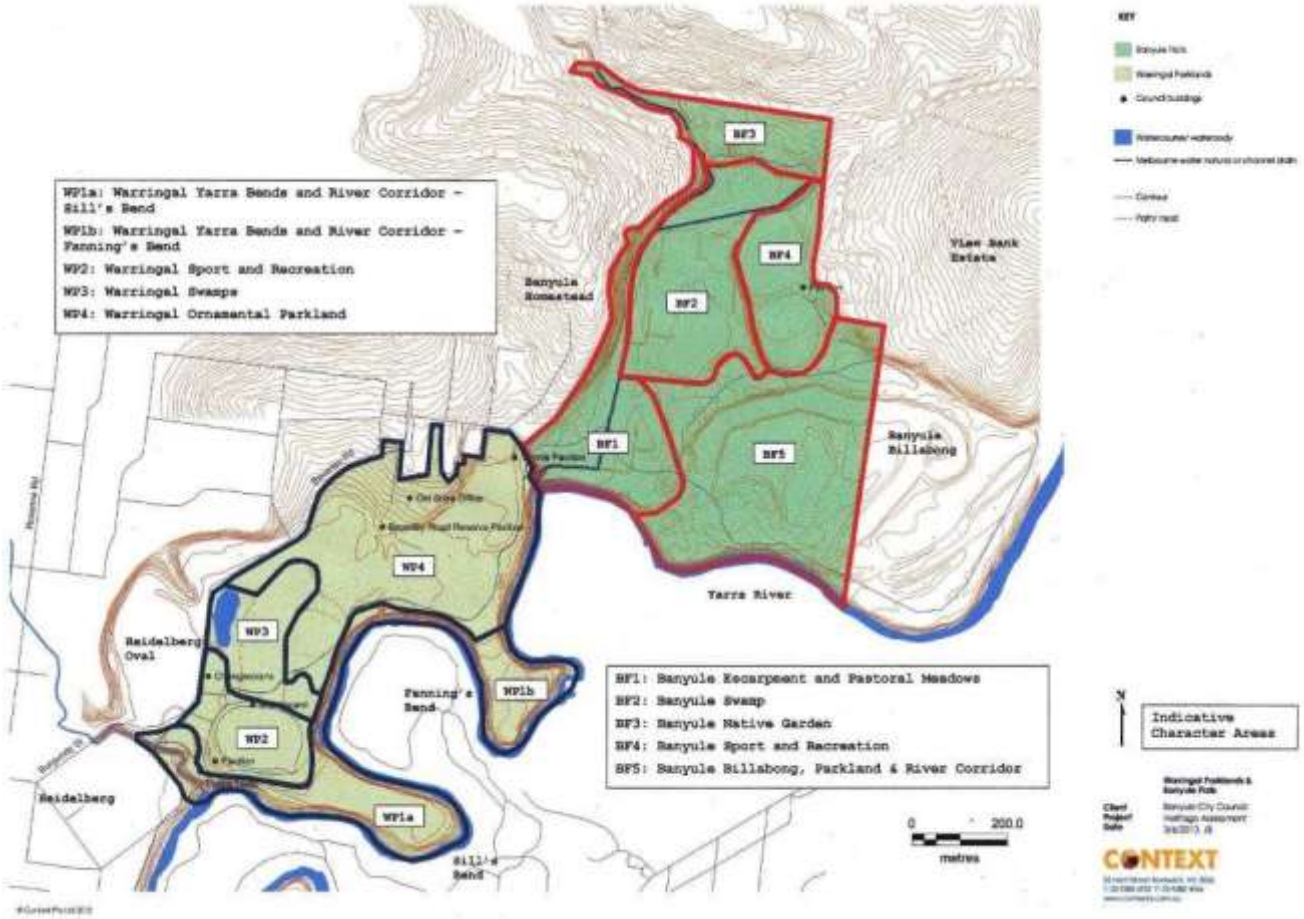

Fig. 1 Map of Banyule Flat and Warringal Parklands, showing zones used by the City of Banyule for management (BF1, WP1, etc). The main wetland lies in BF2 and the billabong (now usually dry) is in BF5 and PV1. Wooded land along the river to the east of BF5 is managed by Parks Victoria: it is designated PV1 in the current document but this term is not in general use.

Appendix 10. Maps

Map 1. Study Area

Banyule Flats

Legend

Banyule Flats study area

Details

Mapping by: Colin Broughton & Karen McGregor
Data Source: Aerial photography courtesy of Melbourne Water (2009)

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Map 1. Study Area

Warringal Parklands

Legend

Warringal Parklands study area

Details

Date: 19/05/2017

Aerial photography courtesy of
Melbourne Water (2009)

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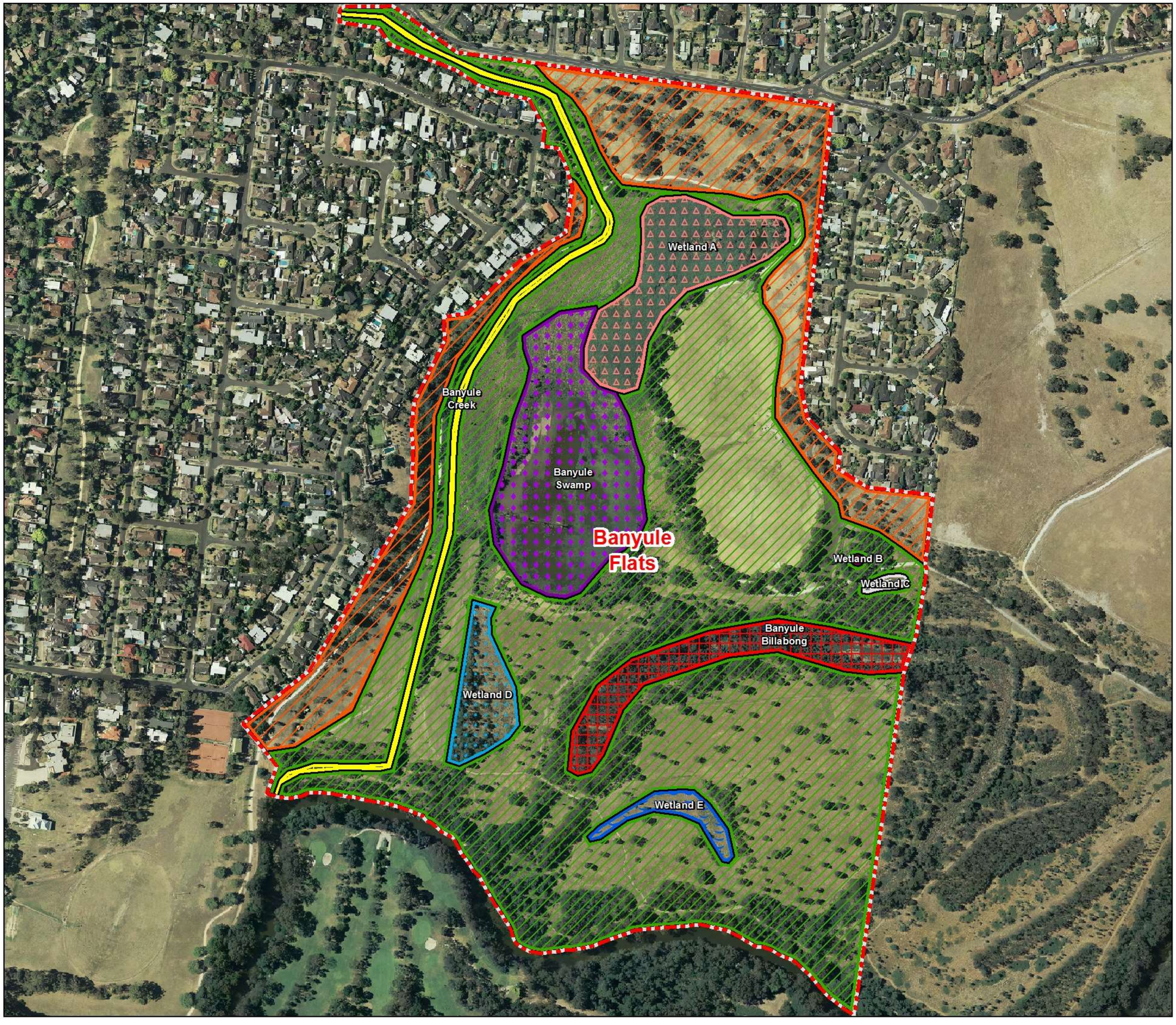
Map 2. Indicative Ecological Vegetation Class (EVC) distribution

Banyule Flats



Legend

Banyule Flats study area

Ecological Vegetation Class

Banyule Swamp - Red Gum Swamp (EVC 292)
Minor components of:
Aquatic Herbland (EVC 653)
Dwarf Floating Aquatic Herbland (EVC 949)
Floodway Pond Herbland (EVC 810)
Swamp Scrub (EVC 53)

Banyule Billabong - Billabong Wetland Aggregate
Floodway Pond Herbland (EVC 810),
Wet Verge Sedgeland (EVC 932)
Minor components of:
Tall Marsh (EVC 821)
Aquatic Herbland (EVC 653)

Banyule Creek
Creekline Grassy Woodland (EVC 68)

Wetland A
Tall Marsh (EVC 821)

Wetland B - Floodplain Wetland Aggregate
Tall Marsh (EVC 821)
Wet Verge Sedgeland (EVC 932)
Aquatic Herbland (EVC 653)

Wetland C - Floodplain Wetland Aggregate
Tall Marsh (EVC 821)
Wet Verge Sedgeland (EVC 932)*Minor components of:*

Wetland D - Floodplain Wetland Aggregate
Red Gum Swamp (EVC 292)
Wet Verge Sedgeland (EVC 932)
Floodway Pond Herbland (EVC 810)

Wetland E - Floodplain Wetland Aggregate
Wet Verge Sedgeland (EVC 932)
Floodway Pond Herbland (EVC 810)

Floodplain Riparian Woodland (EVC 56)

Plains Grassy Woodland (EVC 55)

Details

Mapping by: Colin Broughton & Karen McGregor
Data Source: Aerial photography courtesy of Melbourne Water (2009)

Version	1	Date	19/05/2017

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Map 2. Indicative Ecological Vegetation Class (EVC) distribution

Warringal Parklands

Legend

Warringal Parklands study area

Ecological Vegetation Class

Warringal (main wetland) - Floodplain Wetland Aggregate
Tall Marsh (EVC 821)
Minor components of:
Wet Verge Sedgeland (EVC 932)

Warringal (south-east) - Floodplain Wetland Aggregate
Aquatic Herbland (EVC 653)
Tall Marsh (EVC 821)
Wet Verge Sedgeland (EVC 932)

Warringal (west) - Floodplain Wetland Aggregate
Aquatic Herbland (EVC 653)
Tall Marsh (EVC 821)
Wet Verge Sedgeland (EVC 932)

Plains Grassy Woodland (EVC 55)

Floodplain Riparian Woodland (EVC 56)

Details

Date: 19/05/2017
Aerial photography courtesy of Melbourne Water (2009)

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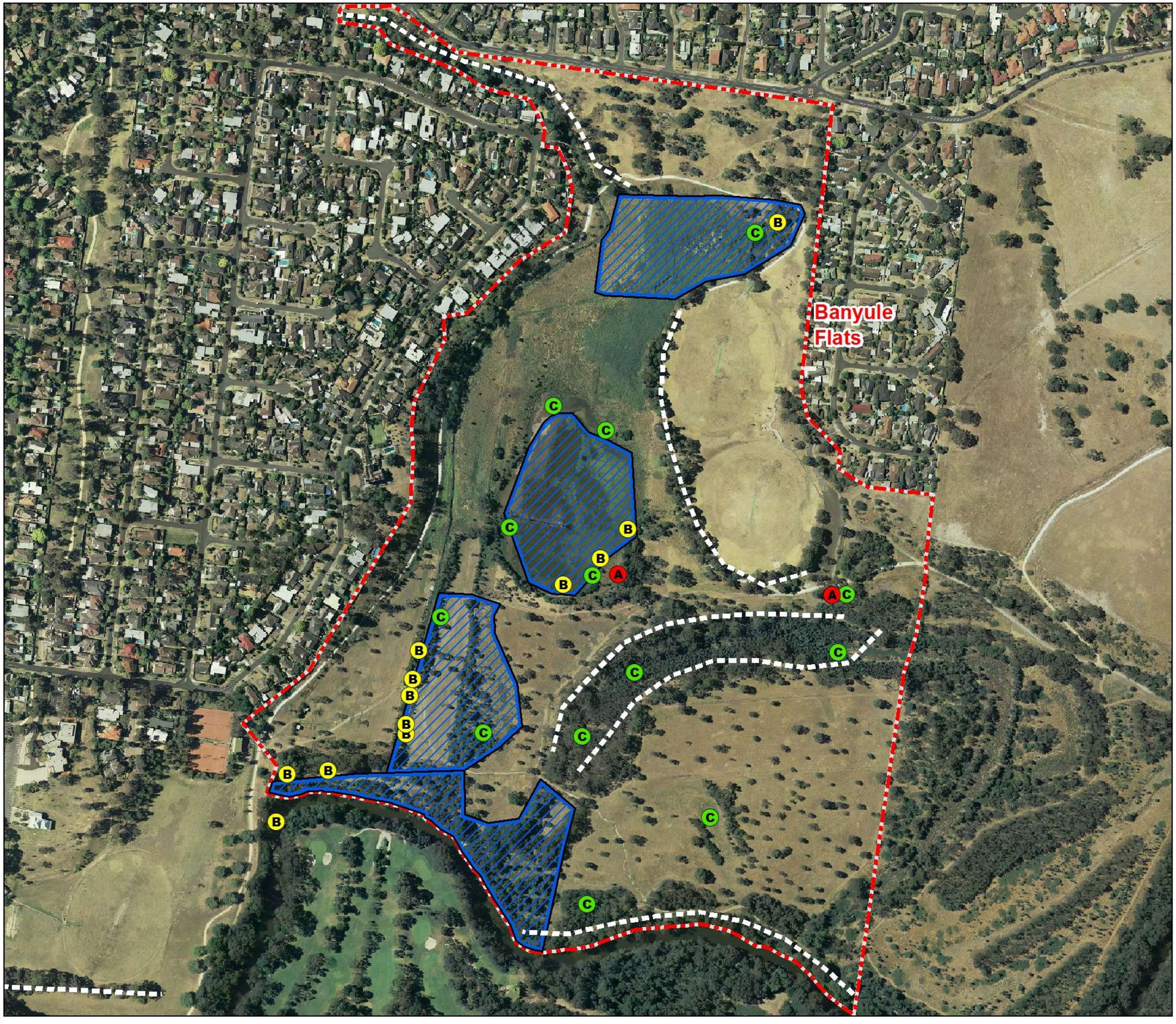
Map 3. Fauna Survey Areas

Banyule Flats



Legend

- Banyule Flats study area

Capture Points

- A — Anabat
- B — Bait Traps
- C — Camera Locations

Bird Surveys

- Bird Survey Area (2ha)
- 2ha Transect (400m x 50m)

Details

Mapping by: Colin Broughton & Karen McGregor
Data Source: Aerial photography courtesy of Melbourne Water (2009)

Version	1	Date	19/05/2017

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Map 3. Fauna Survey Areas

Warringal Parklands

Legend

- Warringal Parklands study area

Capture Points

- B — Bait Traps
- C — Camera Locations

Bird Surveys

- Bird Survey Area (2ha)
- 2ha Transect (400m x 50m)

Details

Date: 19/05/2017

Aerial photography from Google Earth Pro (XXX).

N

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