

Vegetation Communities of the City of Banyule

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Appendix 1 Indigenous species that occur (or are likely to have occurred) in Banyule, their significance and their distribution across vegetation communities

1 INTRODUCTION

The author was commissioned by Banyule City Council to prepare a vegetation community map and accompanying report. The City of Banyule is located 12 km north east of Melbourne and contains 63 sq km. A preliminary survey was conducted to assist in the preparation of a vegetation community classification. This and existing data sets were reviewed to prepare an inventory of plant species for Banyule. The information will assist in the identification of significant species and stands of vegetation and the formulation of appropriate management procedures and revegetation programs by land managers and the general public.

Scope of the Study:

The consultant was required to -

- 1) describe the vegetation communities and sub-communities that occur or have occurred in Banyule. Define their landforms, status, distribution, character species and structure, provide ecological descriptions and identify significant stands.
- 2) prepare a vegetation map of the City of Banyule.
- 3) prepare a descriptive report and plant list to accompany the vegetation map.

This will provide a foundation to a conservation management program for the preservation and enhancement of indigenous vegetation and conservation values of Banyule. Central to this is the protection of streamways and improvement of habitat links to adjacent stands by restoration and revegetation programs.

This report provides a companion flora and vegetation community study to the Sites of Faunal and Habitat Significance of North East Melbourne (NEROC study; Beardsell 1997), which examines the zoological significance of sites in the City of Banyule (NEROC sites 23-28, 31-34, 44 and 45-48). Flora studies by the author in adjacent areas include Yarra Valley Parklands and Plenty Gorge Park.

Summary

The foothills and riverine plains are the most diverse area for native plants and animals in the Greater Melbourne and Port Phillip Catchment. In common with other lowland areas, it has had a high impact from human settlement. This has occurred in every conceivable form. Land clearing, urban housing and industrial development, recreation and service utilities, vermin, weeds and pollution.

Banyule still supports a high diversity of indigenous plants. 438 species (possibly 70% of the original flora) have been confirmed over the last fifteen years (category 1 plants in status column of Appendix 1). Most of these were observed during field work for this study conducted between May 1999 and March 2000. However, 202 species (46%) are known from Banyule only at few locations and in small numbers (e.g. most of the forty or so species of orchids). These species are considered locally rare or threatened and may not survive beyond the short-term unless appropriately managed (category 1 m of Appendix 1).

Up to 201 other species still known from the surrounding district may have been eliminated from Banyule since settlement. Some remain only as re-established populations. Systematic botanical survey will locate a proportion of these species in Banyule. They will most likely include spring ephemerals (e.g. *Hypoxis*, *Levenhookia*) and others including Veiled Fringe-sedge and Grassy Bindweed, which were located just beyond the municipal boundary.

Banyule now contains less than 10% of its original native vegetation cover. Half of this is degraded and only a tiny proportion is considered intact. All surviving stands of native vegetation are significant in this context. This is particularly so for the reserves with highest indigenous species diversity (Yandell, St Helena and Harry Pottage).

Another point of interest is that 34 of the 39 sub-communities (>87%) recorded for Banyule are considered either endangered or vulnerable in the region. Accordingly, Banyule has (or had) a high proportion of threatened species. Communities best preserved in the City of Banyule include floodplain riparian woodland and riparian shrubland of the Yarra River and seasonal and the wetlands of the Yarra floodplain. High quality remnants occur of box - stringybark woodland in St Helena Flora Reserve and plains grassy woodland (alluvial plains) at Simpson Army Barracks and Harry Pottage Reserve. Communities least preserved include plains grassy woodland (volcanic plains) of the Darebin Valley and gully woodland and valley grassy forest of the St Helena foothills.

2 PHYSICAL ENVIRONMENT

2.1 Physiography

Eight major geological formations occur in the City of Banyule (Geological Survey of Victoria, 1972). In descending age these are:

- 1 **Silurian mudstone/siltstone.** The Silurian formations are deposition beds from ancient seas which have undergone uplift and erosion phases over the last 150 million years to form the foothills of North East Melbourne. Siltstone is the oldest and lowest stratum of the Silurian formation (446-430 million years old) and typically occurs in proximity to anticlines (upfolds in the earths crust). Weathering has removed the upper Silurian strata, exposing the siltstone stratum. Distribution: north-east section.
- 2 **Silurian sandstone/shale.** Sandstone is the youngest (upper) strata of the Silurian formation (430-416 million years old). It is related to the presence of synclines (downfolds in the earths crust) which bury the upper Silurian strata, preserving them from erosion. Much of the sandstone strata has been eroded away in the uplifted foothills to the north and east of the City of Banyule. This has exposed the deeper mudstone/siltstone strata. Distribution: all sections except the north-east and the volcanics west of Waterdale Road; notably the central section east of Plenty River and smaller outcrops of the alluvial plains west of Plenty River.
- 3 **Tertiary river sand-plain.** This formed in the early Tertiary Period (Palaeocene Epoch of 65-54 million years ago). A large ancestral stream rising in the Great Dividing Range, deposited alluvium as it meandered across the plain. This was later covered by late Tertiary lava flows. Over the Quaternary Period (last 1.8 million years) the terrain has uplifted. The basalt has been eroded away to expose the underlying Silurian formations and disjunct exposures of river alluvium. The sand-plain consists of broad sand-ridges interspersed with seasonally damp saddles in gully headwaters. Distribution: hill-crests between Greensborough and St Helena.
- 4 **Tertiary volcanics.** Hill-crest cappings remnant from Greensborough Phase lava flows of the late Tertiary Period. The precise age is uncertain, estimates ranging from the Miocene Epoch (24-5 million years ago) to as late as the Upper Pliocene Epoch (3-1.8 million years ago). The latter being continuous with the Pleistocene flows of the Quaternary volcanics (see below). The flows buried earlier land surfaces (e.g. river alluvium). Over time the basalt decomposed to deep black soils. The land surface has been heavily weathered and all that remains are cappings around the rim of river alluvium deposits. Distribution: Greenhill Road to Diamond Creek Road and between south end of Beales Road and Beale Reserve at St Helena.
- 5 **Tertiary marine sand-crest.** Brighton Group stranded coastal dune system (Red Bluff Sands) from marine transgressions (phases of high sea level) of the Upper Pliocene Epoch.. Distribution: south from Mont Park along Waiora Road to Ivanhoe.
- 6 **Quaternary volcanics.** These formed from lava flows in the early Quaternary Period (1.8 million to 800 000 years ago during the Pleistocene Epoch). The flows which originated from volcanic cones north of Epping, moved down the Darebin Valley, burying older land surfaces (e.g. Silurian sandstone). In Banyule, the lava flows form the leading edge of the Western Volcanic Plains. They have been subsequently covered by a silt plain derived from eroding higher land surfaces on sedimentary formations to the east. Distribution: Waterdale Road to Darebin Creek and in the north at Bundoora.
- 7 **Older Quaternary high level alluvium.** Pleistocene Epoch (1.8 million to 10 000 years ago) alluvial escarpments and high terraces of Yarra River and outwash plain-slopes above major tributaries. Deposition from prior courses of the Yarra eroding into the valley develops broad alluvial fans. These are most evident on the neck of meander terraces. Outwash plain-slopes consist of colluvial deposits eroding from higher land surfaces. The alluvium consists of gravel, silt and sand while the colluvium is composed of clay and silt. Distribution: restricted to rivers and major creeks.
- 8 **Newer Quaternary alluvium.** Recent Epoch (last 10 000 years) river and swamp alluvium of the lower terrace and floodplain of Yarra River and Plenty River and valleys of their tributaries. The strongly dissected valleys are being actively entrenched by youthful creeks. This is developing floodplains of depositional clay, coarse and fine grained sands and organic silts. Distribution: widespread along river, creek and gully floodplains.

2.2 Landforms

The City of Banyule occurs on the transition of the Coastal Plains, Western Volcanic Plains and the foothills of the Eastern Uplands physiographic regions. Three physiographic zones have been identified as occurring in the City of Banyule by Beardsell (1997). These are the Yarra Lowland Alluvial Plains, Plenty Lowland Volcanic Plains and Plenty Lowland Hills.

Landform groups have been correlated to vegetation communities. On topographic relationship and floristic composition, landform groups categorise broadly into alluvial plain, volcanic plain, foothill, riverine and wetland. Landforms occur from about 7 m elevation above sea level on the bank of the Yarra at the mouth of Darebin Creek to just over 120 m in the north-east at Greenhills and St Helena. Vegetation sub-communities and their most intact stand or main occurrence are listed under each landform group.

ALLUVIAL PLAIN

Sedimentary plain-slopes, valleys, creek terraces and sand-crests: the landform has gradients of 0-20° and soils are primarily yellow duplex with grey loam topsoil to medium depth. The marine sand-crest is composed of yellow-red uniform sand. Soils of sheltered plain-slopes and valleys are largely colluvial in origin (conveyed by various means from higher land surfaces). Soils of creek terraces are largely alluvial in origin (conveyed and deposited by streams). In valleys and on terraces, soils sit on an impermeable claypan horizon causing sub-surface waterlogging during winter. Main occurrences are associated with the Yarra Valley and hinterland in south-west Banyule.

Vegetation:

Plains Grassy Woodland

PGWOep River Red Gum (exposed plain-slope); Harry Pottage Reserve

PGWOSP River Red Gum (sheltered plain-slope); Streeton Views

PGWOTv River Red Gum (terrace/valley); Simpson Barracks.

Creeks and drainage lines: watercourses with natural annual flow of 3-9 months. Soils are yellow duplex with fine-textured surface loams. These occur to a depth of 1 m and are partially waterlogged for most of the year in the lower strata. Creeks and drainage lines on the alluvial plains are scattered across southern Banyule west from Plenty River to Ivanhoe.

Vegetation:

Creepline Grassy Woodland

CGWc River Red Gum (creek); lower and middle Banyule Creek

CGWdl River Red Gum (drainage line); upper Banyule Creek at Simpson Barracks.

Hill-crests and exposed hill-slopes: exceeding 30 m elevation above and 150 m distance from streams. Exposed hill-slopes have gradients of 15-30° with aspects from north-east through north to south-west. Soils are shallow stony, brown gradational.

Vegetation:

Box Woodland

BWlh Yellow Box (lowland hill-crest); Hill crests south west of the Watsonia Drain and the Plenty River

VOLCANIC PLAIN

Quaternary volcanic silt plains: low-lying areas of flat to gentle relief on the leading edge of the Western Volcanic Plains east of Darebin Creek. The silt plains lack stony crests and gilgais occurring on stony plains west of Darebin Creek. Soils on more elevated sections are grey-black duplex containing surface loams derived from nearby volcanic and sedimentary sources. Soils in swales and on the creek terrace are comprised of black uniform clay. These swell and become sticky when wet and crack when dry. The silt plains are restricted to the Darebin Valley along the western boundary of Banyule.

Vegetation:

Plains Grassy Woodland

PGWOvp River Red Gum (volcanic plain); Waterdale Road to Darebin Creek

PGWOvs River Red Gum (volcanic swale/terrace); Darebin Creek valley.

FOOTHILL

Sheltered hill-slopes: gradients are generally 15-30° with aspects from east through south to south-west. Sheltered hill-slopes are localised across northern and central Banyule. Soils are yellow duplex of colluvial origin.

Vegetation:

Herb-rich Foothill Forest

HFFsl Red Stringybark (sheltered hill-slope); Yandell Reserve.

Creeks, gullies, sheltered valleys and footslopes: gullies contain semi-permanent watercourses with annual flow not exceeding 9 months (those with urban catchments may flow the whole year due to urban runoff). Valleys contain ephemeral watercourses with annual flow not exceeding 3 months. Flow is based on natural rates in normal years. Gullies are mostly narrowly dissected ("V"-shaped) while their tributary valleys are broader ("U"-shaped). Valleys and footslopes have gradients less than 15°. Soils in gullies are yellow loamy gradational (dispersible and erosion prone), while their floodplains are derived primarily of Quaternary alluvium.

Soils in valleys are yellow duplex. Occurrences of foothill gullies, valleys and footslopes are widespread across northern and south-eastern Banyule while foothill creeks are restricted to north-east Banyule.

Vegetation:

Creepline Herb-rich Woodland

CHWfc Manna Gum - Swamp Gum (foothill creek); Karingal Creek

Valley Grassy Forest

VGfSf Long-leaf Box - Candlebark (footslope); Brown's Nature Reserve.

VGfeh Yellow Box (exposed hill-slope) Yandell Reserve.

Hill-crests and exposed hill-slopes: exceeding 30 m elevation above and 150 m distance from streams. Exposed hill-slopes have gradients of 15-30° with aspects from north-east through north to south-west. Soils are shallow stony, brown gradational. Occurrences of hill-crests and exposed hill-slopes are widespread across northern and south-eastern Banyule.

Vegetation:

Box - Stringybark Woodland

BSWhr Red Box (hill-slope); St Helena Flora Reserve

BSWhy Yellow Box (hill-slope); Fitzsimons Lane cutting north of Rosehill Road

Box - Ironbark Forest

BIFsy Melbourne Yellow Gum (hill-crest/spur); Yandell Reserve.

Tertiary volcanic hill-crest cappings: formerly a volcanic landform now placed under foothill due to geological uplifting during the late Tertiary/Quaternary. Soils are black cracking uniform clay. Restricted to the north of Banyule between Diamond Creek Road and St Helena Road.

Vegetation:

Grassy Woodland

GWv Yellow Box - Manna Gum (volcanic hill-crest); Beales Road (south end).

Tertiary river sand-plains: formerly a riverine landform now placed under foothill due to geological uplifting during the late Tertiary/Quaternary. The sand-plain exposures persist on scattered hill-crests and have been broken down by weathering. They would have formerly supported the Grassy Woodland sub-community (GWsy) which occupies the sand-plain at nearby Janefield in the Plenty Gorge. Soils are yellow duplex grey organic sand and clay with gravel, ironstone and basalt cobble conglomerate. Restricted to hill-crests between Greensborough and St Helena.

Vegetation:

Box - Stringybark Woodland

BSWhy Yellow Box (hill-slope); St Katherine's church St Helena.

RIVERINE

River banks: soils of banks are primarily yellow gradational or uniform organic/sandy loam. Restricted to the Yarra floodplain, Plenty River and Darebin Creek

Vegetation: dominant plains elements

Floodplain Riparian Woodland

FRWrm Manna Gum (riverbank); Plenty River

FRWrr River Red Gum (riverbank); Yarra River.

River flats and terraces of the alluvial floodplain: the landforms have gradients not exceeding 5° and support young depositional soils of the Yarra/Plenty floodplain. These are variable and often poorly differentiated in profile. They range from well-drained open sand, gravel and organic silt alluviums to poorly drained heavy clays in low-lying sections which are water-logged in winter. Yellow duplex soil (with deep grey loam topsoil) occurs on floodplains and grey/black cracking uniform clay occurs in terrace depressions.

Vegetation:

Floodplain Riparian Woodland

FRWtm Manna Gum (terrace); Plenty River

FRWtr River Red Gum (terrace); Yarra River

Swamp Scrub

SSf Swamp Paperbark (floodplain); eliminated from Yarra.

Rapids: sedimentary rapids develop at the point of intersection between Yarra River and spurs. The river channel lies tranverse to the strike of bedrock, which is composed of lateral rock-bars of resistant outcrop. A succession of bars deflect the channel into small anabranches between which accumulated sediment and flood debris form vegetated islands. The Darebin Creek follows a major lava flow from north of Epping, cutting a small gorge. Where the creek strikes across the flow, columnar basalt reefs are exposed disrupting the channel into anabranches (forks around the reefs). Some of these are brackish and flow only when the creek floods. There are also tessellated basalt pavements, rock cascades and small waterfalls. Pools form in intervening sections of the creek.

Vegetation: elements of the foothills (RSsr) and plains (RSvc)

Riparian Shrubland

RSsr Muttonwood (sedimentary rapids); Yarra upstream of Bonds Road

RSvc Woolly Tea-tree (volcanic creek); Darebin Creek.

Escarments and cliffs: these landforms occur within 150 m of Yarra River, Plenty River and Darebin Creek. Escarpment gradients are generally 30° to 45° while cliff gradients exceed 45°. Sedimentary cliffs (in association with rapids) occur where the rivers develop an ingrown meander as they intersect a spur. Meanders contain steeply undercut rocky cliff faces below an abrupt spur on the outer (convex) side and a sandy terrace (alluvial fan) below a more gentle (slip-off) spur on the inner (concave) side. Along the Yarra and Plenty upstream at Warrandyte and Janefield, cliffs develop into gorges when flanking the river on both sides. Volcanic cliffs of the Darebin Creek consist of basalt columns. Soils of sheltered escarpments consist of high level alluvium of yellow duplex with grey sandy-loam topsoil. Soils of cliffs are derived from old alluvium and more recent erosion. They vary from skeletal amongst rock-faces to friable brown (sedimentary) or red (volcanic) gradational on earth ledges.

Vegetation: predominant floristic elements are from the plains

Riverine Escarpment Scrub

RESes Golden Wattle - Burgan (exposed sedimentary); Plenty River, Darebin Creek

RESss Burgan - Sweet Bursaria (sheltered sedimentary); Plenty River

RESvc Lightwood - Tree Violet (volcanic); Darebin Creek.

High river terrace fans: the landform has level to gentle gradient. Soils are alluvial in origin and primarily yellow duplex with sandy topsoil. Restricted to the Yarra Valley upstream of Plenty River.

Vegetation:

Grassy Woodland

GWsy Yellow Box (sand-plain); Odyssey House area.

WETLAND

Freshwater meadows: Natural billabongs, swamps, floodplain swales and abandoned channels and artificial surface excavations that are inundated less than 6 months of the year to an average depth not exceeding 0.25 m. Freshwater meadow consists of semi-aquatic vegetation. When billabongs are inundated, freshwater meadow is restricted to mudflats on the fringing banks and in shallow bays. It colonises the entire ground surface as billabongs dry. Soils of floodplain swales and abandoned channels are a mixture of sand, gravel and organic alluviums while those at billabongs are uniform (grey-black) clay which crack when dry.

Vegetation:

Floodway Pond Herbland

FPHbm. Lesser Joyweed - Matted Water-starwort (billabong mudflat); Bolin Billabong

FPHfm. Common Sneezeweed - Creeping Knotweed (freshwater meadow); Banyule Swamp and Main Yarra Trail (MYT) bridge wetland at Montpelier

Plains Grassy Wetland

PGWeme. Veined Swamp Wallaby-grass - Common Spike-sedge (freshwater meadow); MYT wetland at Murundaka and Yaruk Tamboore.

Freshwater marshes and billabongs: shallow freshwater marshes include semi-permanent wetlands inundated 6 to 9 months of the year or permanent wetlands containing an average depth of less than 1 m when full. Deep freshwater marshes are permanent wetlands with average depth exceeding 1 m. Billabongs are bodies of still water periodically linked during flood episodes to the Yarra and other floodplain wetlands. They occur in various stages of separation from early succession with high banks through to late succession with low banks (< 1 m high). Billabongs support areas of deep freshwater marsh, shallow freshwater marsh and mudflats. Soils are peaty and predominantly uniform (grey-black) organic clays. Localised on the Yarra floodplain.

Vegetation:

Plains Sedgy Wetland

PSWema. Tall Sedge - Hollow Sedge (freshwater marsh); being reconstructed at Yaruk Tamboore.

Floodplain Wetland Aggregate (FWA) contains the following component EVCs:

Aquatic Herbland (AHbs) Common Water Ribbons - Upright Water-milfoil (billabong/swamp); Banyule Swamp.

Aquatic Sedgeland (ASbs) Tall Spike-sedge (billabong/swamp); Banyule Billabong

Submerged Aquatic Herbland (SAHbs) Ribbon-weed – Pondweed (billabong/swamp); Banyule Swamp.

Dwarf Floating Aquatic Herbland (DFAHbs) Azolla - Duckweed (billabong/swamp); Banyule Swamp.

Tall Marsh (TMbs) Common Reed – Cumbungi (billabong/swamp); Banyule Swamp.

Wet Verge Sedgeland (WVSfm) Leafy Flat-sedge - Tassel Sedge (freshwater marsh); Reedy Swamp, Wilson Reserve

Wetland Formation (semi-aquatic and aquatic)

WFeh Common Reed - Cumbungi (emergent herbfield); Banyule Flats

2.3 *Climate*

The climate is mild with warm summers and cool winters. Rainfall is distributed evenly through autumn, winter and spring while summer normally experiences lower rainfall. January being the driest month (average ca. 50 mm) and October being the wettest month (average ca. 85 mm). Mean annual rainfall is 650-700 mm (Bureau of Meteorology, 1977).

3 *METHODS*

3.1 *Field survey and vegetation mapping*

Preliminary field surveys were conducted to locate remnant vegetation and compile lists of indigenous plants. Relevant literature on the vegetation of Banyule was also examined. Particular emphasis was placed on confirming rarer species occurrences and examining previously undocumented sub-communities. Vegetation was correlated to landforms and overlaid onto a 1:10 000 topographic map. Sub-communities were first predictively mapped on the basis of landform, geology, soil type, topography, aspect and altitude. Extensive field proofing was then undertaken to confirm or modify the mapping boundaries.

While shown on the map as precise lines with habitats appearing to fit together neatly. In nature, boundaries between adjacent communities consistently overlap. Narrow strips or pockets of differing sub-communities frequently infiltrate micro-habitats within other communities. These and instances where the original landform and vegetation has been completely modified since settlement (e.g. barrel-drained creeks) were difficult to pick up in the field or map at the above scale. The vegetation codes presented on the legend of the map follow the alphabetical community classification of section 4.1.

4 VEGETATION COMMUNITIES

4.1 Banyule Vegetation Community Classification

The following is the full list of Banyule's vegetation communities and sub-communities and their abbreviations.

<p>Box - Ironbark Forest</p> <p>BIFsy Melbourne Yellow Gum (hill-crest/spur)</p> <p>Box - Stringybark Woodland</p> <p>BSWhr Red Box (hill-slope)</p> <p>BSWhy Yellow Box (hill-slope)</p> <p>Box Woodland</p> <p>BWlh Yellow Box (lowland hill-crest)</p> <p>Creekline Grassy Woodland</p> <p>CGWc River Red Gum (creek)</p> <p>CGWdl River Red Gum (drainage line)</p> <p>Creekline Herb-rich Woodland</p> <p>CHWdl Swamp Gum (drainage line)</p> <p>CHWfc Manna Gum - Swamp Gum (foothill creek)</p> <p>Floodplain Riparian Woodland</p> <p>FRWrm Manna Gum (riverbank)</p> <p>FRWrr River Red Gum (riverbank)</p> <p>FRWtm Manna Gum (terrace)</p> <p>FRWtr River Red Gum (terrace)</p> <p>Floodplain Wetland Aggregate</p> <p>Aquatic Herbland</p> <p>AHbs Water Ribbons (billabong/swamp)</p> <p>Aquatic Sedgeland</p> <p>ASbs Tall Spike-sedge (billabong/swamp).</p> <p>Dwarf Floating Aquatic Herbland</p> <p>DWAHbs Azolla - Duckweed (billabong/swamp)</p> <p>Floodway Pond Herbland</p> <p>FPMbm Lesser Joyweed - Matted Water-starwort(billabong mudflat)</p> <p>FPHfm Lesser Joyweed - Common Sneezeweed - Hairy Willow-herb (freshwater meadow)</p> <p>Submerged Aquatic Herbland</p> <p>SAHbs Ribbon-weed – Pondweed (billabong/swamp)</p> <p>Tall Marsh</p> <p>TMbs Common Reed – Cumbungi (billabong/swamp)</p> <p>Wet Verge Sedgeland</p> <p>WVSma Leafy Flat-sedge - Tassel Sedge (freshwater marsh)</p>	<p>Grassy Woodland</p> <p>GWsy Yellow Box (sand-plain)</p> <p>GWv Yellow Box – Manna Gum (volcanic hill-crest)</p> <p>Herb-rich Foothill Forest</p> <p>HFFsl Red Stringybark (sheltered hill-slope)</p> <p>Plains Grassy Wetland</p> <p>PGWEme Veined Swamp Wallaby-grass - Common Spike-sedge (freshwater meadow)</p> <p>Plains Grassy Woodland</p> <p>PGWOep River Red Gum (exposed plain-slope)</p> <p>PGWosp River Red Gum (sheltered plain-slope)</p> <p>PGWotv River Red Gum (terrace/valley)</p> <p>PGWOvp River Red Gum (volcanic plain)</p> <p>PGWOvs River Red Gum (volcanic swale/terrace)</p> <p>Plains Sedge Wetland</p> <p>PSWema Tall Sedge - Hollow sedge (freshwater marsh)</p> <p>Riverine Escarpment Scrub</p> <p>RESes Golden Wattle - Burgan (exposed sedimentary)</p> <p>RESss Burgan - Sweet Bursaria (sheltered sedimentary)</p> <p>RESvc Lightwood - Tree Violet (volcanic cliff)</p> <p>Riparian Shrubland</p> <p>RSsr Muttonwood (sedimentary rapids)</p> <p>RSvc Woolly Tea-tree (volcanic creek)</p> <p>Swamp Scrub</p> <p>SSF Swamp Paperbark (floodplain)</p> <p>Valley Grassy Forest</p> <p>VGfeh Yellow Box (exposed hill-slope)</p> <p>VGfsl Long-leaf Box - Candlebark (sheltered footslope)</p> <p>Wetland Formation</p> <p>WFeh Common Reed – Cumbungi (emergent herbfield)</p>
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4.2 Vegetation Community Definitions

The vegetation classification was derived from field survey and analysis and a review of relevant literature. Vegetation communities and sub-communities for regional studies of the Melbourne area have been described by several authors (e.g. Robinson 1992, SGAP 1993 and Cheal *et al.* unpub.). Communities have also been described in local flora studies and management plans for areas including Plenty Gorge Park (Carr *et al.* 1991; Beardsell 1997a), Merri Creek (Frood 1992), Yarra Valley Parklands (Beardsell 1996/1996a/2011) and Warrandyte SP (Beardsell in prep.). Over the last decade, vegetation classification terminology has undergone major revision.

DSE has determined Ecological Vegetation Classes for Victoria and mostly community nomenclature follows the EVC system. Two exceptions are the communities Box - Stringybark woodland and Box Woodland, which are parts within the EVC 22- Grassy Dry Forest but not currently recognised as EVCs by DSE.

This study has modified the fauna habitat classification system defined in the NEROC study (Beardsell 1997). Several additional sub-communities were recognised during field surveys of the City of Banyule. Some are of minor natural occurrence or have been eliminated or reduced to refugial stands by land settlement. A standard methodology for floristic appraisal of sub-communities was followed (e.g. Opie *et al.* 1984) but this has been redefined to correlate with landforms (see section 2.2).

Thirty nine sub-communities within seventeen vegetation communities are recognised as occurring in the City of Banyule (see section 4.1). One or two others potentially present but now apparently eliminated are not included. A description of each sub-community is provided in section 4.3.

The classification was determined by hand-sorting field data into natural groupings. Floristic and structural information was important for determination of communities. Landform and biogeographic (plant and animal) indicator species were important for determination of sub-communities. Plant scientific and common name nomenclature and Victorian conservation status follows NRE (1998) and Walsh & Entwisle (1994-1999). The regional (Greater Melbourne) and local (Banyule) conservation status of plants and vegetation sub-communities has been determined by this author.

Following is a brief discussion on derivation of plant communities in the City of Banyule.

BIF Box - Ironbark Forest (EVC 61): this is comprised of foothills alliances dominated by Red Ironbark and/or Yellow Gum. BIW occurs on stony hill-crests and river spurs. Banyule supports one sub-community dominated by Yellow Gum (BIFhy). This has strong floristic affinity with vegetation of the Brisbane Ranges and north-central Victorian goldfields. The prominence of chenopod shrubs also has floristic affinity with riverine escarpment scrub (RES) which occurs on cliffs in the Plenty Gorge. Understorey is shaped strongly by fire and kangaroo/rabbit grazing regimes.

BSW Box - Stringybark Woodland: lowland community split from upland EVC 22- grassy dry forest. The community occupies hill-top environments across the low rainfall foothills and plains. In Banyule these include exposed hill-slopes (BSWhr/hy) and sheltered hill-slopes (BSWsh). Box - stringybark woodland is the ecological bridge between plains grassy woodland (PGWO) of the lowlands and grassy dry forest of the mountains. It supports a characteristic and diverse orchid assemblage (e.g. spider-orchids). Shrubs are co-dominants with grasses in the ground stratum. The latter (notably Silvertop Wallaby-grass and Grey Tussock-grass) form the clear dominant of grassy dry forest in dry mountain areas. They are most frequent in BSWhr of the Silurian mudstone foothills in the north-east of Banyule.

Shrubs most indicative of the lowlands include Gold-dust Wattle, Hedge Wattle and Golden Wattle. There are also grasses (notably Kangaroo Grass) and a suite of herbs including Scaly Buttons, Pink Bindweed and Spur Velleia of volcanic plains grassland. This is particular for BSWhy on Silurian sandstone in central and south-east Banyule. Box - stringybark woodland also has affinity with riverine escarpment scrub (RES) and Herb-rich Foothill Forest (HFF) of the Yarra and Plenty Gorge.

BW Box Woodland: lowland community within EVC 22- Grassy Woodland occupying sandstone hill-crests and spurs in river gorges flanking the volcanic and alluvial plains. The Victorian Midlands (goldfields) shrub layer including Gold-dust Wattle, Golden Wattle, Grey Everlasting, Shiny Everlasting, Common Beard-heath and Matted Bush-pea has floristic affinity with box - stringybark woodland (BSW). The prominent grassland layer dominated by Weeping Grass and including eight or more wallaby grass and five spear grass species gives structural and floristic affinity with plains grassy woodland (PGWO). It associates with PGWO on the plains and valley grassy forest (VGF) in the foothills. Box woodland occurs in lower rainfall areas (500-700 mm per annum) than box - stringybark woodland and is highly threatened across Melbourne.

CGW Creekline Grassy Woodland (EVC 68): Banyule supports two sub-communities dominated by River Red Gum. CGWc occurs along semi-permanent creeks of the plains. It is distinguished from CGWdl which occurs along ephemeral drainage lines by containing additional riparian species in common with floodplain riparian woodland (FRW). The floristic and landform relationship of CGW on the plains is comparable to creekline herb-rich woodland (CHW) and valley grassy forest (VGF) in the foothills. Alliances of CGWc on the volcanic plains and alluvial plains could well be distinct at the sub-community level (e.g. absence of Swamp Paperbark from the former).

FRW Floodplain Riparian Woodland (EVC 56): stream alliances of the alluvial plains dominated by River Red Gum along Yarra River and Manna Gum along Plenty River. The community is replaced by riparian forest in higher rainfall sections of the foothills and riparian shrubland (RS) on the volcanic plains. Banyule supports four sub-communities of floodplain riparian woodland. Two occur along river banks (FRWrm/rr) and two on river terraces (FRWtm/tr).

FWA Floodplain Wetland Aggregate (EVC 172): this is associated with floodplain riparian woodland and occupies billabongs and swamps on the alluvial plains and is comprised of semi-aquatic to aquatic herbfields in a dynamic equilibrium. Floodplain wetland aggregate is a collective of EVCs covering various vegetation zones in the wet and dry phases of billabongs and swamps associated with riparian floodplains. The zones can vary dramatically depending on environmental conditions (e.g. become absent after extended drought). They re-appear when wetlands remain inundated for an extended period. The different vegetation zones usually occur together but form distinct vegetation strata and provide habitat to differing animal groups.

The components of FWA include aquatic herbland (EVC 653), aquatic sedgeland (EVC 308), dwarf floating aquatic herbland (EVC 949), floodway pond herbland (EVC 810), submerged aquatic herbland (EVC 918), tall marsh (EVC 821) and wet verge sedgeland (EVC 932). As well as character species composition, sub-communities are categorised on landform type and depth/inundation regime (e.g. shallow freshwater marsh or freshwater meadow). FWA is comprised of species that float on or below the water (e.g. azollas, duckweeds and bladderwort - dwarf floating aquatic herbland), species that attach to the substrate, have submerged to floating foliage and flower under water (e.g. eel grass- submerged aquatic herbland), species that attach to the substrate, have floating to emergent foliage with rootstocks tolerant of prolonged desiccation (Water-ribbons and Upright Water-milfoil - aquatic herbland), species that attach to the substrate and have fully emergent foliage (Tall Spike-sedge, Giant Rush and Common Reed - aquatic sedgeland & tall marsh) and species that alternate in growth habit (e.g. liverworts).

GW Grassy Woodland (EVC 175): infrequently documented box and gum eucalypt community which occupies high river terrace fans, sand-plains and hill crest cappings of central and north-eastern Victoria. The main occurrence in Greater Melbourne is in the Yarra Valley from Templestowe to Warrandyte Gorge. It also occurs on the Tertiary sand-plain in the southern Plenty Gorge. Two sub-communities occur in Banyule, one occupying alluvial fans at the neck of river meanders of the Yarra, and the other restricted in Banyule to volcanic hill-crest cappings east of the Plenty River near the northern boundary of the municipality.

GW supports transitional vegetation between herb-rich foothill forest (HFF), plains grassy woodland (PGWO) and valley grassy forest (VGF). The prominence of tall shrubs provides structural affinity to grassy low open-forest (characterised by Coast Manna Gum) of coastal sand-plains.

PGWE Plains Grassy Wetland (EVC 125): Grassy-herbaceous shallow seasonal wetlands of lowland plains, characteristically species-rich (at least on verges) when relatively intact. Zones interpreted as representing complexes between Plains Grassy Wetland and several other wetland EVCS are frequently present. Formerly widespread in lowland plains areas.

PGWO Plains Grassy Woodland (EVC 55): It forms a woodland canopy (trees of less than 100/ha) and contains a grassy understorey with dominants including Kangaroo Grass and a suite of other flora and fauna (e.g. parrot) species in common with the plains. There are five sub-communities of plains grassy woodland in Banyule. Three occur on the alluvial plains, one each on exposed plain-slopes (PGWOep), sheltered plain-slopes (PGWOsp) and stream terraces and valleys (PGWOtv). The other two sub-communities occur on the Quaternary volcanic plains. PGWOvp occurs on higher ground of the silt plains east of Darebin Creek while PGWOvs occupies seasonally damp swales and stream terraces. Each sub-community is dominated by River Red Gum. Plains grassy woodland is replaced by valley grassy forest (VGF) and box - stringybark woodland (BSW) in the foothills. The transition from BSW to PGW is determined by decreasing rainfall and elevation (approximately 680 mm and 50 m).

PSWE Plains Sedgy Wetland (EVC 647): this EVC occupies swamps on the alluvial plains and is comprised of semi-aquatic to aquatic herbfields. It occupies shallow freshwater marshes and is dominated by sedges. The only stand in Banyule (Yaruk Tamboore) has been drained and the remnant formation now occupies freshwater meadow (currently being restored to freshwater marsh). The original freshwater meadows at the fringe of the plains sedgy wetland would have supported plains grassy wetland (PGWEfm) dominated by grasses, sedges and rushes. Banyule supports one sub-community of plains sedgy wetland (PSWEma). It occurs on the upper floodplain of the Yarra and would have been connected to the river only in periods of high flood. In sections more frequently inundated on the lower floodplain (e.g. billabongs) and higher rainfall areas (e.g. Middle Yarra), plains sedgy wetland is replaced by wet verge sedgeland (WVSfm).

RES Riverine Escarpment Scrub (EVC 82): Previously included under chenopod rocky open scrub by authors in areas west of Melbourne. Banyule supports two sub-communities restricted to sedimentary formations in lowland river gorges (RESes/ss) and another on basalt stream cliffs of the volcanic plains (RESv). Riverine escarpment scrub contains a higher proportion of scrambling herbs and ferns than adjoining habitats. Many of these species are of narrow or disjunct distribution. RES has affinity with box - stringybark woodland but lacks character hill-crest species (e.g. Black's Goodenia and Common Beard-heath). It supports additional escarpment species (Saloop Saltbush, Cut-leaf Daisy). Disturbed stands are vulnerable to weed invasion. Occupying the cliff-faces of gorges, Riparian Escarpment Scrub grades into Riparian Shrubland in the riparian zone at the foot of the cliff.

RS Riparian Shrubland (EVC 19): the community consists of dense thickets of shrubs, swards of reeds, rushes and sedges and only scattered trees. It is more diverse than floodplain riparian woodland (FRW), supporting additional elements from mountain forest (e.g. ferns) and coastal marshland (e.g. Australian Lilaopsis, Swamp Mazus). Two sub-communities occur in Banyule. One

characterised by Muttonwood occupies rapids in sedimentary river gorges of the foothills (RSsr). The other characterised by Woolly Tea-tree occurs along streams on the volcanic plains (RSvc).

SS *Swamp Scrub (EVC 53)*: characterised by Swamp Paperbark on the lower floodplain adjacent to billabongs of the Lower Yarra between Kew and Templestowe. One sub-community occurred in Banyule (SSf), but this has been eliminated. Swamp scrub is usually associated with seasonal wetland (SW) and permanent wetland (PW). These are included under EVC - swamp scrub but are treated separately in this study.

VGF *Valley Grassy Forest (EVC 47)*: this community occupies foothill valleys. There are two sub-communities in Banyule. VGFsf occupies the main valley and adjoining sheltered foot-slopes on the east side of the valley. VGFeh occupies the exposed hill-slopes above VGFsf. VGFeh and VGFsf are replaced by River Red Gum plains grassy woodland (PGWOep and PGWotv respectively) on the lower rainfall alluvial plains at Heidelberg.

Character mountain species of VGF not occurring in PGW include Mountain Clematis, Snow Daisy-bush, Narrow-leaf Peppermint and Messmate. Other differences include absence of several character plains elements (notably riparian species of CGWdl) and the dominant shrub transition from Lightwood and Tree Violet to Burgan and Prickly Tea-tree. Thatch Saw-sedge dominates seepages and gullies.

4.3 Vegetation Community Descriptions

The following pages contain descriptions of the vegetation sub-communities that occur in Banyule.

Pre-European Banyule contained fifteen vegetation communities. These are further subdivided into thirty five sub-communities. Some have been eliminated since land settlement. Several others remain only as isolated trees in residential areas. Sub-communities are described according to vegetation attributes (character species and structure of life strata) and environmental parameters (topography). Further information on vegetation communities can be obtained from section 4.2 while additional species can be determined from Appendix 1. More detailed descriptions of physical and environmental parameters (e.g. landform, soil type) appear in sections 2.1 and 2.2.

The boxes under each sub-community contain a list of character species. These are species usually present in intact or relatively intact stands across the City of Banyule. Species are listed under their respective life forms in alphabetical order. The nominate species for a sub-community is usually in the canopy strata. This is entered in bold/italic type.

Where only partially intact or remnant stands remain, species have been reconstructed from the nearest intact stands in the district surrounding Banyule. The district is defined as areas occurring within 5 km of the municipal boundary. It includes Yarra Bend, Darebin Creek Bundoora Park to Epping, La Trobe University and Gresswell Forest, Plenty Gorge Park, Diamond Valley from Diamond Creek to Hurstbridge, Yarra Valley Parklands and Koonung Creek.

A theoretical percentage cover is listed at the head of each life form and for the substrate. Height of the tree or canopy stratum is also listed (emergent eucalypts listed under the canopy of scrub and shrubland normally exceed this). Height of the canopy stratum of scrub and shrubland formations and understorey strata occupy standardised ranges.

These are canopy/tall shrubs and climbers (2-8 m); low shrubs (ground to 2 m); ferns (with exception of tree-ferns, <2 m); monocots including sedges, lilies and grasses (<1.5 m); dicot herbs including daisies (<1 m). The latter includes "shrubby" species that go through an annual growth and dieback cycle (e.g. fireweeds, etc.). Note that tall shrubs include small trees such as Blackwood which can grow in excess of 8 m (as normally do emergent eucalypts listed under canopy).

The final entry for each sub-community is a listing of the most intact stand/s remaining in Banyule. There are four categories: (a) reference or intact stand; (b) relatively intact stand; (c) partially intact stand; (d) remnant/refugial, degraded or establishing stand. A full methodology of survey and assessment of intactness and other criteria of botanical significance is presented in other studies by the author.

While botanical significance is not assessed in this study, as a rule of thumb, (a) is normally equivalent to state and (b) is regional. Generally, the more intact the stand, the more important it is to conservation. But note that even degraded stands can have at least regional significance when supporting a species that is rare or threatened in Victoria. The above assessments are preliminary and based only on brief visits to a subset of sites in the City of Banyule. A complete assessment along with other criteria of botanical significance is dependent on systematic and intensive, quadrat based surveys.

Sub-communities are placed into six conservation status categories according to their frequency of occurrence in Greater Melbourne (GM). In order of highest to lowest risk these are:

1. **Critically Endangered:** sub-communities that have been eliminated or substantially degraded over their entire natural range in GM. As far as is known, only one but more often no stands remain intact and few stands remain relatively intact. All other remaining stands are largely degraded remnants confined to the lowlands, predominantly in plains grassland/grassy woodland and some riverine and wetland communities. They occupy soils of higher nutrient status or moisture content and have been selectively cleared for settlement and agriculture.
2. **Endangered:** habitats that have been virtually eliminated over their entire natural range in Greater Melbourne (<5% remain intact). Fewer than three intact or relatively intact stands are represented in the biological reserve system of Greater Melbourne. Stands that remain are largely degraded remnants and are primarily confined to the lowland plains, mostly in riverine or grassland/grassy woodland communities. They occupy soils of higher nutrient status and moisture content and have been selectively cleared for settlement and agriculture.
3. **Threatened:** habitats that have been eliminated or degraded in over 75% of their natural range in Greater Melbourne (>5% remain intact). At least three intact or relatively intact stands are represented in the biological reserve system of Greater Melbourne.
4. **Depleted:** habitats that have been eliminated or degraded in 50% to 75% of their natural range in Greater Melbourne, but usually represented in the biological reserve system.
5. **Disjunct or naturally rare:** habitats naturally separated from their nearest known extensive and intact occurrence by a distance considered to exceed that required for genetic contact, apart from through chance events. Stands are small (usually less than 5 ha and not normally exceeding 50 ha) and often support remnant populations which convey important biogeographic information. Most habitats that are disjunct, while rare, are not threatened. Often the physiographic feature making them rare has preserved them (e.g. cliff-faces in river gorges).
6. **Secure:** habitats still occurring in over 75% of their natural range in Greater Melbourne and contained in substantially intact condition in over 50% of this range. Several are wetland habitats which have been restored or created at artificial waterbodies and are adequately represented in the biological reserve system.

Box - Ironbark Forest (EVC 61)Sub-community: **BIFsy** Melbourne Yellow-gum (hill-crest/spur)**Data:** Banyule (Yandell Reserve). District (Memorial Drive Plenty Gorge Park)**TREES** (10-15 m tall; 15-20% cover)*Eucalyptus leucoxydon**Eucalyptus macrorhyncha**Eucalyptus melliodora***TALL SHRUBS & CLIMBERS** (15-20% cover)*Acacia implexa**Acacia mearnsii**Acacia paradoxa**Acacia pycnantha**Bursaria spinosa**Cassinia longifolia**Cassytha melantha**Clematis microphylla**Exocarpos cupressiformis**Hardenbergia violacea**Kunzea ericoides***LOW SHRUBS** (5-10% cover)*Acacia acinacea**Astroloma humifusum**Chrysocephalum apiculatum**Daviesia leptophylla**Pimelea curviflora**Pultenaea pedunculata***SEDGES, LILIES, RUSHES & GRASSES** (20-30% cover)*Arthropodium strictum**Austrodanthonia spp.**Austrostipa mollis**Dianella revoluta**Lomandra filiformis***HERBS including DAISIES** (10-20% cover)*Brachyscome multifida**Drosera whittakeri**Einadia nutans**Gonocarpus tetragynus**Goodenia blackiana**Kennedia prostrata**Lagenophora huegelii**Leptorhynchus tenuifolius**Stuartina muelleri**Veronica plebeia***SUBSTRATE** (30-40% cover): bare ground; leaf litter, logs, rocks**Yellow Gum**

Red Stringybark

Yellow Box

Lightwood

Black Wattle

Hedge Wattle

Golden Wattle

Sweet Bursaria

Dogwood

Coarse Dodder-laurel

Small-leaved Clematis

Cherry Ballart

Purple Coral-pea

Burgan

Gold-dust Wattle

Cranberry Heath

Common Everlasting

Narrow-leaf Bitter-pea

Curved Rice-flower

Matted Bush-pea

Chocolate Lily

Wallaby Grass

Supple Spear-grass

Black-anther Flax-lily

Wattle Mat-rush

Cut-leaf Daisy

Scented Sundew

Nodding Saltbush

Common Raspwort

Black's Goodenia

Running Postman

Coarse Bottle-daisy

Wiry Buttons

Spoon Cudweed

Trailing Speedwell

Conservation status in Greater Melbourne: regionally threatened**Distribution:** localised at Greenhills north of Greensborough**Landform:** foothill; sandstone hill-crests and exposed hill-slopes**Vegetation:** BIFsy has a medium cover of tall shrubs (wattles), climbers and low shrubs (heaths) and an open field layer with ample bare ground and leaf litter. Several species (Yellow Gum, Golden Wattle, Gold-dust Wattle) have biogeographic links with the central goldfields. River spurs in nearby Plenty Gorge Park support an additional alliance of spear-grass and chenopod shrubs (see RESes). BIFsy has floristic affinity (e.g. shrub-peas and orchids) with BSWhr. The stand at Yandell Reserve in absence of grazing/fire has an elevated grass cover.**Most intact stand(s):** partially intact at Cairns Street frontage of Yandell Reserve.

Box - Stringybark WoodlandSub-community: **BSWhr** Red Box (hill-slope)**Data:** Banyule (St Helena Flora Reserve and Aqueduct Lane)

TREES (12-15 m tall; 20-30% cover)	
<i>Eucalyptus goniocalyx</i>	Long-leaf Box
<i>Eucalyptus macrorhyncha</i>	Red Stringybark
<i>Eucalyptus polyanthemos</i>	Red Box
TALL SHRUBS & CLIMBERS (20% cover)	
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia paradoxa</i>	Hedge Wattle
<i>Acacia pycnantha</i>	Golden Wattle
<i>Cassinia longifolia</i>	Dogwood
<i>Exocarpos cupressiformis</i>	Cherry Ballart
<i>Kunzea ericoides</i>	Burgan
LOW SHRUBS (10-20% cover)	
<i>Acacia acinacea</i>	Gold-dust Wattle
<i>Acacia genistifolia</i>	Spreading Wattle
<i>Acrotriche serrulata</i>	Honey-pots
<i>Daviesia leptophylla</i>	Narrow-leaf Bitter-pea
<i>Leucopogon virgatus</i>	Common Beard-heath
<i>Ozothamnus obcordatus</i>	Grey Everlasting
SEDGES, LILIES, RUSHES & GRASSES (20-30% cover)	
<i>Austrodanthonia</i> spp.	Wallaby Grass
<i>Dianella revoluta</i>	Black-anther Flax-lily
<i>Joycea pallida</i>	Silvertop Wallaby-grass
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa sieberiana</i> var. <i>sieberiana</i>	Grey Tussock-grass
HERBS including DAISIES (10-20% cover)	
<i>Brunonia australis</i>	Blue Pincushion
<i>Dichondra repens</i>	Kidney-weed
<i>Drosera whittakeri</i>	Scented Sundew
<i>Galium gaudichaudii</i>	Rough Bedstraw
<i>Gonocarpus tetragynus</i>	Common Raspwort
<i>Goodenia blackiana</i>	Black's Goodenia
<i>Helichrysum scorpioides</i>	Button Everlasting
<i>Hovea linearis</i>	Common Hovea
<i>Hydrocotyle laxiflora</i>	Stinking Pennywort
<i>Microseris</i> sp. aff. <i>lanceolata</i>	Foothill Yam-daisy
<i>Plantago varia</i>	Variable Plantain
<i>Wahlenbergia gracilis</i>	Sprawling Bluebell
<i>Viola hederacea</i>	Ivy-leaf Violet
SUBSTRATE (20-30% cover): leaf litter/moss; logs, bare ground	

Conservation status in Greater Melbourne: regionally threatened**Distribution:** restricted to north-east Banyule (St Helena Road to Ryans Road)**Landform:** foothill; Silurian mudstone hill-crests and upper hill-slopes

Vegetation: BSWhr has an open eucalypt layer, a moderate cover of tall shrubs (notably wattles) and low shrubs (particularly peas) and prominent field layer dominated by flax-lily, wallaby-grasses, Weeping Grass and Blue Pincushion. BSWhr is ecotonal with HFFsl on sheltered mid-slopes. Damp valley elements such as Button Everlasting co-occur with goldfields elements such as Dogwood, Grey Everlasting, Gold-dust Wattle, Golden Wattle and Hedge Wattle (all shared with BIFsy). Rock outcrop species including Narrow Rock-fern and Hoary Sunray also occur in volcanic plains grassland and RESEs of river gorges. BSWhr has a diverse ground flora and is critical habitat for the rare Emerald-lip Greenhood.

Most intact stand(s): relatively intact (St Helena Flora Reserve)

Box - Stringybark WoodlandSub-community: **BSWhy** Yellow Box (hill-slope)**Data:** Banyule (St Katherine's St Helena and Fitzsimons Lane cutting)

TREES (10-15 m tall; 15-25% cover)	
<i>Eucalyptus goniocalyx</i>	Long-leaf Box
<i>Eucalyptus macrorhyncha</i>	Red Stringybark
<i>Eucalyptus melliodora</i>	Yellow Box
TALL SHRUBS & CLIMBERS (10-20% cover)	
<i>Acacia implexa</i>	Lightwood
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia pycnantha</i>	Golden Wattle
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Cassinia longifolia</i>	Dogwood
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Hardenbergia violacea</i>	Purple Coral-pea
<i>Kunzea ericoides</i>	Burgan
LOW SHRUBS (10% cover)	
<i>Acacia acinacea</i>	Gold-dust Wattle
<i>Astroloma humifusum</i>	Cranberry Heath
<i>Chrysocephalum apiculatum</i>	Common Everlasting
<i>Daviesia leptophylla</i>	Narrow-leaf Bitter-pea
<i>Dillwynia cinerascens</i>	Grey Parrot-pea
<i>Pimelea curviflora</i>	Curved Rice-flower
<i>Platylobium obtusangulum</i>	Common Flat-pea
SEDGES, LILIES, RUSHES & GRASSES (40-50% cover)	
<i>Arthropodium strictum</i>	Chocolate Lily
<i>Austrodanthonia spp.</i>	Wallaby Grass
<i>Austrostipa spp.</i>	Spear Grass
<i>Dianella revoluta</i>	Black-anther Flax-lily
<i>Lomandra nana</i>	Dwarf Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Themeda triandra</i>	Kangaroo Grass
<i>Tricoryne elatior</i>	Yellow Rush-lily
HERBS including DAISIES (10-20% cover)	
<i>Bossiaea prostrata</i>	Creeping Bossiaea
<i>Gonocarpus tetragynus</i>	Common Raspwort
<i>Hovea linearis</i>	Common Hovea
<i>Hydrocotyle laxiflora</i>	Stinking Pennywort
<i>Oxalis perennans</i>	Grassland Wood-sorrel
<i>Pimelea humilis</i>	Common Rice-flower
<i>Velleia paradoxa</i>	Spur Velleia
SUBSTRATE (10% cover): bare ground; leaf litter, logs	

Conservation status in Greater Melbourne: regionally threatened**Distribution:** formerly widespread in central and south-east Banyule (Montmorency)**Landform:** foothill; sandstone and Tertiary sand-plain hill-crests and upper hill-slopes

Vegetation: BSWhy has an open tree strata dominated by Yellow Box, medium tall shrub layer of wattles and dense grass layer (affinity PGWOep). BSWhy has affinity with BSWhr in the wattle composition but the grassland plains Kangaroo Grass - Common Everlasting alliance replaces the foothills Silvertop Wallaby-grass - Common Beard-heath alliance. Bordering downslope on the plains is PGWOep while in the foothills is VGFsf (strip dominated by Candlebark and the tall shrubs, Burgan and Hedge Wattle). Red Box is absent apart from the edge of the sand-plain at St Katherine's. BSWhy borders herb-rich grassy woodland (GWv) on the Tertiary volcanics.

Most intact stand(s): partially intact (St Katherine's; Fitzsimons Lane).

Box Woodland

Sub-community: **BWlh** Yellow Box (lowland hill-crest).

Data: District (Gresswell Hill and Westerfolds Park)

TREES (12-15 m tall; 15-25% cover)

Eucalyptus blakelyi

Eucalyptus goniocalyx

Eucalyptus melliodora

Eucalyptus viminalis

TALL SHRUBS & CLIMBERS (10% cover)

Acacia implexa & *Acacia mearnsii*

Acacia melanoxylon & *Acacia paradoxa*

Allocasuarina littoralis & *A. verticillata*

Banksia marginata (Tree Form)

Bursaria spinosa & *Cassinia longifolia*

Clematis decipiens & *Exocarpos cupressiformis*

Hardenbergia violacea & *Melicytus dentatus*

LOW SHRUBS (5-10% cover)

Atriplex semibaccata

Chrysocephalum apiculatum & *C. semipapposum* (FF)

Myoporum insulare & *Olearia ramulosa* ssp. *ramulosa*

Pultenaea pedunculata & *Rubus parvifolius*

SEDGES, LILIES, RUSHES & GRASSES (40-60% cover)

Austrodanthonia spp. & *Austrostipa* spp.

Arthropodium strictum & *Bothriochloa macra*

Bulbine bulbosa & *Caesia calliantha*

Dianella admixta & *Dianella amoena*

Dianella perfragrans

Elymus scaber

Hemarthria uncinata & *Lepidosperma gunnii*

Lomandra filiformis & *Lomandra nana*

Microlaena stipoides & *Poa rodwayi*

Themeda triandra & *Tricoryne elatior*

DICOT HERBS including DAISIES (10-20% cover)

Acaena agnipila & *Asperula conferta*

Bossiaea prostrata & *Convolvulus angustissimus*

Cynoglossum suaveolens & *Desmodium varians*

Dichondra repens & *Drosera peltata* ssp. *peltata*

Einadia nutans & *Einadia trigonos*

Geranium aff. *pallidiflorum* & *Geranium retrorsum* FF

Glycine tabacina & *Gonocarpus tetragynus*

Leptorhynchos squamatus & *Linum marginale*

Oxalis perennans & *Oxalis radicata*

Pimelea curviflora & *Pimelea humilis*

Velleia paradoxa & *Veronica gracilis*

Wahlenbergia communis & *W. gracilis*

SUBSTRATE (10% cover): leaf litter/moss.

Blakely's Red Gum

Long-leaf Box

Yellow Box

Manna Gum (ssp. & hybrids)

Lightwood & Black Wattle

Blackwood & Hedge Wattle

Black Sheoke & Drooping Sheoke

Silver Banksia

Sweet Bursaria & Dogwood

Slender Clematis & Cherry Ballart

Purple Coral-pea & Tree Violet

Berry Saltbush

Common Everlasting & Clustered Everlasting

Common Boobialla & Twiggy Daisy-bush

Matted Bush-pea & Small-leaf Bramble

Wallaby Grass & Spear Grass

Chocolate Lily & Red-leg Grass

Bulbine Lily & Blue Grass-lily

Black-anther Flax-lily & Matted Flax-lily

Arching Flax-lily

Common Wheat-grass

Mat Grass & Slender Sword-sedge

Wattle Mat-rush & Dwarf Mat-rush

Weeping Grass & Velvet Tussock-grass

Kangaroo Grass & Yellow Rush-lily

Hairy Sheep's Burr & Common Woodruff

Creeping Bossiaea & Pink Bindweed

Sweet Hound's-tongue & Slender Tick-trefoil

Kidney-weed & Pale Sundew

Nodding Saltbush & Lax Goosefoot

Rosella Crane's-bill & Grassland Crane's-bill

Variable Glycine & Common Raspwort

Scaly Buttons & Native Flax

Grassland Wood-sorrel & Stout-rooted Wd-sorrel

Curved Rice-flower & Common Rice-flower

Spur Velleia & Slender Speedwell

Tufted Bluebell & Sprawling Bluebell

Conservation Status in Greater Melbourne: critically endangered

Distribution: Hill crests in the South East lowland parts of Banyule.

Landform: *foothill*; exposed aspects of the Silurian sandstone on the edge of Tertiary volcanics

Vegetation: BWlh contains an open canopy and tall shrub stratum (wattles, Sweet Bursaria and Tree Violet) and a dense field layer of grasses, lilies and ground peas. Livestock grazing has depleted the daisy component. BWlh occurs on hill-crests out-cropping plains grassy woodland.

Most intact stand(s): eliminated from Banyule, nearest relatively intact stands are Gresswell Hill and at Westerfolds Grassland Conservation Area.

Creekline Grassy Woodland (EVC 68)Sub-community: **CGWc** River Red Gum (creek)**Data:** Banyule (Banyule Creek composite). District (Kestrel Creek Westerfolds Park)**TREES** (15 m tall; 10-20% cover)*Eucalyptus camaldulensis**Eucalyptus ovata***TALL SHRUBS & CLIMBERS** (10% cover)*Acacia mearnsii**Acacia melanoxylon**Gynatrix pulchella**Melicytus dentatus**Melaleuca ericifolia***SEDGES, LILIES, RUSHES & GRASSES** (40-50% cover)*Agrostis avenacea**Alisma plantago-aquatica**Bolboschoenus medianus**Eleocharis acuta**Glyceria australis**Hemarthria uncinata**Isolepis cernua**Juncus* spp.*Microlaena stipoides**Notodanthonia semiannularis**Phragmites australis**Poa labillardieri**Potamogeton crispus**Schoenoplectus tabernaemontani**Tricoryne elatior**Triglochin procerum**Typha domingensis***HERBS including DAISIES** (20-30% cover)*Acaena novae-zelandiae**Alternanthera denticulata**Centella cordifolia**Centipeda cunninghamii**Crassula helmsii**Elatine gratioloides**Lobelia anceps**Mentha australis**Persicaria decipiens**Rumex bidens**Senecio minimus**Veronica gracilis***SUBSTRATE** (10-20% cover): bare ground (creek banks/bed)**River Red Gum**

Swamp Gum

Black Wattle

Blackwood

Hemp Bush

Tree Violet

Swamp Paperbark

Common Blown-grass

Water Plantain

Marsh Club-sedge

Common Spike-sedge

Australian Sweet-grass

Mat Grass

Nodding Club-sedge

rushes

Weeping Grass

Wetland Wallaby-grass

Common Reed

Common Tussock-grass

Curly Pondweed

River Club-sedge

Yellow Rush-lily

Common Water-ribbons (floating narrow leaf variant)

Narrow-leaf Cumbungi

Bidgee-widgee

Lesser Joyweed

Centella

Common Sneezeweed

Swamp Crassula

Waterwort

Angled Lobelia

River Mint

Slender Knotweed

Mud Dock

Shrubby Fireweed

Slender Speedwell

Conservation status in Greater Melbourne: regionally threatened**Distribution:** creeks of the Yarra Valley downstream from Plenty River**Landform:** alluvial plain; non-permanent swampy drainage lines and creeks**Vegetation:** CGWc has an open canopy of River Red Gums and a moderate tall shrub layer (Black Wattle, Blackwood and Tree Violet).

The field layer above creek banks has elements of bordering PGWOtv (Mat Grass, Slender Speedwell). Semi-aquatics are from floodplain swamps (Marsh Club-sedge, Common Reed, Mud Dock of PGWEme/WFeh) and foothill creeks (Centella of CHWfc).

Aquatics at pools (pondweeds, Water-ribbons) have affinity with AHbs. CGWc has poorer sub-surface drainage than CGWdl along upper creeks and supports Swamp Paperbark and additional semi-aquatics (e.g. Common Spike-sedge, Cumbungi, Shrubby Fireweed, Lesser Joyweed). Permanent creeks on the plains (e.g. Koonung Creek) support FRWrr.

Most intact stand(s): partially intact (Banyule Creek below Simpson Barracks).

Creepline Grassy Woodland (EVC 68)

Sub-community: **CGWdl** River Red Gum (drainage line)

Data: Banyule (Simpson Barracks). District (Salt Creek in Gresswell Forest)

TREES (15 m tall; 20% cover)	
<i>Eucalyptus camaldulensis</i>	River Red Gum
<i>Eucalyptus ovata</i>	Swamp Gum
TALL SHRUBS & CLIMBERS (10-20% cover)	
<i>Acacia melanoxylon</i>	Blackwood
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Exocarpos cupressiformis</i>	Cherry Ballart
<i>Melicytus dentatus</i>	Tree Violet
<i>Ozothamnus ferrugineus</i>	Tree Everlasting
LOW SHRUBS (5% cover)	
<i>Acacia verticillata</i>	Prickly Moses
<i>Coprosma quadrifida</i>	Prickly Currant-bush
SEDGES, LILIES, RUSHES & GRASSES (60% cover)	
<i>Agrostis avenacea</i>	Common Blown-grass
<i>Alisma plantago-aquatica</i>	Water Plantain
<i>Austrodanthonia duttoniana</i>	Brown-back Wallaby-grass
<i>Austrodanthonia laevis</i>	Smooth Wallaby-grass
<i>Carex appressa</i>	Tall Sedge
<i>Carex iynx</i>	Tussock Sedge
<i>Glyceria australis</i>	Australian Sweet-grass
<i>Isolepis platycarpa</i>	Broad-fruit Club-sedge
<i>Juncus spp.</i>	rushes
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa labillardieri</i>	Common Tussock-grass
HERBS including DAISIES (10% cover)	
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Centipeda cunninghamii</i>	Common Sneezeweed
<i>Crassula helmsii</i>	Swamp Crassula
<i>Drosera peltata ssp. peltata</i>	Pale Sundew
<i>Epilobium hirtigerum</i>	Hairy Willow-herb
<i>Geranium inundatum</i>	Naked Crane's-bill
<i>Haloragis heterophylla</i>	Varied Raspwort
<i>Lythrum hyssopifolia</i>	Small Loosestrife
<i>Oxalis exilis</i>	Shady Wood-sorrel
<i>Persicaria decipiens</i>	Slender Knotweed
<i>Veronica gracilis</i>	Slender Speedwell
<i>Wahlenbergia multicaulis</i>	Many-stemmed Bluebell
SUBSTRATE (5-10% cover): bare ground on banks; leaf litter/logs	

Conservation status in Greater Melbourne: regionally endangered

Distribution: restricted across south between Bonds Road and Darebin Creek

Landform: alluvial plain; ephemeral swampy drainage lines and adjoining alluvial flats in upper reaches of creeks and on river floodplains

Vegetation: CGWdl contains a moderately dense River Red Gum canopy and tall shrub layer dominated by Blackwood. Several riparian species in common with CGWc occupy drainage lines (Water Plantain, Australian Sweet-grass, Slender Knotweed) but other character aquatics and semi-aquatics of CGWc are absent (ferns and tall shrubs including Hemp Bush and Swamp Paperbark). Alluvial flats support dense field layers of Tall Sedge, Tussock Sedge and Common Tussock-grass. This grades into adjoining PGWOtv. Plains seasonal wetland species occupy swales and soaks (Brown-back Wallaby-grass, Varied Raspwort). CGWdl is the plains floristic equivalent of CHWdl in the foothills.

Most intact stand(s): partially intact (upper Banyule Creek at Simpson Barracks).

Creekline Herb-rich Woodland (EVC 164)

Sub-community: **CHWdl** Swamp Gum (drainage line)

Data: Banyule (Brown's Nature Reserve). District (Diamond Valley; Beardsell in prep.)

TREES (15-20 m tall; 15-20% cover)	
<i>Eucalyptus melliodora</i>	Yellow Box
<i>Eucalyptus ovata</i>	Swamp Gum
<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint
<i>Eucalyptus viminalis</i>	Manna Gum
TALL SHRUBS & CLIMBERS (20-30% cover)	
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia melanoxylon</i>	Blackwood
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Kunzea ericoides</i>	Burgan
<i>Ozothamnus ferrugineus</i>	Tree Everlasting
LOW SHRUBS (5-10% cover)	
<i>Cassinia aculeata</i>	Common Cassinia
<i>Goodenia ovata</i>	Hop Goodenia
FERNS (5-10% cover)	
<i>Adiantum aethiopicum</i>	Common Maiden-hair
<i>Pteridium esculentum</i>	Austral Bracken
SEDGES, LILIES, RUSHES & GRASSES (40-50)% cover)	
<i>Bulbine bulbosa</i>	Bulbine Lily
<i>Carex appressa</i>	Tall Sedge
<i>Echinopogon ovatus</i>	Common Hedgehog-grass
<i>Eleocharis acuta</i>	Common Spike-sedge
<i>Gahnia radula</i>	Thatch Saw-sedge
<i>Glyceria australis</i>	Australian Sweet-grass
<i>Isolepis platycarpa</i>	Broad-fruit Club-sedge
<i>Juncus spp.</i>	rushes
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa ensiformis</i>	Sword Tussock-grass
<i>Poa tenera</i>	Slender Tussock-grass
<i>Triglochin striatum</i>	Streaked Arrow-grass
HERBS including DAISIES (10-20% cover)	
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Centella cordifolia</i>	Centella
<i>Crassula helmsii</i>	Swamp Crassula
<i>Desmodium gunnii</i>	Southern Tick-trefoil
<i>Geranium potentilloides</i>	Cinquefoil Crane's-bill
<i>Goodenia elongata</i>	Lanky Goodenia
<i>Lythrum hyssopifolia</i>	Small Loosestrife
<i>Veronica gracilis</i>	Slender Speedwell
SUBSTRATE (5-10% cover): leaf litter/moss; logs	

Conservation status in Greater Melbourne: regionally threatened

Distribution: restricted east of Plenty River and localised around Heidelberg

Landform: foothill; drainage lines, damp gullies and upper reaches of creeks

Vegetation: CHWdl contains an open canopy of eucalypts, a dense sub-canopy of Blackwood and tall shrubs (notably Burgan) and a ground stratum dominated by ferns and shade tolerant herbs (Austral Bear's-ears, Lanky Goodenia). CHWdl occupies moist and fertile sites along tributaries of creeks (supporting CHWfc) and the heads of gullies (supporting CGWdl) running into Plenty River. It is usually flanked by VGFsf but supports additional riparian species (Angled Lobelia, Swamp Crassula) and a higher frequency of ferns and climbers (e.g. Mountain Clematis). The plains equivalent is CGWdl, where River Red Gum replaces Swamp Gum.

Most intact stand(s): partially intact (Brown's Nature Reserve & land to north).

Creekline Herb-rich Woodland (EVC 164)

Sub-community: **CHWfc** Manna Gum - Swamp Gum (foothill creek)

Data: District (compiled from the Diamond Valley; Beardsell in prep.)

TREES (15-20 m tall; 15-20% cover)	
<i>Eucalyptus ovata</i>	Swamp Gum
<i>Eucalyptus viminalis</i>	Manna Gum
TALL SHRUBS & CLIMBERS (20-30% cover)	
<i>Acacia dealbata</i>	Silver Wattle
<i>Acacia melanoxylon</i>	Blackwood
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Clematis aristata</i>	Mountain Clematis
<i>Kunzea ericoides</i>	Burgan
<i>Ozothamnus ferrugineus</i>	Tree Everlasting
<i>Pomaderris aspera</i>	Hazel Pomaderris
<i>Prostanthera lasianthos</i>	Victorian Christmas-bush
LOW SHRUBS (10% cover)	
<i>Acacia verticillata</i>	Prickly Moses
<i>Cassinia aculeata</i>	Common Cassinia
<i>Coprosma quadrifida</i>	Prickly Currant-bush
<i>Goodenia ovata</i>	Hop Goodenia
<i>Rubus parvifolius</i>	Small-leaf Bramble
FERNS (10% cover)	
<i>Adiantum aethiopicum</i>	Common Maiden-hair
<i>Pteridium esculentum</i>	Austral Bracken
SEDGES, LILIES, RUSHES & GRASSES (30-40% cover)	
<i>Carex appressa</i>	Tall Sedge
<i>Echinopogon ovatus</i>	Common Hedgehog-grass
<i>Gahnia radula</i>	Thatch Saw-sedge
<i>Juncus spp.</i>	rushes
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Poa ensiformis</i>	Sword Tussock-grass
<i>Poa tenera</i>	Slender Tussock-grass
HERBS including DAISIES (10-20% cover)	
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Centella cordifolia</i>	Centella
<i>Gratiola peruviana</i>	Austral Brooklime
<i>Hydrocotyle hirta</i>	Hairy Pennywort
<i>Lagenophora stipitata</i>	Blue Bottle-daisy
<i>Lobelia anceps</i>	Angled Lobelia
<i>Oxalis exilis</i>	Shady Wood-sorrel
<i>Ranunculus amphitrichus</i>	Small River Buttercup
<i>Senecio minimus</i>	Shrubby Fireweed
SUBSTRATE (10-20% cover): rocks/logs; bare ground, water	

Conservation status in Greater Melbourne: regionally depleted

Distribution: Karingal Creek and Greensborough Creek in the north of Banyule

Landform: foothill; non-permanent creeks

Vegetation: CHWfc contains an open canopy of gums, a prominent tall shrub layer and an open field layer of shade-tolerant ferns, grasses and sedges. Several character floodplain riparian woodland (FRWrr/rm) species extend into CHWfc from downstream (Sword Tussock-grass, Silver Wattle). Mud banks support ferns (Common Maiden-hair) and sedges (Leafy Bog-sedge). Creeks contain chains of pools interspersed with rock bars. Pools support aquatics (Austral Brooklime, Small River Buttercup, Water-ribbons) and are fringed by sphagnum bogs of grasses (Slender Tussock-grass) and herbs (Centella). Tributaries and flanking valleys support CHWdl/VGFsf. CHWfc is the foothills floristic equivalent of CGWc on the plains.

Most intact stand(s): eliminated.

Floodplain Riparian Woodland (EVC 56)Sub-community: **FRWrm** Manna Gum (riverbank)**Data:** Banyule (Plenty River Montmorency). District (Plenty Gorge; Beardsell 1997a)

TREES (15-20 m tall; 10-20% cover)	
<i>Eucalyptus viminalis</i>	Manna Gum
TALL SHRUBS & CLIMBERS (20-30% cover)	
<i>Acacia dealbata</i>	Silver Wattle
<i>Callistemon sieberi</i>	River Bottlebrush
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Melicytus dentatus</i>	Tree Violet
<i>Gynatrix pulchella</i>	Hemp Bush
<i>Leptospermum lanigerum</i>	Woolly Tea-tree
<i>Ozothamnus ferrugineus</i>	Tree Everlasting
LOW SHRUBS (10-20% cover)	
<i>Acacia verticillata</i>	Prickly Moses
<i>Coprosma quadrifida</i>	Prickly Currant-bush
<i>Goodenia ovata</i>	Hop Goodenia
<i>Solanum aviculare</i>	Kangaroo Apple
FERNS (5% cover)	
<i>Adiantum aethiopicum</i>	Common Maiden-hair
<i>Pteridium esculentum</i>	Austral Bracken
SEDGES, LILIES, RUSHES & GRASSES (20-30% cover)	
<i>Agrostis avenacea</i>	Common Blown-grass
<i>Bolboschoenus medianus</i>	Marsh Club-sedge
<i>Carex appressa</i>	Tall Sedge
<i>Carex gaudichaudiana</i>	Fen Sedge
<i>Juncus spp.</i>	rushes
<i>Phragmites australis</i>	Common Reed
<i>Poa ensiformis</i>	Sword Tussock-grass
<i>Schoenoplectus tabernaemontani</i>	River Club-sedge
HERBS including DAISIES (20-30% cover)	
<i>Alternanthera denticulata</i>	Lesser Joyweed
<i>Crassula helmsii</i>	Swamp Crassula
<i>Lobelia anceps</i>	Angled Lobelia
<i>Lycopus australis</i>	Australian Gipsywort
<i>Mentha australis</i>	River Mint
<i>Persicaria spp.</i>	knotweeds
<i>Senecio minimus</i>	Shrubby Fireweed
SUBSTRATE (10% cover): bare ground/riverbank	

Conservation status in Greater Melbourne: regionally threatened**Distribution:** Plenty River excluding the lower reaches and a small section of the Yarra for about 500 m downstream from Fitzsimons Lane**Landform:** riverine; banks of rivers**Vegetation:** FRWrm has an open tree canopy and dense shrub and field layers. Structurally similar to FRWrr, it has some floristic aspects of riparian forest along the Yarra in the foothills of Warrandyte. This includes the Manna Gum canopy and ferns (e.g. Common Rasp-fern, Ruddy Ground-fern and Rough Tree-fern). In common with streams on the plains, the tall shrub stratum (Silver Wattle, Tree Violet and Woolly Tea-tree) provides the strongest structural component. Semi-aquatics such as Marsh Club-sedge show further floristic affinity to the plains. FRWrm is flanked by FRWtm on adjoining terraces and upper floodplain and grades into RSsr at sedimentary rapids by Westerfolds Park and in the Plenty River.**Most intact stand(s):** partially intact along Plenty River below Montmorency Park and Yarra River downstream of Fitzsimons Lane. Nearest intact stand occurs in the Plenty Gorge.

Floodplain Riparian Woodland (EVC 56)

Sub-community: **FRWrr** River Red Gum (riverbank)

Data: Banyule (Yarra River at Main Trail - Westerfolds bridge)

TREES (15 m tall; 10-20% cover)	
<i>Eucalyptus camaldulensis</i>	River Red Gum
TALL SHRUBS & CLIMBERS (20-30% cover)	
<i>Acacia dealbata</i>	Silver Wattle
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Callistemon sieberi</i>	River Bottlebrush
<i>Calystegia sepium</i>	Large Bindweed
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Gynatrix pulchella</i>	Hemp Bush
<i>Melicytus dentatus</i>	Tree Violet
<i>Kunzea ericoides</i>	Burgan
<i>Leptospermum lanigerum</i>	Woolly Tea-tree
<i>Melaleuca ericifolia</i>	Swamp Paperbark
<i>Ozothamnus ferrugineus</i>	Tree Everlasting
LOW SHRUBS (5-10% cover)	
<i>Goodenia ovata</i>	Hop Goodenia
<i>Rubus parvifolius</i>	Small-leaf Bramble
<i>Solanum aviculare</i>	Kangaroo Apple
SEDGES, LILIES, RUSHES & GRASSES (30-40% cover)	
<i>Agrostis avenacea</i>	Common Blown-grass
<i>Juncus spp.</i>	rushes
<i>Microlaena stipoides</i>	Weeping Grass
<i>Phragmites australis</i>	Common Reed
<i>Poa labillardieri</i>	Common Tussock-grass
HERBS including DAISIES (20-30% cover)	
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Alternanthera denticulata</i>	Lesser Joyweed
<i>Centipeda cunninghamii</i>	Common Sneezeweed
<i>Crassula helmsii</i>	Swamp Crassula
<i>Lycopus australis</i>	Australian Gipsywort
<i>Lythrum hyssopifolia</i>	Small Loosestrife
<i>Persicaria spp.</i>	knotweeds
<i>Senecio minimus</i>	Shrubby Fireweed
SUBSTRATE (10% cover): bare ground/riverbank	

Conservation status in Greater Melbourne: regionally threatened

Distribution: Yarra River downstream from Westerfolds rapids, lower reaches of Plenty River and Darebin Creek downstream from Heidelberg Road

Landform: riverine; banks of rivers and adjoining sections of major creeks

Vegetation: FRWrr consists of an open canopy of River Red Gums and dense tall shrub and field layers. Dominant shrubs include Silver Wattle, River Bottlebrush, Tree Violet, Burgan and Swamp Paperbark. The field layer grades from semi-aquatic plants (sedges, rushes and knotweeds) on the lower bank to a combination of grasses (Common Tussock-grass and Weeping Grass) and herbs of moist, sheltered environments (Common Maiden-hair and Bidgee-widgee) on the upper bank. The downstream transition in river morphology and vegetation from foothills to alluvial plains occurs at Westerfolds rapids (e.g. River Red Gum for Manna Gum, Common Tussock-grass for Sword Tussock-grass, Tree Violet for Prickly Currant-bush, Woolly Tea-tree for Foothill Tea-tree). FRWrr is ecotonal with FRWtr on the terraces and lower floodplain.

Most intact stand(s): reference stand in Westerfolds Park at Yarra Trail footbridge.

Floodplain Riparian Woodland (EVC 56)Sub-community: **FRWtm** Manna Gum (terrace)**Data:** Banyule (Montpelier Billabong). District (Plenty Gorge Park; Beardsell 1997a)

TREES (15 m tall; 15-20% cover)	
<i>Eucalyptus viminalis</i>	Manna Gum
<i>Eucalyptus melliodora</i>	Yellow Box
TALL SHRUBS & CLIMBERS (10-20% cover)	
<i>Acacia dealbata</i>	Silver Wattle
<i>Acacia melanoxylon</i>	Blackwood
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Gynatrix pulchella</i>	Hemp Bush
<i>Melicytus dentatus</i>	Tree Violet
<i>Kunzea ericoides</i>	Burgan
<i>Ozothamnus ferrugineus</i>	Tree Everlasting
<i>Pomaderris aspera</i>	Hazel Pomaderris
LOW SHRUBS (10% cover)	
<i>Acacia verticillata</i>	Prickly Moses
<i>Dodonaea viscosa ssp. cuneata</i>	Wedge-leaf Hop-bush
<i>Goodenia ovata</i>	Hop Goodenia
<i>Olearia lirata</i>	Snow Daisy-bush
<i>Rubus parvifolius</i>	Small-leaf Bramble
<i>Sambucus gaudichaudiana</i>	White Elderberry
SEDGES, LILIES, RUSHES & GRASSES (40-50% cover)	
<i>Carex inomitata</i>	Hillside Sedge
<i>Carex iynx</i>	Tussock Sedge
<i>Echinopogon ovatus</i>	Common Hedgehog-grass
<i>Juncus spp.</i>	rushes
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa labillardieri</i>	Common Tussock-grass
HERBS including DAISIES (10-20% cover)	
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Centella cordifolia</i>	Centella
<i>Dichondra repens</i>	Kidney-weed
<i>Glycine microphylla</i>	Small-leaf Glycine
<i>Gonocarpus humilis</i>	Shade Raspwort
<i>Pelargonium australe</i>	Austral Stork's-bill
<i>Senecio minimus</i>	Shrubby Fireweed
<i>Veronica plebeia</i>	Trailing Speedwell
<i>Wahlenbergia gracilis</i>	Sprawling Bluebell
SUBSTRATE (10-20% cover): logs/leaf litter	

Conservation status in Greater Melbourne: regionally threatened**Distribution:** Plenty River upstream from Banyule Road, Montpelier Billabong and a small section of the Yarra for about 500 m downstream from Fitzsimons Lane**Landform:** riverine; low terrace including minor drainage lines and swales of river floodplains**Vegetation:** FRWtm contains an open tree stratum of Manna Gums and an understorey of dense grassland (Common Tussock-grass) and shrubland copses (Silver Wattle, Hazel Pomaderris, Tree Violet). Drainage lines support riparian species including rushes, Tree Everlasting and Hemp Bush in common with FRWrm. Terraces support escarpment and cliff species in common with HFFsl and REses. These include Austral Stork's-bill, Forest Germander and Wedge-leaf Hop-bush. Swales support elements from foothill gullies including Hillside Sedge, Tussock Sedge, Centella, Small-leaf Glycine and Shade Raspwort.**Most intact stand(s):** partially intact inside horseshoe at Montpelier Billabong.

Floodplain Riparian Woodland (EVC 56)Sub-community: **FRWtr** River Red Gum (terrace)**Data:** Banyule (Yarra terrace south of Montpelier Billabong)

TREES (15 m tall; 15-20% cover)	
<i>Eucalyptus camaldulensis</i>	River Red Gum
TALL SHRUBS & CLIMBERS (20-30% cover)	
<i>Acacia dealbata</i>	Silver Wattle
<i>Acacia melanoxylon</i>	Blackwood
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Gynatrix pulchella</i>	Hemp Bush
<i>Melicytus dentatus</i>	Tree Violet
<i>Kunzea ericoides</i>	Burgan
<i>Melaleuca ericifolia</i>	Swamp Paperbark
<i>Pomaderris aspera</i>	Hazel Pomaderris
<i>Prostanthera lasianthos</i>	Victorian Christmas-bush
LOW SHRUBS (5-10% cover)	
<i>Coprosma quadrifida</i>	Prickly Currant-bush
<i>Goodenia ovata</i>	Hop Goodenia
<i>Rubus parvifolius</i>	Small-leaf Bramble
<i>Solanum aviculare</i>	Kangaroo Apple
FERNS (<5% cover)	
<i>Adiantum aethiopicum</i>	Common Maiden-hair
<i>Pteridium esculentum</i>	Austral Bracken
SEDGES, LILIES, RUSHES & GRASSES (40-50% cover)	
<i>Dianella longifolia</i>	Pale Flax-lily
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa labillardieri</i>	Common Tussock-grass
<i>Schoenus apogon</i>	Common Bog-sedge
HERBS including DAISIES (20-30% cover)	
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Dichondra repens</i>	Kidney-weed
<i>Einadia trigonos ssp. trigonos</i>	Lax Goosefoot
<i>Lycopus australis</i>	Australian Gipsywort
<i>Oxalis perennans</i>	Grassland Wood-sorrel
<i>Persicaria prostrata</i>	Creeping Knotweed
<i>Veronica gracilis</i>	Slender Speedwell
<i>Urtica incisa</i>	Scrub Nettle
SUBSTRATE (5-10% cover): logs/leaf litter	

Conservation status in Greater Melbourne: regionally endangered**Distribution:** Yarra River and lower reaches of Plenty River and Darebin Creek**Landform:** riverine; low terrace including minor drainage lines and swales of river floodplains

Vegetation: FRWtr contains a dominant tall shrub layer of Tree Everlasting, Victorian Christmas-bush, Hemp Bush, Silver Wattle, Hazel Pomaderris and Tree Violet in common with FRWtr/rr. Drainage lines and swales support elements from neighbouring floodplain seasonal wetlands (FPHfm/PGWEme) and swamps (SSf). These include rushes, Creeping Knotweed, Common Tussock-grass and Swamp Paperbark. Ferns grow in the shade provided by the dense sub-canopy. FRWtr grades into PGWOtv on upper terraces (e.g. Slender Speedwell). The upper boundary approximates the one in 100 year flood level. Clearing/grazing has left most stands with only a scattering of understory species (Tree Violet, Weeping Grass and Bidgee-widgee), while exotic pasture grasses dominate. Shrub layers in most stands are being replanted.

Most intact stand(s): relatively intact south of Montpelier Billabong.

Floodplain Wetland Aggregate

Aquatic Herbland. AHbs. EVC 653

Definition: Water-ribbons (billabong/swamp).

AQUATIC PLANTS (50% cover)

Alisma plantago-aquatica

Water Plantain

Amphibromus fluitans

River Swamp Wallaby-grass

Amphibromus nervosus

Veined Swamp Wallaby-grass

Centella cordifolia

Centella

Crassula helmsii & *Crassula peduncularis*

Swamp Crassula & Purple Crassula

Elatine gratioloides

Waterwort

Eleocharis acuta

Common Spike-sedge

Glyceria australis

Australian Sweet-grass

Hydrocotyle verticillata

Shield Pennywort

Isolepis inundata

Swamp Club-sedge

Juncus holoschoenus

Joint-leaf Rush

Lachnagrostis filiformis

Common Blown-grass

Myriophyllum crispatum

Upright Water-milfoil

Myriophyllum simulans

Amphibious Water-milfoil

Neopaxia australasica

White Purslane

Ottelia ovalifolia

Swamp Lily

Potamogeton cheesemanii

Small-fruit Pondweed

Potamogeton tepperi

Furrowed Pondweed

Ranunculus inundatus

River Buttercup

Rumex bidens

Mud Dock

Triglochin procera (broad erect leaf variant)

Upright Water-ribbons

Villarsia reniformis

Running Marsh-flower

SUBSTRATE (50% cover): water

Conservation Status in Greater Melbourne: artificial stands disjunct & natural stands endangered

Distribution: scattered at billabongs, swamps and Main Yarra Trail wetlands at Murundaka

Landform: *wetland*; open water at natural and artificial shallow and deep freshwater marshes inundated at least semi-permanently to an average depth exceeding 0.25 m (ranging from permanent in wet years to dry over extended droughts)

Vegetation: permanent to semi-permanent wetland vegetation dominated by aquatic herbs with rootstocks tolerant of dry periods (typically Upright Water-ribbons, Water Plantain, water-milfoils and buttercups) and water-grasses (River Swamp Wallaby-grass and Australian Sweet-grass). AHbs usually occurs in association other EVC members of floodplain wetland aggregate.

Significant flora - VROT: *Amphibromus fluitans*. **Reg Thr:** *Hydrocotyle verticillata*, *Juncus prismatocarpus*

Stand quality: relatively intact at Reedy and Bailey Billabongs, the Annulus, Warringal Swamp, Banyule Swamp, Banyule Billabong, Main Yarra Trail wetland at Murundaka.

Floodplain Wetland Aggregate

Aquatic Sedgeland. ASbs. EVC 308

Definition: Tall Spike-sedge (billabong/swamp).

AQUATIC PLANTS (50% cover)

Baumea articulata

Jointed Twig-sedge (to plant Yaruk Tamboore)

Eleocharis sphacelata

Tall Spike-sedge

SUBSTRATE (50% cover): water

Conservation Status in Greater Melbourne: artificial & natural stands disjunct

Distribution: scattered at billabongs.

Landform: *wetland*; open water at natural shallow and deep freshwater marshes that are inundated at least semi-permanently to an average depth exceeding 0.25 m (ranging from permanent in wet years to dry over extended droughts)

Vegetation: very species-poor vegetation dominated by one to two species of robust inundation-tolerant rhizomatous sedges. These typically with septate culms or otherwise including large air-spaces, with vegetative growth extending into virtually permanent water. Usually occurs in association with aquatic herbland.

Significant flora - Reg Thr: *Baumea articulata*

Stand quality: intact stands at Bailey billabong and Banyule Billabong.

Floodplain Wetland Aggregate

Dwarf Floating Aquatic Herbland. DFAHbs. EVC 949

Definition: Azolla - Fringed Heartwort - Common Duckweed (billabong/swamp).

AQUATIC PLANTS (50% cover)

Azolla filiculoides

Azolla pinnata

Lemna disperma

Riccia duplex

Ricciocarpos natans

Spirodela polyrhiza

Wolffia australiana

SUBSTRATE (50% cover): *water*

Pacific Azolla

Ferny Azolla

Common Duckweed

Floating Crystalwort (non-vascular)

Fringed Heartwort (non-vascular)

Spotted Duckweed

Tiny Duckweed

Conservation Status in Greater Melbourne: endangered

Distribution: scattered at billabongs, golf course ponds, Banyule Swamp and Warringal Swamp.

Landform: *wetland*; open water at natural shallow and deep freshwater marshes that are inundated at least semi-permanently to an average depth exceeding 0.25 m (ranging from permanent in wet years to dry over extended droughts)

Vegetation: surface layer of dwarf free-floating plants, usually as a component of diverse aquatic systems. Dwarf floating aquatic herbland largely occurs in the wet phase of billabongs and swamps associated with riparian floodplains. It can re-appear after long droughts when wetlands remain inundated for an extended period and can expand over broad areas during ambient periods of inundation. Most stands only support a narrow and often opportunistic component of the billabong assemblage (catergorised as partially intact or establishing). This includes Pacific Azolla and Common Duckweed that are widespread in farm dams (where it sometimes comprises the only life-form present in open water). Raising the water level in 1999 at Banyule Swamp has led to significant vegetation changes. Previously there had been a prominent floating zone composed of ricciocarpos, azolla, duckweed and Yellow Bladderwort. Most other members are naturally rare and appear more selective about physical and environmental parameters (or less tolerant of habitat degradation or nutrification from urban outfalls - notably Thin Duckweed. The azolla may have been reduced by lower water temperatures due to excessive stormwater input. European Carp and raised levels of turbidity/eutrophication have severely reduced the extent of dwarf floating aquatic herbland in billabongs of the Chandler Basin.

Significant flora - Reg Thr: *Spirodela polyrhiza*

Stand quality: partially intact at billabongs due to lack of inundation during the 1997-2009 drought and carp damage and turbidity/eutrophication when inundated.

Floodplain Wetland Aggregate**Floodway Pond Herbland. FPHbm. EVC 810****Definition:** Lesser Joyweed - Matted Water-starwort (billabong mudflat).**SEDGES, LILIES, RUSHES & GRASSES (30% cover)***Carex appressa*

Tall Sedge

Fimbristylis velata & *Glyceria australis*

Veiled Fringe-sedge & Australian Sweet-grass

Isolepis inundata & *Isolepis platycarpa*

Swamp Club-sedge & Broad-fruit Club-sedge

Juncus spp. & *Lachnagrostis filiformis*

Rushes & Common Blown-grass

Triglochin procera

Upright Water-ribbons

DICOT HERBS including DAISIES (40% cover)*Acaena novae-zelandiae*

Bidgee-widgee

Alternanthera denticulata**Lesser Joyweed***Asperula subsimplex* & *Callitriche sonderi*Water Woodruff & **Matted Water-starwort***Centipeda minima* & *Chenopodium pumilio*

Spreading Sneezeweed & Clammy Goosefoot

Elatine gratioloides & *Epilobium hirtigerum*

Waterwort & Hairy Willow-herb

Lycopus australis & *Lythrum hyssopifolia*

Australian Gipsywort & Small Loosestrife

Myriophyllum crispatum & *Neopaxia australasica*

Upright Water-milfoil & White Purslane

Persicaria prostrata

Creeping Knotweed

Polygonum plebeium & *Pseudognaphalium luteoalbum*

Small Knotweed & Jersey Cudweed

Rorippa laciniata

Jagged Bitter-cress

Senecio minimus

Shrubby Fireweed

Stellaria caespitosa & *Urtica incisa*

Matted Starwort & Scrub Nettle

SUBSTRATE (20-30% cover): bare ground/receding mudflats**Conservation Status in Greater Melbourne:** endangered**Distribution:** scattered at billabongs.**Landform:** wetland (riverine); billabong mudflats of the Yarra floodplain

Vegetation: FPHbm occupies mud and shallow water on drying floors of floodplain ponds and billabongs and is most extensively developed at billabongs with gently-pitched ends or shallow bays. For a period after billabongs dry, mudflat herbfield covers much of the floor. FPHbm occurs in dynamic equilibrium with aquatic herbland - aquatic sedgeland - dwarf floating aquatic herbland - submerged aquatic herbland - tall marsh determined by depth and period of inundation. Floristics and diversity is variable and occurs in temporary cycles with a distinct zonation. Low carpets of annuals including Veiled Fringe-sedge, Broad-fruit Club-sedge, Matted Water-starwort, Matted Starwort, Waterwort and Small Knotweed colonize the early succession mudflats in shallow water, along with stranded aquatics from AHbs/ASbs/TMbs including Tall Spike-sedge, Giant Rush, River Swamp Wallaby-grass, Common Reed and Upright Water-ribbons.

The annual herbfield chases the receding water and over 12 months the zone transforms into a dense amphibious herbfield (1-2 m high) of knotweeds with Short-fruit Nardoo and Matted Starwort underneath. This zone and several species of the late succession (e.g. Hairy Willow-herb) persists as a terrestrial zone over ensuing dry periods. On the landward side on the high ebb of the water lies an open grassy meadow zone (0.5 m high) of Common Blown-grass, Fireweeds, Lesser Joyweed, Spreading Sneezeweed and Water Woodruff. This is fringed on the lower bank by FRWtr (e.g. Weeping Grass, Hairy Pennywort, Lax Goosefoot and River Mint).

Veiled Fringe-sedge, Matted Water-starwort and Small Knotweed are pioneer annuals of ephemeral inland wetlands (i.e. adapted to colonising bare, drying mud after floods and passing drought cycles as dormant soil-seed). They germinate in the drawdown of receding water and advance over bare mudflats by adventitious roots in cracking mud. They are intolerant of permanent inundation (replaced by AHbs) and yield when dry for extended periods to terrestrial plants of FRWtr. Vegetation succession goes into reverse cycle as the mudflats are bared by waterlogging the terrestrial plants when billabongs commence filling.

Significant flora - VROT: *Callitriche sonderi*, *Fimbristylis velata*. **Reg Thr:** *Asperula subsimplex*, *Marsilea hirsuta* (Short-fruit Nardoo), *Polygonum plebeium*, *Rorippa laciniata*, *Stellaria caespitosa*

Stand quality: Relatively intact (Annulus, Banyule Billabong). Partially intact (Streeton Peninsula Swamp & Montpelier Billabong). Reference stand outside of Banyule at northern bay of Bolin Billabong.

Floodplain Wetland Aggregate

Floodway Pond Herbland. FPHfm. EVC 810

Definition: Lesser Joyweed - Common Sneezeweed - Hairy Willow-herb (freshwater meadow).

SEDGES, LILIES, RUSHES & GRASSES (50-60% cover)

<i>Amphibromus nervosus</i>	Veined Swamp Wallaby-grass
<i>aphelia/centrolepis</i> spp.	aphelia/centrolepis spp.
<i>Austrodanthonia caespitosa</i> & <i>Austrodanthonia laevis</i>	Common/Smooth Wallaby-grass
<i>Carex appressa</i> & <i>Carex inversa</i>	Tall Sedge & Knob Sedge
<i>Carex iynx</i> & <i>Carex tereticaulis</i>	Tussock Sedge & Hollow Sedge
<i>Deyeuxia quadriseta</i>	Reed Bent-grass
<i>Eleocharis acuta</i> & <i>Eragrostis brownii</i>	Common Spike-sedge & Common Love-grass
<i>Glyceria australis</i> & <i>Hemarthria uncinata</i>	Australian Sweet-grass & Mat Grass
<i>Isolepis hookeriana</i> & <i>Isolepis inundata</i>	Grassy Club-sedge & Swamp Club-sedge
<i>Juncus</i> spp.	rushes
<i>Lachnagrostis filiformis</i> & <i>Microlaena stipoides</i>	Common Blown-grass & Weeping Grass
<i>Notodanthonia semiannularis</i> & <i>Poa labillardierei</i>	Wetland Wallaby-grass & Common Tussock-g/ss
<i>Schoenus apogon</i>	Common Bog-sedge

DICOT HERBS including DAISIES (30-40% cover)

<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Alternanthera denticulata</i>	Lesser Joyweed
<i>Callitriche brachycarpa</i> & <i>Centella cordifolia</i>	Short Water-starwort & Centella
<i>Centipeda cunninghamii</i> & <i>Centipeda minima</i>	Common Sneezeweed & Spreading Sneezeweed
<i>Chenopodium pumilio</i>	Clammy Goosefoot
<i>Crassula helmsii</i> & <i>Crassula peduncularis</i>	Swamp Crassula & Purple Crassula
<i>Elatine gratioloides</i> & <i>Epilobium billardierianum</i>	Waterwort & Grey/Robust Willow-herb
<i>Epilobium hirtigerum</i>	Hairy Willow-herb
<i>Geranium inundatum</i>	Naked Crane's-bill
<i>Goodenia humilis</i> & <i>Gratiola pubescens</i>	Swamp Goodenia & Glandular Brooklime
<i>Hydrocotyle sibthorpioides</i>	Shining Pennywort
<i>Hypericum gramineum</i> & <i>Hypericum japonicum</i>	Small St John's Wort & Matted St John's Wort
<i>Isotoma fluviatilis</i>	Swamp Isotome
<i>Lobelia anceps</i> & <i>Lobelia pedunculata</i>	Angled Lobelia & Matted Pratia
<i>Lythrum hyssopifolia</i> & <i>Lythrum salicaria</i>	Small Loosestrife & Purple Loosestrife
<i>Mazus pumilio</i> & <i>Myriophyllum crispatum</i>	Swamp Mazus & Upright Water-milfoil
<i>Neopaxia australasica</i> & <i>Oxalis perennans</i>	White Purslane & Grassland Wood-sorrel
<i>Persicaria decipiens</i> & <i>Persicaria prostrata</i>	Slender Knotweed & Creeping Knotweed
<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed
<i>Ranunculus inundatus</i>	River Buttercup
<i>Senecio minimus</i> & <i>Senecio quadridentatus</i>	Shrubby Fireweed & Cotton Fireweed

SUBSTRATE (10-20% cover): bare ground/mudflats

Conservation Status in Greater Melbourne: artificial stands disjunct & natural stands vulnerable

Distribution: localised at Main Yarra Trail (MYT) bridge wetlands, Banyule Swamp and Warringal Swamp

Landform: wetland/riverine; freshwater meadows in artificial seasonal ponds (mostly) and river terrace swales

Vegetation: this sub-community of floodway pond herbland occurs at seasonal or intermittent wetlands along river floodplains. Most stands in the study area (and Yarra Valley) are artificial. It is composed of two seasonal herbfield zones that colonise mudflats over summer as water recedes from winter-spring inundations. The outer infrequently flooded zone consists of grassland (Common Tussock-grass and Common Blown-grass), annuals (aphelia and centrolepis spp.), draw-down colonisers (Lesser Joyweed and Prostrate Knotweed) and matting perennials (Swamp Crassula and Matted Pratia). This zone includes shade and moisture tolerant grasses (e.g. Weeping Grass) and moss-beds under shrubs on higher ground. The inner more frequently inundated and permanently moist zone is dominated by Tall Sedge, rushes, Centella, Shining Pennywort, Swamp Goodenia, Upright Water-milfoil, Glandular Brooklime and water-starworts. FPHfm has affinity with plains grassy wetland (PGWE). There are also several grassland species from plains grassy woodland (e.g. Common Wallaby-grass and Grassland Wood-sorrel). Soils are sandy clay rather than peaty. Each stand has differing dominants and many flora species are planted. The stand on the western and northern fringes of Banyule Swamp has been largely replaced by aquatic herbland (AHbs) and tall marsh (TMbs) due to raised water levels preventing the summer draw-down.

Significant flora - VROT: *Callitriche brachycarpa*. **Reg Thr:** #*Goodenia humilis*, #*Gratiola pubescens*, *Juncus vaginatus* (Clustered Rush), #*Marsilea drummondii*. # = planted and naturalised

Stand quality: relatively intact (MYT bridge west wetland); partially intact (eastern swamp at Murundaka).

Floodplain Wetland Aggregate**Submerged Aquatic Herbland. SAHbs. EVC 918****Definition:** Pondweed - Eel Grass (billabong/swamp).**AQUATIC PLANTS** (50% cover)*Ceratophyllum demersum**Chara* sp.*Crassula helmsii**Elatine gratioloides**Glossostigma elatinoides**Limosella australis* (extinct)*Myriophyllum crispatum****Potamogeton crispus******Potamogeton ochreatus****Ranunculus amphitrichus**Utricularia australis* (extinct)***Vallisneria americana*****SUBSTRATE** (50% cover): *water*

Common Hornwort

Stonewort (non-vascular)

Swamp Crassula

Waterwort

Small Mud-mat

Austral Mudwort

Upright Water-milfoil

Curly Pondweed**Blunt Pondweed**

Small River Buttercup

Yellow Bladderwort

Eel Grass**Conservation Status in Greater Melbourne:** endangered**Distribution:** scattered at billabongs, Irvine Rd ponds and at Banyule Swamp**Landform:** *wetland*; open water at natural shallow and deep freshwater marshes that are inundated at least semi-permanently to an average depth exceeding 0.25 m (ranging from permanent in wet years to dry over extended droughts)**Vegetation:** extensive submerged beds of eel grass and associated herbs in lakes and watercourse ponds. Submerged aquatic wetland can occur in association with other floodplain wetland zones (tall marsh, aquatic herbland and dwarf floating aquatic herbland). Composition varies dramatically depending on environmental conditions (e.g. become absent after extended drought). It can re-appear when wetlands remain inundated for an extended period. European Carp and raised levels of turbidity/eutrophication have virtually eliminated submerged aquatic herbland from billabongs in Banyule and it survives only along creeks and in artificial wetlands. Occurrences of submerged aquatic herbfield in the Yarra have been eliminated by carp and high water turbidity. Raising the water level in 1999 at Banyule Swamp has led to significant vegetation changes. Previously there had been a prominent submerged aquatic wetland zone composed of eel grass and pondweed. These are now absent. Most members are naturally rare and appear more selective about physical and environmental parameters (or less tolerant of habitat degradation or nutrification from urban outfalls).**Significant flora - VROT:** *Ceratophyllum demersum*. **Reg Thr:** *Ranunculus amphitrichus***Stand quality:** degraded at all billabongs due to lack of inundation during the 1997-2009 drought and carp damage and turbidity/eutrophication when inundated.

Floodplain Wetland Aggregate**Tall Marsh. TMbs. EVC 821****Definition:** Club-sedge - Common Reed - Cumbungi - Giant Rush (billabong/swamp).**AQUATIC PLANTS** (50% cover)*Bolboschoenus caldwellii**Bolboschoenus fluviatilis**Bolboschoenus medianus**Calystegia sepium**Cladium procerum**Juncus ingens**Juncus* species*Persicaria decipiens**Persicaria praetermissa**Phragmites australis**Schoenoplectus tabernaemontanii**Triglochin procera**Typha domingensis***Typha latifolia**Typha orientalis**Urtica incisa***SUBSTRATE** (50% cover): *water***Salt Club-sedge****River Club-sedge****Marsh Club-sedge**

Large Bindweed

Leafy Twig-sedge

Giant Rush

Rushes

Slender Knotweed

Spotted Knotweed

Common Reed

River Club-sedge

Upright Water-ribbons

Narrow-leaf Cumbungi

Great Reedmace

Broad-leaf Cumbungi

Scrub Nettle

Conservation Status in Greater Melbourne: artificial stands disjunct & natural stands vulnerable**Distribution:** Banyule Swamp, Warringal Swamp, Main Yarra Trail wetlands and adjacent to Banyule at Trinity Grammar and Carey Grammar.**Landform:** *wetland*; open water at shallow and deep freshwater marshes that are inundated at least semi-permanently to an average depth exceeding 0.25 m (ranging from permanent in wet years to dry over extended droughts)**Vegetation:** treeless wetland dominated by tall emergent monocots (reeds, sedges or rushes), typically in thick swards varying from monocultures (e.g. *Typha*-dominated) to relatively species-poor herbfield. Tall marsh occupies deep and shallow freshwater marshes that are permanent or semi-permanent (provided not dry for extended periods). It occurs in isolated stands or in association with aquatic hermland at billabongs and swamps. It is typically a rushland, sedgeland or reedbed - locally closed or in association or fine-scale mosaic with aquatic hermland along floodway billabongs. Raising the water level in 1999 at Banyule Swamp has led to significant vegetation changes. The tall marsh zone dominated by *Bolboschoenus* spp. has greatly expanded. Scrub Nettle and Large Bindweed enter the formation when input from stormwater drains occurs. Tall marsh is usually associated with wet verge sedgeland (WVSfm).**Significant flora - Reg Thr:** *Bolboschoenus medianus*, *Cladium procerum* & *Juncus ingens***Stand quality:** relatively intact at Banyule Billabong, Bailey and Reedy Billabongs. Artificial at northern part of Banyule Swamp.

Floodplain Wetland Aggregate

Wet Verge Sedgeland. WVSfm. EVC 932

Definition: Tall Sedge - Tassel Sedge - Fen Sedge - Flecked Flat-sedge - Leafy Flat-sedge (freshwater marsh).

FERNS & NON-VASCULARS (5-10% cover)

Marsilea drummondii

Common Nardoo

SEDGES, LILIES, RUSHES & GRASSES (40-50% cover)

Alisma plantago-aquatica

Water Plantain

Carex appressa & *Carex fascicularis*

Tall Sedge & Tassel Sedge

Carex gaudichaudiana & *Carex tereticaulis*

Fen Sedge & Hollow Sedge

Carex chlorantha

Green-top Sedge

Cyperus gunnii & *Cyperus lucidus*

Flecked Flat-sedge & Leafy Flat-sedge

Eleocharis acuta

Common Spike-sedge

Glyceria australis

Australian Sweet-grass

Isolepis inundata

Swamp Club-sedge

Juncus spp.

rushes

Lachnagrostis filiformis

Common Blown-grass

Notodanthonia semiannularis

Wetland Wallaby-grass

Schoenus maschalinus

Leafy Bog-sedge

Triglochin striata

Streaked Arrow-grass

DICOT HERBS including DAISIES (30-40% cover)

Acaena novae-zelandiae

Bidgee-widgee

Alternanthera denticulata

Lesser Joyweed

Centella cordifolia

Centella

Centipeda cunninghamii & *Centipeda elatinoidea*

Common Sneezeweed & Elatine Sneezeweed

Crassula helmsii & *Crassula peduncularis*

Swamp Crassula & Purple Crassula

Elatine gratioloides

Waterwort

Epilobium hirtigerum & *Glossostigma elatinoidea*

Hairy Willow-herb & Small Mud-mat

Goodenia humilis

Swamp Goodenia

Hydrocotyle pterocarpa

Wing Pennywort

Lilaeopsis polyantha

Australian Lilaeopsis

Lobelia anceps & *Lobelia pedunculata*

Angled Lobelia & Matted Pratia

Lythrum hyssopifolia

Small Loosestrife

Mazus pumilio

Swamp Mazus

Myriophyllum crispatum

Upright Water-milfoil

Persicaria decipiens

Slender Knotweed

Ranunculus inundatus

River Buttercup

Rumex bidens

Mud Dock

Senecio spp.

fireweeds/groundsels

SUBSTRATE (10-20% cover): water/mudflats

Conservation Status in Greater Melbourne: artificial stands disjunct & natural occurrences endangered

Distribution: scattered at billabongs, Warringal Swamp, Streeon Peninsula Lagoon and adjacent to Banyule at Trinity Grammar and Carey Grammar

Landform: wetland/riverine; shallow freshwater marsh and freshwater meadow at natural and artificial semi-permanent wetlands

Vegetation: WVSfm is a tussock sedge wetland composed of three herbfield zones. Above the high water mark there is a freshwater meadow consisting of perennial-matting species tolerant of summer dessication (Matted Pratia, Purple Crassula, Swamp Goodenia and Swamp Mazus) and a scattering of ephemeral herbs characteristic of winter-wet depressions and spring-soaks (aphelia and centrolepis spp.). Shallow water and mudflats support an amphibious herbfield of sedges (Tall Sedge, Tassel Sedge, Leafy Flat-sedge and Common Spike-sedge), rushes (Joint-leaf Rush) and water-grasses (amphibromus spp. and Australian Sweet-grass) and a dense cover of seasonally submerged perennial herbs (Common Nardoo, Australian Lilaeopsis, Swamp Crassula, Upright Water-milfoil and River Buttercup). Deeper water supports tall marsh (TMbs) composed of emergent herbfield including Marsh Club-sedge, Common Reed and Narrow-leaf Cumbungi and aquatic herbland (AHbs) including Small-fruit Pondweed and Running Marsh-flower. Wet verge sedgeland is frequently infested by weeds.

Significant flora - VROT: *Carex chlorantha*, *Ranunculus papulentis*, *Senecio campylocarpus* (Floodplain Fireweed; rare). **Reg Thr:** *Cyperus gunnii*, *Senecio biserratus* (Jagged Fireweed) & *Senecio squarrosus* (Leafy Fireweed)

Stand quality: relatively intact (Reedy Billabong and Bailey Billabong); partially intact (The Annulus, Streeon Peninsula Lagoon, Banyule Billabong & Montpelier Billabong).

Grassy Woodland (EVC 175)

Sub-community: **GWsy** Yellow Box (sand-plain)

Data: District (Janefield Plenty Gorge Park and above Yarra Trail bridge Westerfolds)

TREES (15 m tall; 20-30% cover)	
<i>Eucalyptus camaldulensis</i>	River Red Gum
<i>Eucalyptus aff. viminalis</i>	Hill Manna Gum
<i>Eucalyptus melliodora</i>	Yellow Box
TALL SHRUBS & CLIMBERS (10-20% cover)	
<i>Acacia implexa</i>	Lightwood
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia paradoxa</i>	Hedge Wattle
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Convolvulus erubescens</i>	Pink Bindweed
<i>Melicytus dentatus</i>	Tree Violet
<i>Kunzea ericoides</i>	Burgan
<i>Ozothamnus ferrugineus</i>	Tree Everlasting
LOW SHRUBS (5-10% cover)	
<i>Astroloma humifusum</i>	Cranberry Heath
<i>Acacia acinacea</i>	Gold-dust Wattle
<i>Cassinia aculeata</i>	Common Cassinia
<i>Rubus parvifolius</i>	Small-leaf Bramble
FERNS (10% cover)	
<i>Pteridium esculentum</i>	Austral Bracken
SEDGES, LILIES, RUSHES & GRASSES (40-50% cover)	
<i>Austrodanthonia spp.</i>	Wallaby Grass
<i>Austrostipa spp.</i>	Spear Grass
<i>Dianella revoluta</i>	Black-anther Flax-lily
<i>Gahnia radula</i>	Thatch Saw-sedge
<i>Lepidosperma laterale</i>	Variable Sword-sedge
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa spp.</i>	Tussock Grass
<i>Themeda triandra</i>	Kangaroo Grass
<i>Tricoryne elatior</i>	Yellow Rush-lily
HERBS including DAISIES (10-20% cover)	
<i>Acaena agnipila</i>	Hairy Sheep's Burr
<i>Asperula conferta</i>	Common Woodruff
<i>Bossiaea prostrata</i>	Creeping Bossiaea
<i>Dichondra repens</i>	Kidney-weed
<i>Glycine tabacina</i>	Variable Glycine
<i>Gonocarpus tetragynus</i>	Common Raspwort
<i>Pimelea humilis</i>	Common Rice-flower
<i>Veronica plebeia</i>	Trailing Speedwell
SUBSTRATE (10% cover): leaf litter/moss	

Conservation status in Greater Melbourne: regionally threatened/disjunct

Distribution: localised at Odyssey House

Landform: riverine; high level alluvial terrace fans above meanders of the Yarra

Vegetation: GWsy has a medium canopy of Hill Manna Gum and Yellow Box in elevated sites and River Red Gum in low-lying sites. It supports a well developed tall shrub layer of wattles and Burgan, a dense layer of Austral Bracken and diverse field layer dominated by grasses, lilies and peas. GWsy grades into floodplain riparian woodland (FRWtr) on younger terraces nearer the Yarra. It also supports species from escarpments (PGWOsp) and has floristic links with herb-rich and plains grassy woodland (GWv, PGWotv).

Most intact stand(s): remnant (Odyssey House). Nearest is Westerfolds Park.

Grassy Woodland (EVC 175)

Sub-community: **GWv** Yellow Box - Manna Gum (volcanic hill-crest)

Data: Banyule (Beales Rd freeway easement). District (Janefield in Plenty Gorge Park)

TREES (15 m tall; 10-20% cover)

Eucalyptus goniocalyx

Eucalyptus melliodora

Eucalyptus ovata

Eucalyptus aff. viminalis

TALL SHRUBS & CLIMBERS (10-20% cover)

Acacia implexa

Acacia mearnsii

Acacia melanoxylon

Acacia paradoxa

Bursaria spinosa

Clematis microphylla

Exocarpos cupressiformis

Meliccytus dentatus

SEDGES, LILIES, RUSHES & GRASSES (60-70% cover)

Arthropodium strictum

Austrodanthonia spp.

Austrostipa rudis

Carex iynx

Elymus scaber

Lepidosperma laterale

Lomandra filiformis

Microlaena stipoides

Poa labillardieri

Schoenus apogon

Themeda triandra

Tricoryne elatior

HERBS including DAISIES (10-20% cover)

Acaena agnipila

Bossiaea prostrata

Dichondra repens

Glycine tabacina

Gonocarpus tetragynus

Hydrocotyle laxiflora

Opercularia ovata

Oxalis perennans

Pimelea humilis

Senecio quadridentatus

Solenogyne gunnii

Veronica gracilis

SUBSTRATE (10% cover): leaf litter; logs

Long-leaf Box

Yellow Box

Swamp Gum

Hill Manna Gum

Lightwood

Black Wattle

Blackwood

Hedge Wattle

Sweet Bursaria

Small-leaved Clematis

Cherry Ballart

Tree Violet

Chocolate Lily

Wallaby Grass

Veined Spear-grass

Tussock Sedge

Common Wheat-grass

Variable Sword-sedge

Wattle Mat-rush

Weeping Grass

Common Tussock-grass

Common Bog-sedge

Kangaroo Grass

Yellow Rush-lily

Hairy Sheep's Burr

Creeping Bossiaea

Kidney-weed

Variable Glycine

Common Raspwort

Stinking Pennywort

Broad-leaf Stinkweed

Grassland Wood-sorrel

Common Rice-flower

Cotton Fireweed

Hairy Solenogyne

Slender Speedwell

Conservation status in Greater Melbourne: regionally endangered

Distribution: restricted to Tertiary volcanics at Greenhills and St Helena

Landform: foothill; Tertiary volcanic hill-crest cappings

Vegetation: GWv contains an open tree strata and prominent layer of tall wattles. The dense field layer is dominated by Weeping Grass and Common Tussock-grass. Drooping Sheoke and low shrubs (Gold-dust Wattle, Cranberry Heath and Grey Parrot-pea) have been eliminated. The Tertiary cappings lacked lava outcrops. GWv supports a floristic overlap of the volcanic plains (Hairy Solenogyne, Variable Glycine) and sedimentary hills (Austral Bugle, Fan-leaf Buttercup). It shares a boundary with box - stringybark woodland (BSWhy) on the adjoining Tertiary sand-plain.

Most intact stand(s): partially intact between Beales Rd and Brown's Nature Reserve.

Herb-rich Foothill Forest (EVC 23)Sub-community: **HFFsl** Red Stringybark (sheltered hill-slope)**Data:** Banyule (Yandell Reserve). District (composite from Diamond Valley)

TREES (15 m tall; 20-30% cover)	
<i>Eucalyptus goniocalyx</i>	Long-leaf Box
<i>Eucalyptus macrorhyncha</i>	Red Stringybark
<i>Eucalyptus radiata</i>	Narrow-leaf Peppermint
TALL SHRUBS & CLIMBERS (10-20% cover)	
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia melanoxylon</i>	Blackwood
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Exocarpos cupressiformis</i>	Cherry Ballart
<i>Melicytus dentatus</i>	Tree Violet
<i>Kunzea ericoides</i>	Burgan
LOW SHRUBS (5-10% cover)	
<i>Acacia genistifolia</i>	Spreading Wattle
<i>Cassinia aculeata</i>	Common Cassinia
<i>Coprosma quadrifida</i>	Prickly Currant-bush
<i>Correa reflexa</i>	Common Correa
SEDGES, LILIES, RUSHES & GRASSES (40% cover)	
<i>Dianella longifolia</i>	Pale Flax-lily
<i>Elymus scaber</i>	Common Wheat-grass
<i>Gahnia radula</i>	Thatch Saw-sedge
<i>Lepidosperma laterale</i>	Variable Sword-sedge
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa spp.</i>	Tussock Grass
<i>Tricoryne elatior</i>	Yellow Rush-lily
HERBS including DAISIES (30% cover)	
<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Brunonia australis</i>	Blue Pincushion
<i>Dichondra repens</i>	Kidney-weed
<i>Drosera peltata ssp. auriculata</i>	Tall Sundew
<i>Gonocarpus tetragynus</i>	Common Raspwort
<i>Helichrysum scorpioides</i>	Button Everlasting
<i>Hydrocotyle laxiflora</i>	Stinking Pennywort
<i>Oxalis perennans</i>	Grassland Wood-sorrel
<i>Senecio spp.</i>	fireweeds/groundsels
<i>Wahlenbergia stricta</i>	Tall Bluebell
<i>Veronica calycina</i>	Hairy Speedwell
<i>Viola hederacea</i>	Ivy-leaf Violet
SUBSTRATE (10% cover): litter/logs; moss	

Conservation status in Greater Melbourne: regionally threatened**Distribution:** localised across northern and south-east Banyule**Landform:** foothill; sheltered hill-slopes

Vegetation: Long-leaf Box and Red Stringybark are the dominant eucalypts joined by Red Box on mudstone at St Helena or Hill Manna Gum on sandstone at Montmorency. The prominent tall shrub layer is dominated by Black Wattle and Burgan. Upper slopes support dry environment species of adjoining hill-crests (e.g. Dogwood). Lower slopes support Narrow-leaf Peppermint and Yellow Box over a prominent layer of herbs adapted to damp, shaded environments (e.g. Blue Pincushion). The downslope border is shared with VGFsf. Species in common include Bulbine Lily, Soft Tussock-grass, Sweet Bursaria and Candlebark.

Most intact stand(s): partially intact (Yandell Reserve).

Plains Grassy Wetland (EVC 125)Sub-community: **PGWEme** Veined Swamp Wallaby-grass - Common Spike-sedge (freshwater meadow)**Data:** Banyule (Banyule Swamp & Yaruk Tamboore)**FERNS & NON-VASCULARS** (<5% cover)*Marsilea hirsuta*

Small-fruit Nardoo

SEDGES, LILIES, RUSHES & GRASSES (50-60% cover)*Amphibromus nervosus***Veined Swamp Wallaby-grass***Austrodanthonia duttoniana*

Brown-back Wallaby-grass

Austrodanthonia laevis

Smooth Wallaby-grass

Carex appressa & *Carex brownii*

Tall Sedge & Stream Sedge

Carex inversa & *Carex tereticaulis*

Knob Sedge & Hollow Sedge

Eleocharis acuta & *Eleocharis pusilla***Common Spike-sedge** & Small Spike-sedge*Glyceria australis* & *Hemarthria uncinata*

Australian Sweet-grass & Mat Grass

Isolepis inundata

Swamp Club-sedge

Juncus australis & *Juncus flavidus*

Austral Rush & Yellow Rush

Juncus holoschoenus & *Juncus planifolius*

Joint-leaf Rush & Broad-leaf Rush

Juncus subsecundus & *Juncus vaginatus*

Finger Rush & Clustered Rush

Lachnagrostis filiformis & *Notodanthonia semiannularis*

Common Blown-grass & Wetland Wallaby-grass

Poa labillardierei

Common/Prickly Blue Tussock-grass

Triglochin striata

Streaked Arrow-grass

DICOT HERBS including DAISIES (30-40% cover)*Acaena novae-zelandiae* & *Alternanthera denticulata*

Bidgee-widgee & Lesser Joyweed

Callitriche brachycarpa & *Calocephalus lacteus*

Short Water-starwort & Milky Beauty-heads

Centella cordifolia & *Centipeda cunninghamii*

Centella & Common Sneezeweed

Chenopodium pumilio & *Crassula helmsii*

Clammy Goosefoot & Swamp Crassula

Elatine gratioloides

Waterwort

Epilobium billardierianum & *Epilobium hirtigerum*

Robust Willow-herb & Hairy Willow-herb

Eryngium vesiculosum

Prickfoot

Gratiola peruviana & *Gratiola pubescens*

Austral Brooklime & Glandular Brooklime

Haloragis heterophylla

Varied Raspwort

Helichrysum aff. *rutidolepis* (Lowland Swamp)

Pale Swamp Everlasting

Hydrocotyle sibthorpioides & *Isotoma fluviatilis*

Shining Pennywort & Swamp Isotome

Lobelia anceps & *Lobelia pedunculata*

Angled Lobelia & Matted Pratia

Lythrum hyssopifolia

Small Loosestrife

Myriophyllum crispatum & *Neopaxia australasica*

Upright Water-milfoil & White Purslane

Persicaria decipiens & *Persicaria prostrata*

Slender Knotweed & Creeping Knotweed

Plantago gaudichaudii & *Pseudognaphalium luteoalbum*

Narrow Plantain & Jersey Cudweed

Ranunculus inundatus & *Rumex bidens*

River Buttercup & Mud Dock

Selliera radicans

Shiny Swamp-mat

SUBSTRATE (10-20% cover): bare ground/mudflats**Conservation Status in Greater Melbourne:** artificial stands disjunct & natural stands endangered**Distribution:** localised at Main Yarra Trail wetland at Murundaka (artificial), Yaruk Tamboore and eastern swamp at Murundaka and near Banyule at north-west billabong of Trinity Grammar**Landform:** wetland/riverine; freshwater meadow around swamps and in swampy drainage lines and seasonally waterlogged depressions along the Yarra floodplain**Vegetation:** grass, sedge and rush-dominated seasonal wetland consisting of a grass-dominated outer zone, rush and sedge-dominated central zone and a spike-sedge and septate rush (i.e. with partitioned air-spaces to stand up in shallow water) dominated inner zone. Intact stands are diverse with at least a half dozen species of grasses and daisies present. Dominant species include Veined Swamp Wallaby-grass, Brown-back Wallaby-grass, Australian Sweet-grass, Common Blown-grass and Common Tussock-grass. Other prominent species include Small-fruit Nardoo, Common Spike-sedge, Hollow Sedge, Austral Rush, Broad-leaf Rush, Finger Rush and a number of forbs including Upright Water-milfoil, White Purslane, Small Loosestrife, Slender Knotweed and River Buttercup. The fringing vegetation is plains grassy woodland (PGWotv). Numerous species are locally extinct.**Significant flora - VROT:** *Amphibromus fluitans*, *Callitriche brachycarpa*, *Helichrysum* aff. *rutidolepis* & *Senecio campylocarpus*.**Reg Thr:** *Carex brownii*, *Juncus vaginatus*, *Marsilea hirsuta* (Trinity), *Plantago gaudichaudii*, *Poa labillardierei* (prickly blue) & *Ranunculus inundatus*.**Most intact stand(s):** relatively intact (MYT wetland at Murundaka); partially intact (eastern swamp at Murundaka and Yaruk Tamboore at Murundaka)

Plains Grassy Woodland (EVC 55)

Sub-community: **PGWOep** River Red Gum (exposed plain-slope)

Data: Banyule (Harry Pottage Reserve, Simpson Barracks, Maroondah aqueduct Bundoora)

TREES (10-15 m tall; 15-25% cover)

Eucalyptus camaldulensis

Eucalyptus melliodora

TALL SHRUBS & CLIMBERS (5-10% cover)

Acacia implexa

Acacia mearnsii

Acacia paradoxa

Acacia pycnantha

Allocasuarina verticillata

Cassinia longifolia

Convolvulus erubescens

Kunzea ericoides

LOW SHRUBS (<5% cover)

Acacia acinacea

Astroloma humifusum

Pimelea curviflora

SEDGES, LILIES, RUSHES & GRASSES (50-60% cover)

Arthropodium strictum

Austrodanthonia spp.

Austrostipa spp.

Burchardia umbellata

Caesia calliantha

Carex breviculmis

Dianella revoluta

Dichelachne crinita

Lomandra filiformis

Microlaena stipoides

Poa sieberiana var. *sieberiana*

Schoenus apogon

Themeda triandra

Tricoryne elatior

HERBS including DAISIES (20-30% cover)

Bossiaea prostrata

Dichondra repens

Gonocarpus tetragynus

Leptorhynchos squamatus

Oxalis perennans

Pimelea humilis

Senecio quadridentatus

Veronica gracilis

SUBSTRATE (5% cover): logs/leaf litter

River Red Gum

Yellow Box

Lightwood

Black Wattle

Hedge Wattle

Golden Wattle

Drooping Sheoke

Dogwood

Pink Bindweed

Burgan

Gold-dust Wattle

Cranberry Heath

Curved Rice-flower

Chocolate Lily

Wallaby Grass

Spear Grass

Milkmaids

Blue Grass-lily

Short-stem Sedge

Black-anther Flax-lily

Long-hair Plume-grass

Wattle Mat-rush

Weeping Grass

Grey Tussock-grass

Common Bog-sedge

Kangaroo Grass

Yellow Rush-lily

Creeping Bossiaea

Kidney-weed

Common Raspwort

Scaly Buttons

Grassland Wood-sorrel

Common Rice-flower

Cotton Fireweed

Slender Speedwell

Conservation status in Greater Melbourne: regionally endangered

Distribution: formerly widespread between Plenty River and Darebin Creek

Landform: alluvial plain; exposed upper/middle plain-slopes and marine sand-crests

Vegetation: PGWOep consists of an open canopy of River Red Gums and an open tall shrub layer of Black Wattle and Golden Wattle.

The ground layer varies from diverse herbfield (e.g. 3 or 4 *Austrostipa* spp.) to dense grassland dominated by Kangaroo Grass. Short-stem Sedge and Common Bog-sedge are common in seepage areas. PGWOep is ecotonal with PGWOtv in creek valleys and on high terraces of the Yarra and PGWOsp on adjoining sheltered plain-slopes. PGWOep comes into contact with PGWOvp on the volcanic plains toward Darebin Creek. Introduced pasture grasses (notably *Paspalum*) threaten PGWOep.

Most intact stand(s): intact (Harry Pottage); relatively intact (Simpson Barracks).

Plains Grassy Woodland (EVC 55)

Sub-community: **PGWOsp** River Red Gum (sheltered plain-slope)

Data: Banyule (Simpson Barracks, Streeon Views and Viewbank)

TREES (15 m tall; 25-35% cover)

Eucalyptus camaldulensis

Eucalyptus melliodora

Eucalyptus ovata

Eucalyptus X studleyensis

TALL SHRUBS & CLIMBERS (10% cover)

Acacia implexa

Acacia mearnsii

Acacia melanoxylon

Bursaria spinosa

Exocarpos cupressiformis

Meliccytus dentatus

SEDGES, LILIES, RUSHES & GRASSES (60-70% cover)

Arthropodium strictum

Austrodanthonia racemosa

Austrostipa rudis

Bulbine bulbosa

Carex breviculmis

Carex inversa

Carex iynx

Elymus scaber

Lomandra filiformis

Microlaena stipoides

Poa labillardieri

Poa morrisii

Schoenus apogon

Themeda triandra

Tricoryne elatior

HERBS including DAISIES (10-20% cover)

Acaena spp.

Bossiaea prostrata

Dichondra repens

Drosera peltata ssp. *auriculata*

Gonocarpus tetragynus

Hypericum gramineum

Lagenophora stipitata

Oxalis perennans

Pimelea humilis

Senecio quadridentatus

Veronica gracilis

SUBSTRATE (5-10% cover): leaf litter/moss

River Red Gum

Yellow Box

Swamp Gum

Studley Park Gum

Lightwood

Black Wattle

Blackwood

Sweet Bursaria

Cherry Ballart

Tree Violet

Chocolate Lily

Stiped Wallaby-grass

Veined Spear-grass

Bulbine Lily

Short-stem Sedge

Common Sedge

Tussock Sedge

Common Wheat-grass

Wattle Mat-rush

Weeping Grass

Common Tussock-grass

Soft Tussock-grass

Common Bog-sedge

Kangaroo Grass

Yellow Rush-lily

sheep's burrs

Creeping Bossiaea

Kidney-weed

Tall Sundew

Common Raspwort

Small St John's Wort

Blue Bottle-daisy

Grassland Wood-sorrel

Common Rice-flower

Cotton Fireweed

Slender Speedwell

Conservation status in Greater Melbourne: regionally endangered

Distribution: restricted across south between Bonds Road and Upper Heidelberg Road

Landform: alluvial plain; sheltered plain-slopes

Vegetation: PGWOsp contains up to five eucalypt species forming a forest canopy. There is an open tall shrub layer of wattles and dense field layer dominated by Weeping Grass. The latter also supports Kangaroo Grass and a high diversity of wallaby-grasses and lilies. The sheltered aspect promotes species adapted to higher soil moisture and fertility than in PGWOep (Hill Sedge, Blue Bottle-daisy, Swamp Gum). PGWOsp grades upslope into PGWOep and downslope into PGWOtv. Woody weeds (notably Hawthorn) threaten PGWOsp.

Most intact stand(s): relatively intact (Simpson Barracks); partially intact (Streeon Views and Viewbank). Intact nearby at Mont Park above Broadford Crescent.

Plains Grassy Woodland (EVC 55)Sub-community: **PGWOtv** River Red Gum (terrace/valley)**Data:** Banyule (Harry Pottage Reserve and Simpson Barracks)

TREES (15 m tall; 20% cover)	
<i>Eucalyptus camaldulensis</i>	River Red Gum
<i>Eucalyptus ovata</i>	Swamp Gum
TALL SHRUBS & CLIMBERS (10-20% cover)	
<i>Acacia implexa</i>	Lightwood
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia melanoxylon</i>	Blackwood
<i>Acacia pycnantha</i>	Golden Wattle
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Exocarpos cupressiformis</i>	Cherry Ballart
<i>Melicytus dentatus</i>	Tree Violet
SEDGES, LILIES, RUSHES & GRASSES (60-70% cover)	
<i>Arthropodium strictum</i>	Chocolate Lily
<i>Austrodanthonia spp.</i>	Wallaby Grass
<i>Austrostipa rudis</i>	Veined Spear-grass
<i>Carex iynx</i>	Tussock Sedge
<i>Deyeuxia quadriseta</i>	Reed Bent-grass
<i>Dianella amoena</i>	Matted Flax-lily
<i>Elymus scaber</i>	Common Wheat-grass
<i>Eragrostis brownii</i>	Common Love-grass
<i>Hemarthria uncinata</i>	Mat Grass
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa spp.</i>	Tussock Grass
<i>Tricoryne elatior</i>	Yellow Rush-lily
HERBS including DAISIES (10-20% cover)	
<i>Acaena spp.</i>	sheep's burrs
<i>Asperula conferta</i>	Common Woodruff
<i>Bossiaea prostrata</i>	Creeping Bossiaea
<i>Drosera peltata ssp. peltata</i>	Pale Sundew
<i>Plantago varia</i>	Variable Plantain
<i>Cynoglossum suaveolens</i>	Sweet Hound's-tongue
<i>Dichondra repens</i>	Kidney-weed
<i>Glycine microphylla</i>	Small-leaf Glycine
<i>Opercularia ovata</i>	Broad-leaf Stinkweed
<i>Poranthera microphylla</i>	Small Poranthera
<i>Oxalis perennans</i>	Grassland Wood-sorrel
<i>Veronica gracilis</i>	Slender Speedwell
SUBSTRATE (5-10% cover): leaf litter	

Conservation status in Greater Melbourne: regionally endangered**Distribution:** restricted across south between Bonds Road and Darebin Creek**Landform:** alluvial plain; creek valleys and high level stream terraces

Vegetation: PGWOtv has a more strongly developed tall shrub layer (Black Wattle, Tree Violet) than PGWOep. The field layer is dominated by Weeping Grass and supports species adapted to more shaded conditions (Small-leaf Glycine) and moist, fertile soils (Common Love-grass, Mat Grass, Common Tussock-grass). Kangaroo Grass becomes dominant over Weeping Grass at the boundary with PGWOep upslope. PGWOtv borders CGWc/dl along creeks or drainage lines (swales and minor gullies support overlap species). It also borders FRWtr on lower river terraces. PGWOtv is the plains floristic equivalent of VGFsf in the foothills.

Most intact stand(s): relatively intact (Simpson Barracks); partially intact (Harry Pottage).

Plains Grassy Woodland (EVC 55)Sub-community: **PGWOvp** River Red Gum (volcanic plain)**Data:** District (R&D in Plenty Gorge Park)

TREES (12-15 m tall; 10-20% cover)	
<i>Eucalyptus camaldulensis</i>	River Red Gum
<i>Eucalyptus melliodora</i>	Yellow Box
TALL SHRUBS & CLIMBERS (10% cover)	
<i>Acacia implexa</i>	Lightwood
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia melanoxylon</i>	Blackwood
<i>Acacia paradoxa</i>	Hedge Wattle
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Convolvulus erubescens</i>	Pink Bindweed
<i>Melicytus dentatus</i>	Tree Violet
SEDGES, LILIES, RUSHES & GRASSES (50-60% cover)	
<i>Agrostis aemula</i>	Purplish Blown-grass
<i>Arthropodium strictum</i>	Chocolate Lily
<i>Austrodanthonia</i> spp.	Wallaby Grass
<i>Burchardia umbellata</i>	Milkmaids
<i>Caesia calliantha</i>	Blue Grass-lily
<i>Carex breviculmis</i>	Short-stem Sedge
<i>Deyeuxia quadriseta</i>	Reed Bent-grass
<i>Dichelachne crinita</i>	Long-hair Plume-grass
<i>Elymus scaber</i>	Common Wheat-grass
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa labillardieri</i>	Common Tussock-grass
<i>Schoenus apogon</i>	Common Bog-sedge
<i>Themeda triandra</i>	Kangaroo Grass
<i>Tricoryne elatior</i>	Yellow Rush-lily
HERBS including DAISIES (20-30% cover)	
<i>Asperula conferta</i>	Common Woodruff
<i>Bossiaea prostrata</i>	Creeping Bossiaea
<i>Cynoglossum suaveolens</i>	Sweet Hound's-tongue
<i>Geranium retrorsum</i>	Grassland Crane's-bill
<i>Glycine tabacina</i>	Variable Glycine
<i>Leptorhynchos squamatus</i>	Scaly Buttons
<i>Oxalis perennans</i>	Grassland Wood-sorrel
<i>Veronica gracilis</i>	Slender Speedwell
<i>Wahlenbergia gracilis</i>	Sprawling Bluebell
SUBSTRATE (5-10% cover): leaf litter	

Conservation status in Greater Melbourne: regionally endangered**Distribution:** Darebin Creek to Waterdale Road**Landform:** volcanic plain; silt plain on leading edge of the Merri Volcanic Plains

Vegetation: PGWOvp contains open strata of River Red Gums (scattered Yellow Box) and tall wattles over volcanic plains grassland dominated by Kangaroo Grass. The field layer supports a diverse assemblage of lilies, orchids and daisies. Apart from above the escarpments of Darebin Creek, the silt plains of Banyule apparently lacked lava outcrops and its stony knoll flora which occurs in the Plenty Gorge. Swales supported PGWOvs while vegetation on the boundary of the lava plain and alluvial plain would have supported floristic elements of PGWOep (Small-leaved Clematis, Burgan). PGWOvp further west on the Merri Volcanic Plains (where River Red Gums are absent) grades into communities dominated by Kangaroo Grass (plains grassland on silt/stony plains and stony knoll grassland at stony rises).

Most intact stand(s): eliminated from Banyule; remnants adjoining above Darebin Creek at La Trobe University.

Plains Grassy Woodland (EVC 55)

Sub-community: **PGWOvs** River Red Gum (volcanic swale/terrace)

Data: District (Bundoora Park, La Trobe University & Sullivan Park Reservoir)

TREES (12-15 m tall; 10-20% cover)

Eucalyptus camaldulensis

TALL SHRUBS & CLIMBERS (10% cover)

Acacia implexa

Acacia mearnsii

Bursaria spinosa

Melicytus dentatus

SEDGES, LILIES, RUSHES & GRASSES (50-60% cover)

Agrostis avenacea

Austrodanthonia spp.

Carex inversa

Deyeuxia quadriseta

Dianella revoluta

Dichelachne crinita

Elymus scaber

Eragrostis brownii

Hemarthria uncinata

Juncus subsecundus

Lomandra filiformis

Microlaena stipoides

Pentapogon quadrifidus

Poa labillardieri

Themeda triandra

Tricoryne elatior

HERBS including DAISIES (20-30% cover)

Asperula conferta

Calocephalus lacteus

Convolvulus remotus

Drosera peltata ssp. peltata

Geranium solanderi

Haloragis heterophylla

Lobelia pratioides

Oxalis perennans

Senecio quadridentatus

Veronica gracilis

Wahlenbergia communis

SUBSTRATE (5-10% cover): leaf litter

River Red Gum

Lightwood

Black Wattle

Sweet Bursaria

Tree Violet

Common Blown-grass

Wallaby Grass

Common Sedge

Reed Bent-grass

Black-anther Flax-lily

Long-hair Plume-grass

Common Wheat-grass

Common Love-grass

Mat Grass

Finger Rush

Wattle Mat-rush

Weeping Grass

Five-awned Spear-grass

Common Tussock-grass

Kangaroo Grass

Yellow Rush-lily

Common Woodruff

Milky Beauty-heads

Grassy Bindweed

Pale Sundew

Austral Crane's-bill

Varied Raspwort

Poison Lobelia

Grassland Wood-sorrel

Cotton Fireweed

Slender Speedwell

Tufted Bluebell

Conservation status in Greater Melbourne: regionally endangered

Distribution: restricted to the Darebin Creek valley (including Bundoora)

Landform: volcanic plain; swales, disrupted drainage lines and creek terraces

Vegetation: PGWOvs contains an open stratum of River Red Gums and copses of tall wattles and bursaria over plains grassland dominated by Common Tussock-grass. It occupies seasonally damp terraces of Darebin Creek and swales on the silt plain to the east. The latter being eliminated along with vegetation of drainage lines (CGWdl). The original extent is unknown. Some pre-settlement stands probably occurred in areas mapped as PGWOvp. Adjacent remnants occur north of Crissane Road at La Trobe University and opposite Dougharty Road at east end of Sullivan Park. Further west on the Merri Volcanic Plains (where River Red Gums are absent), PGWOvs grades into plains grassland dominated by Common Tussock-grass. At R&D Plenty Gorge, freshwater meadow elements (Brown-back Wallaby-grass, Milky Beauty-heads) develop at gilgais into seasonal wetland (SWfm - Beardsell 1997a). The band along Darebin Creek terrace is often too narrow to show on map.

Most intact stand(s): degraded (Darebin Creek terrace); eliminated to east of creek.

Plains Sedgy Wetland. Sub-community **PSWema.** EVC 647

Definition: Tall Sedge - Hollow Sedge (freshwater marsh). **Regional Conservation Status:** critically endangered

SEDGES, LILIES, RUSHES & GRASSES (70% cover)

<i>Alisma plantago-aquatica</i>	Water Plantain
<i>Amphibromus nervosus</i>	Veined Swamp Wallaby-grass
<i>Baumea arthropphylla</i>	Fine Twig-sedge
<i>Bolboschoenus medianus</i>	Marsh Club-sedge
<i>Carex appressa</i> & <i>Carex tereticaulis</i>	Tall Sedge & Hollow Sedge
<i>Eleocharis acuta</i>	Common Spike-sedge
<i>Ficinia nodosa</i>	Knobby Club-sedge
<i>Glyceria australis</i>	Australian Sweet-grass
<i>Isolepis inundata</i>	Swamp Club-sedge
<i>Juncus amabilis</i> & <i>Juncus gregiflorus</i>	Hollow Rush & Green Rush
<i>Juncus sarophorus</i>	Broom Rush
<i>Phragmites australis</i>	Common Reed
<i>Schoenoplectus tabernaemontanii</i>	River Club-sedge
<i>Triglochin procera</i>	Upright Water-ribbons
<i>Typha domingensis</i>	Narrow-leaf Cumbungi

DICOT HERBS including DAISIES (20% cover)

<i>Alternanthera denticulata</i>	Lesser Joyweed
<i>Crassula helmsii</i>	Swamp Crassula
<i>Elatine gratioloides</i>	Waterwort
<i>Myriophyllum simulans</i>	Amphibious Water-milfoil
<i>Neopaxia australasica</i>	White Purslane
<i>Persicaria decipiens</i>	Slender Knotweed
<i>Ranunculus inundatus</i>	River Buttercup
<i>Rumex bidens</i>	Mud Dock
<i>Stellaria angustifolia</i>	Swamp Starwort

SUBSTRATE (10% cover): bare ground/mudflats; grass litter

Distribution: highly localised at Yaruk Tamboore and formerly at Banyule Swamp

Landform: wetland; swamps on alluvial plains inundated more than 6 months of year to an average depth not exceeding 0.25 m (Yaruk Tamboore has drains and supports a shorter periodicity of inundation)

Vegetation: taller sedge and rush-dominated seasonal wetland of the lowland plains. Intact stands have a conspicuous herbaceous component including species characteristically associated with wet sites on fertile soils (hence few stands survived pastoral settlement). Moisture supply appears to be more reliable (e.g. associated with springs or seepage from surrounding hills) than for sites supporting plains grassy wetland. Plains sedgy wetland usually occurs in mosaic or complex in deeper water with aquatic herbland/tall marsh or shallower water with plains grassy wetland. PSWema occurs locally at semi-permanent wetlands. Deeper water consists of elements from tall marsh (TMbs) including Marsh Club-sedge and Giant Rush and elements from aquatic herbland (AHbs) including Water Plantain and Upright Water-ribbons. Shallower water supports an amphibious herbfield of Tall Sedge, Hollow Sedge, Common Spike-sedge, Veined Swamp Wallaby-grass, Amphibious Water-milfoil and White Purslane. These also occur in plains grassy wetland (PGWeme) that usually fringes in seasonally inundated freshwater meadows. A number of species from CGWc along creeks (Marsh Club-sedge, Water-pepper, Slender Knotweed and Mud Dock) are present.

Significant flora - Reg Thr: *Baumea arthropphylla* (reinstated to Yaruk Tamboore), *Bolboschoenus medianus*, *Ranunculus inundatus* & *Stellaria angustifolia*

Stand quality: relatively intact at Yaruk Tamboore (Murundaka).

Riverine Escarpment Scrub (EVC 82)

Sub-community: **RESEs** Golden Wattle - Burgan (exposed sedimentary)

Data: Banyule (Partington Flat and Yallambie). District (Plenty Gorge)

CANOPY & CLIMBERS (2-8 m tall; 20-30% cover)

<i>Acacia implexa</i>	Lightwood
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia pycnantha</i>	Golden Wattle
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Cassinia longifolia</i>	Dogwood
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Convolvulus erubescens</i>	Pink Bindweed
<i>Exocarpos cupressiformis</i>	Cherry Ballart
<i>Hardenbergia violacea</i>	Purple Coral-pea
<i>Kunzea ericoides</i>	Burgan

LOW SHRUBS (10-20% cover)

<i>Acacia acinacea</i>	Gold-dust Wattle
<i>Chrysocephalum semipapposum</i> (FF)	Clustered Everlasting (Foothill form)
<i>Correa glabra</i>	Rock Correa
<i>Dodonaea viscosa</i> ssp. <i>cuneata</i>	Wedge-leaf Hop-bush
<i>Enchylaena tomentosa</i>	Ruby Saltbush
<i>Myoporum viscosum</i>	Sticky Boobialla
<i>Pomaderris prunifolia</i>	Prunus Pomaderris

SEDGES, LILIES, RUSHES & GRASSES (10-20% cover)

<i>Austrodanthonia</i> spp.	Wallaby Grass
<i>Austrostipa densiflora</i>	Dense Spear-grass
<i>Austrostipa scabra</i> ssp. <i>falcata</i>	Slender Spear-grass
<i>Dianella revoluta</i>	Black-anther Flax-lily
<i>Dichelachne crinita</i>	Long-hair Plume-grass
<i>Lepidosperma laterale</i>	Variable Sword-sedge
<i>Lomandra filiformis</i>	Wattle Mat-rush
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass

HERBS including DAISIES (10-20% cover)

<i>Brachyscome multifida</i>	Cut-leaf Daisy
<i>Carpobrotus modestus</i>	Inland Pigface
<i>Crassula sieberiana</i>	Austral Stonecrop
<i>Einadia hastata</i>	Saloop Saltbush
<i>Einadia nutans</i>	Nodding Saltbush
<i>Galium gaudichaudii</i>	Rough Bedstraw
<i>Gonocarpus tetragynus</i>	Common Raspwort
<i>Pimelea humilis</i>	Common Rice-flower
<i>Stellaria pungens</i>	Prickly Starwort
<i>Stuartina muelleri</i>	Spoon Cudweed
<i>Wahlenbergia luteola</i>	Yellowish Bluebell

SUBSTRATE (30-40% cover): bare ground/rocks

Conservation status in Greater Melbourne: regionally disjunct

Distribution: localised above Plenty River and Darebin Creek at Darebin Parklands

Landform: foothill; exposed sedimentary stream cliff/escarpments

Vegetation: varying from bare rock faces on exposed vertical cliffs, to shrubland with sparse cover of herbs on dry rock ledges, to scrub or open woodland on escarpments. Long-leaf Box, Red Stringybark and Yellow Box (affinity BSWWhy) attend RESEs, but the diagnostic structural component is provided by wattles. A spear-grass/chenopod alliance (also in BIFsy) is disjunct from "mallee" areas west of Melbourne (see Beardsell 1997a). It includes Dense Spear-grass, Inland Pigface, Cut-leaf Daisy, Saloop Saltbush, Sticky Boobialla and Wedge-leaf Hop-bush.

Most intact stand(s): partially intact at Partington Flat

Riverine Escarpment Scrub (EVC 82)Sub-community: **RESs** Burgan - Sweet Bursaria (sheltered sedimentary)**Data:** District (Plenty Gorge Park; see Beardsell 1997a)**CANOPY & CLIMBERS** (2-8 m; 30-50% cover)*Acacia dealbata*

Silver Wattle

Acacia melanoxylon

Blackwood

Bursaria spinosa**Sweet Bursaria***Cassinia longifolia*

Dogwood

Clematis microphylla

Small-leaved Clematis

Meliccytus dentatus

Tree Violet

Kunzea ericoides**Burgan****LOW SHRUBS** (10-20% cover)*Chrysocephalum semipapposum* (GF)

Clustered Everlasting (Gully form)

Goodenia ovata

Hop Goodenia

Olearia lirata

Snow Daisy-bush

Rubus parvifolius

Small-leaf Bramble

FERNS (5-10% cover)*Adiantum aethiopicum*

Common Maiden-hair

Pteridium esculentum

Austral Bracken

SEDGES, LILIES, RUSHES & GRASSES (20-30% cover)*Arthropodium strictum*

Chocolate Lily

Dianella longifolia

Pale Flax-lily

Echinopogon ovatus

Common Hedgehog-grass

Lepidosperma laterale

Variable Sword-sedge

Lomandra longifolia

Spiny-headed Mat-rush

Microlaena stipoides

Weeping Grass

Poa spp.

Tussock Grass

HERBS including DAISIES (20-30% cover)*Acaena novae-zelandiae*

Bidgee-widgee

Brunonia australis

Blue Pincushion

Cymbonotus preissianus

Austral Bear's-ears

Desmodium gunnii

Southern Tick-trefoil

Galium propinquum

Maori Bedstraw

Geranium potentilloides

Cinquefoil Crane's-bill

Glycine microphylla

Small-leaf Glycine

Gonocarpus humilis

Shade Raspwort

Lagenophora stipitata

Blue Bottle-daisy

Plantago debilis

Shade Plantain

Ranunculus lappaceus

Australian Buttercup

Stackhousia monogyne

Creamy Candles

Stellaria pungens

Prickly Starwort

Veronica calycina

Hairy Speedwell

Wahlenbergia gracilis/stricta

Sprawling/Tall Bluebell

SUBSTRATE (10-20% cover): rock/bare ground/moss**Conservation status in Greater Melbourne:** regionally disjunct**Distribution:** localised along Plenty River upstream from Lower Plenty Road**Landform:** riverine; sheltered cliff faces of rivers**Vegetation:** varying from bare rock faces on vertical cliffs, through shrubland on steep escarpments, fernland in damp rock fissures and rills, to herbfields on earth ledges. Long-leaf Box, Red Stringybark and Yellow Box (affinity HFFsl) attend RESs, but the diagnostic structural component is provided by tall shrubs. Flora of sheltered cliffs comprises elements of damp mountain forest (Hairy Speedwell), riverine (Muttonwood) and lowland grasslands (Kangaroo Grass). RESs supports a high diversity of herbs, with daisies being particularly prominent. There are also specialist species of rock surfaces or skeletal soils (e.g. Austral Stork's-bill).**Most intact stand(s):** degraded (Yallambie); nearest intact Plenty Gorge at Janefield.

Riverine Escarpment Scrub (EVC 82)Sub-community: **RESvc** Lightwood - Tree Violet (volcanic cliff)**Data:** Banyule (Darebin Creek upstream of Dougharty Road). District (Plenty Gorge)**CANOPY & CLIMBERS** (2-8 m tall; 20-30% cover)

<i>Acacia implexa</i>	Lightwood
<i>Acacia mearnsii</i>	Black Wattle
<i>Acacia melanoxylon</i>	Blackwood
<i>Allocastrum verticillata</i>	Drooping Sheoke
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Cassinia longifolia</i>	Dogwood
<i>Clematis microphylla</i>	Small-leaved Clematis
<i>Convolvulus erubescens</i>	Pink Bindweed
<i>Exocarpos cupressiformis</i>	Cherry Ballart
<i>Melicactus dentatus</i>	Tree Violet

LOW SHRUBS (10% cover)

<i>Chrysocephalum semipapposum</i> (FF)	Clustered Everlasting (Foothill form)
<i>Rubus parvifolius</i>	Small-leaf Bramble
<i>Solanum aviculare</i>	Kangaroo Apple

FERNS (10% cover)

<i>Asplenium flabellifolium</i>	Necklace Fern
<i>Cheilanthes sieberi</i>	Narrow Rock-fern
<i>Pellaea falcata</i> var. <i>falcata</i>	Sickle Fern
<i>Pteridium esculentum</i>	Austral Bracken

SEDGES, LILIES, RUSHES & GRASSES (20-30% cover)

<i>Austrodanthonia</i> spp.	Wallaby Grass
<i>Austrostipa</i> spp.	Spear Grass
<i>Dichelachne crinita</i>	Long-hair Plume-grass
<i>Lepidosperma laterale</i>	Variable Sword-sedge
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Poa rodwayi</i>	Velvet Tussock-grass
<i>Themeda triandra</i>	Kangaroo Grass
<i>Tricoryne elatior</i>	Yellow Rush-lily

HERBS including DAISIES (10-20% cover)

<i>Einadia nutans</i>	Nodding Saltbush
<i>Galium migrans</i>	Wandering Bedstraw
<i>Geranium retrorsum</i>	Grassland Crane's-bill
<i>Glycine tabacina</i>	Variable Glycine
<i>Oxalis perennans</i>	Grassland Wood-sorrel
<i>Pelargonium australe</i>	Austral Stork's-bill
<i>Veronica gracilis</i>	Slender Speedwell
<i>Wahlenbergia luteola</i>	Yellowish Bluebell

SUBSTRATE (20-30% cover): basalt rock**Conservation status in Greater Melbourne:** regionally endangered**Distribution:** Darebin Creek upstream from Donaldsons Creek at Darebin Parklands**Landform:** volcanic plain; Quaternary basalt stream cliff/escarpments

Vegetation: RESvc varies from scattered River Red Gums and open shrubland at cliff bases, to fernland in shaded rock fissures and rills, to grassland on columnar basalt cliff tops and sparse herbfield on ledges of bare rock faces. Cliff tops verge onto PGWOvp on the plains and would have supported stony knoll grassland species (e.g. *Triptilodiscus pygmaeus* Common Sunray). Cliff bases adjoin RSvc along Darebin Creek. RESvc is replaced by PGWOvs where terraces develop. It has some different grasses and herbs to RESes/ss on sedimentary cliffs but most of the shrub species are shared.

Most intact stand(s): partially intact on Darebin Creek upstream of Dougharty Rd.

Riparian Shrubland (EVC 19)Sub-community: **RSsr** Muttonwood (sedimentary rapids)**Data:** Banyule (Plenty at Greensborough, Montmorency; Yarra at Westerfolds, Bonds Road)**CANOPY & CLIMBERS** (2-8 m tall; 30-50% cover)

<i>Acacia dealbata</i>	Silver Wattle
<i>Callistemon sieberi</i>	River Bottlebrush
<i>Calystegia sepium</i>	Large Bindweed
<i>Coprosma quadrifida</i>	Prickly Currant-bush
<i>Eucalyptus viminalis</i>	Manna Gum
<i>Gynatrix pulchella</i>	Hemp Bush
<i>Melicytus dentatus</i>	Tree Violet
<i>Kunzea ericoides</i>	Burgan
<i>Ozothamnus ferrugineus</i>	Tree Everlasting
<i>Pomaderris aspera</i>	Hazel Pomaderris
<i>Myrsine howittiana</i>	Muttonwood

SEDGES, LILIES, RUSHES & GRASSES (20-30% cover)

<i>Agrostis avenacea</i>	Common Blown-grass
<i>Alisma plantago-aquatica</i>	Water Plantain
<i>Carex gaudichaudiana</i>	Fen Sedge
<i>Carex polyantha</i>	River Sedge
<i>Glyceria australis</i>	Australian Sweet-grass
<i>Isolepis platycarpa</i>	Broad-fruit Club-sedge
<i>Juncus spp.</i>	rushes
<i>Phragmites australis</i>	Common Reed
<i>Poa ensiformis</i>	Sword Tussock-grass
<i>Potamogeton crispus</i>	Curly Pondweed
<i>Schoenoplectus tabernaemontani</i>	River Club-sedge

HERBS including DAISIES (20-30% cover)

<i>Alternanthera denticulata</i>	Lesser Joyweed
<i>Crassula helmsii</i>	Swamp Crassula
<i>Gratiola peruviana</i>	Austral Brooklime
<i>Hydrocotyle verticillata</i>	Shield Pennywort
<i>Lobelia anceps</i>	Angled Lobelia
<i>Lycopus australis</i>	Australian Gipsywort
<i>Mazus pumilio</i>	Swamp Mazus
<i>Persicaria spp.</i>	knotweeds
<i>Pratia pedunculata</i>	Matted Pratia
<i>Senecio minimus</i>	Shrubby Fireweed
<i>Urtica incisa</i>	Scrub Nettle

SUBSTRATE (20-30% cover): rocks/water; bare ground/mudflats (at low flow)**Conservation status in Greater Melbourne:** regionally disjunct/rare**Distribution:** localised along upstream sections of Yarra River and Plenty River and Darebin Creek from Darebin Parklands to Heidelberg Road**Landform:** riverine; sedimentary river rapids including riverbank, sandy points, islands of silt or rock and associated channels and adjoining cliff bases**Vegetation:** RSsr intersperses FRWrm/rr along the Yarra and Plenty. The dominant strata is provided by Silver Wattle, Tree Violet and Muttonwood varying in density from open shrubland (10% cover) to closed scrub (over 50%). There is a scattering of Manna Gums. The Yarra bank and channels of islands support dense reed-beds (River Club-sedge, Common Reed) and amphibious herbfields (Hairy Knotweed, Austral Brooklime). Narrow terraces at the foot of cliffs support shade tolerant ferns and herbs (Shining Pennywort). Rocks provide habitat for specialists including River Sedge of mountain streams and Swamp Mazus from coastal swamps. Rapids provide a foothill enclave into the plains dominated riparian vegetation. RSsr has affinity with RSvc of volcanic streams (e.g. Darebin Creek).**Most intact stand(s):** relatively intact (rapids at Westerfolds Park and Bonds Road).

Riparian Shrubland (EVC 19)Sub-community: **RSvc** Woolly Tea-tree (volcanic creek)**Data:** Banyule (Darebin Ck near Dougharty Rd). District (Plenty River). Other (Merri Ck)**CANOPY & CLIMBERS** (2-8 m tall; 20-30% cover)

<i>Acacia dealbata</i>	Silver Wattle
<i>Bursaria spinosa</i>	Sweet Bursaria
<i>Callistemon sieberi</i>	River Bottlebrush
<i>Calystegia sepium</i>	Large Bindweed
<i>Eucalyptus camaldulensis</i>	River Red Gum
<i>Leptospermum lanigerum</i>	Woolly Tea-tree
<i>Gynatrix pulchella</i>	Hemp Bush
<i>Melicytus dentatus</i>	Tree Violet

LOW SHRUBS (10% cover)

<i>Coprosma quadrifida</i>	Prickly Currant-bush
<i>Rubus parvifolius</i>	Small-leaf Bramble

SEDGES, LILIES, RUSHES & GRASSES (30-40% cover)

<i>Agrostis avenacea</i>	Common Blown-grass
<i>Baumea juncea</i>	Bare Twig-sedge
<i>Bolboschoenus medianus</i>	Marsh Club-sedge
<i>Carex tereticaulis</i>	Hollow Sedge
<i>Eleocharis acuta</i>	Common Spike-sedge
<i>Eleocharis sphacelata</i>	Tall Spike-sedge
<i>Isolepis nodosa</i>	Knobby Club-sedge
<i>Isolepis platycarpa</i>	Broad-fruit Club-sedge
<i>Juncus</i> spp.	rushes
<i>Phragmites australis</i>	Common Reed
<i>Poa labillardieri</i>	Common Tussock-grass
<i>Schoenoplectus tabernaemontani</i>	River Club-sedge
<i>Typha domingensis</i>	Narrow-leaf Cumbungi

HERBS including DAISIES (10-20% cover)

<i>Alternanthera denticulata</i>	Lesser Joyweed
<i>Apium prostratum</i> ssp. <i>prostratum</i>	Sea Celery
<i>Centella cordifolia</i>	Centella
<i>Crassula helmsii</i>	Swamp Crassula
<i>Geranium inundatum</i>	Naked Crane's-bill
<i>Hydrocotyle verticillata</i>	Shield Pennywort
<i>Leptinella reptans</i>	Creeping Cotula
<i>Persicaria decipiens</i>	Slender Knotweed
<i>Rumex bidens</i>	Mud Dock
<i>Samolus repens</i>	Creeping Brookweed
<i>Selliera radicans</i>	Shiny Swamp-mat

SUBSTRATE (20% cover): rocks; bare ground/mudflats (at low flow)**Conservation status in Greater Melbourne:** regionally threatened**Distribution:** Darebin Creek upstream from Darebin Parklands**Landform:** riverine; banks and floodplains of streams on the volcanic plains

Vegetation: dominant native strata are tall shrubs (River Bottlebrush, Woolly Tea-tree, Silver Wattle) and riparian herbfield. The latter consists of reed-beds (River Club-sedge, Common Reed, Cumbungi) in deeper water and sedgeland (Bare Twig-sedge, Marsh Club-sedge) in shallow water while amphibious herbfield (Common Tussock-grass, Slender Knotweed) occupies the banks. There is a scattering of River Red Gums. Adjoining floodplain terraces support PGWOVs while columnar basalt cliffs support RESvc. Salt-tolerant herbfields (Knobby Club-sedge, Creeping Brookweed and Shiny Swamp-mat) grow in basalt pavements, soaks and anabranches. Swamp Paperbark (extensively planted) is not indigenous to RSvc.

Most intact stand(s): degraded (Darebin Ck). Nearest intact Merri Ck Campbellfield.

Swamp Scrub (EVC 53)

Sub-community: **SSf** Swamp Paperbark (floodplain)

Data: District (Willsmere Billabong). Other (Yering Backswamp; Beardsell in prep.)

CANOPY & CLIMBERS (2-8 m tall; 30-40% cover)

<i>Acacia dealbata</i>	Silver Wattle
<i>Eucalyptus camaldulensis</i>	River Red Gum
<i>Melicytus dentatus</i>	Tree Violet
<i>Kunzea ericoides</i>	Burgan
Melaleuca ericifolia	Swamp Paperbark
<i>Myrsine howittiana</i>	Muttonwood

LOW SHRUBS (5-10% cover)

<i>Coprosma quadrifida</i>	Prickly Currant-bush
<i>Solanum aviculare</i>	Kangaroo Apple

FERNS (5-10% cover)

<i>Calochlaena dubia</i>	Common Ground-fern
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SEDGES, LILIES, RUSHES & GRASSES (20-30% cover)

<i>Agrostis avenacea</i>	Common Blown-grass
<i>Carex appressa</i>	Tall Sedge
<i>Carex gaudichaudiana</i>	Fen Sedge
<i>Echinopogon ovatus</i>	Common Hedgehog-grass
<i>Isolepis inundata</i>	Swamp Club-sedge
<i>Juncus amabilis</i>	Hollow Rush
<i>Juncus gregiflorus</i>	Green Rush
<i>Poa ensiformis</i>	Sword Tussock-grass
<i>Poa tenera</i>	Slender Tussock-grass
<i>Schoenus maschalinus</i>	Leafy Bog-sedge

HERBS including DAISIES (20-30% cover)

<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Centella cordifolia</i>	Centella
<i>Callitriche muelleri</i>	Round Water-starwort
<i>Hydrocotyle hirta</i>	Hairy Pennywort
<i>Hydrocotyle sibthorpioides</i>	Shining Pennywort
<i>Hypericum japonicum</i>	Matted St John's Wort
<i>Lobelia anceps</i>	Angled Lobelia
<i>Lycopus australis</i>	Australian Gipsywort
<i>Neopaxia australasica</i>	White Purslane
<i>Persicaria hydropiper</i>	Water-pepper
<i>Persicaria praetermissa</i>	Spotted Knotweed
<i>Senecio minimus</i>	Shrubby Fireweed
<i>Stellaria flaccida</i>	Forest Starwort

SUBSTRATE (5-10% cover): logs, litter and bare ground

Conservation status in Greater Melbourne: regionally endangered

Distribution: Yarra floodplain

Landform: riverine; floodplain billabongs and river flat swampland

Vegetation: SSf contains a dense canopy of Swamp Paperbark and tall shrubs from FRWrr and RSsr on the Yarra banks (Silver Wattle, Muttonwood, Prickly Currant-bush). The field layer consists of shade tolerant bog species (e.g. Matted St John's Wort). Banks support species from higher rainfall areas (e.g. ferns and Forest Starwort). As swamps infill with alluvium and waterlogging reduces, a succession occurs from permanent wetland to seasonal wetland to swamp scrub finally to FRWtr. This is influenced by degree of inundation and slope of banks. SSf will likely replace WFeh at the northern wetland of Banyule Flats as it infills with stormwater sediment. SSf fringes FPHfm/PGWeme at floodplain swamps, WVSfm at backswamps and FPHbm at billabongs with low banks. FRWtr replaces SSf at billabongs with high banks.

Most intact stand(s): remnant at Yarra Flats. Nearest stand is Willsmere Billabong.

Valley Grassy Forest (EVC 47)

Sub-community: VGFeh Yellow Box (exposed hill-slope)

Data: Eastern part of Yandell Reserve.

TREES (12-15 m tall; 15-25% cover)

Eucalyptus goniocalyx & *E. macrorhyncha*

Eucalyptus melliodora & *Eucalyptus rubida*

TALL SHRUBS & CLIMBERS (10-20% cover)

Acacia implexa & *Acacia mearnsii*

Acacia paradoxa & *Acacia pycnantha*

Bursaria spinosa & *Cassinia longifolia*

Clematis microphylla

Glycine clandestine

Hardenbergia violacea

LOW SHRUBS (5-10% cover)

Acacia acinacea

Acrotriche serrulata

Chrysocephalum semipapposum(FF)

Daviesia leptophylla

Dillwynia cinerascens & *Pimelea curviflora*

Platylobium obtusangulam & *Pultenaea pedunculata*

SEDGES, LILIES, RUSHES & GRASSES (50-60% cover)

Arthropodium strictum

Austrodanthonia spp & *Austrostipa* spp

Burchardia umbellate

Dianella admixta

Elymus scaber

Lomandra filiformis

Microlaena stipoides

Poa sieberiana var. *sieberiana*

Themeda triandra

DICOT HERBS including DAISIES (10-20% cover)

Acaena echinata

Asperula conferta & *Bossiaea prostrate*

Brunonia australis & *Convolvulus angustissimus*

Cynoglossum suaveolens

Gonocarpus tetragynus

Helichrysum scorpioides

Hovea heterophylla & *Kennedia prostrate*

Leptorhynchus squamatus & *Opercularia varia*

Plantago varia

Ranunculus lappaceus & *Velleia paradoxa*

Wahlenbergia stricta

SUBSTRATE (10-20% cover): leaf litter/moss; logs

Long-leaf Box & Red Stringybark
Yellow Box & Candlebark

Lightwood & Black Wattle
Hedge Wattle & Golden Wattle
Sweet Bursaria & Dogwood
Small-leaved Clematis
Twining Glycine
Purple Coral-pea

Gold-dust Wattle
Honeypots
Clustered Everlasting (Foothill Form)
Narrow-leaf Bitter-pea
Grey Parrot-pea & Curved Rice-flower
Common Flat-pea & Matted Bush-pea

Chocolate Lily
Wallaby Grass & Spear Grass
Milkmaids
Black-anther Flax-lily
Common Wheat-grass
Wattle Mat-rush
Weeping Grass
Grey Tussock-grass
Kangaroo Grass

Sheep's Burr
Common Woodruff & Creeping Bossiaea
Blue Pincushion & Pink Bindweed
Sweet Hound's-tongue
Common Raspwort
Button Everlasting
Common Hovea & Running Postman
Scaly Buttons & Variable Stinkweed
Variable Plantain
Australian Buttercup & Spur Velleia
Tall Bluebell

Conservation status in Greater Melbourne: regionally endangered

Distribution: slopes of the Plenty River and Diamond Creek catchments, extent not currently mapped outside of Yandell Reserve.

Landform: foothill (crest & hill-slope); exposed hill-slopes

Vegetation: VGFeh is characterised by a combination of gum and box eucalypts over a moderate tall shrub layer of Dogwood, Hedge Wattle and Sweet Bursaria. There is an open low shrub layer while openings support a species-rich ground layer of grasses, lilies and dicot herbs including ground-peas, geraniums, bluebells and rice-flowers. VGFeh occupies moderately fertile hill-slopes below box - ironbark forest (BIFsy). Sunny openings on exposed hill-slopes support grassland species from plains grassy woodland (PGWOep). These include Arching Flax-lily, Golden Moths, Blue Grass-lily, Kangaroo Grass, Clover Glycine and Spur Velleia. The stand formerly supported a diverse orchid flora. VGFeh is replaced by plains grassy woodland (PGWOep) on the alluvial plains at Heidelberg.

Most intact stand(s): small areas relatively intact in eastern Yandell Reserve.

Valley Grassy Forest (EVC 47)

Sub-community: VGFsf Long-leaf Box - Candlebark (sheltered foot-slope)

Data: Yandell Reserve.

TREES (15 m tall; 20-30% cover)

Eucalyptus goniocalyx

Eucalyptus macrorhyncha & *Eucalyptus melliodora*

Eucalyptus rubida

TALL SHRUBS & CLIMBERS (10-20% cover)

Acacia implexa & *Acacia mearnsii*

Acacia melanoxylon & *Bursaria spinosa*

Cassinia longifolia & *Clematis microphylla*

Glycine clandestine & *Kunzea leptospermoides*

Meliccytus dentatus

LOW SHRUBS (5-10% cover)

Acacia genistifolia & *Acrotriche serrulata*

Coprosma quadrifida & *Correa reflexa*

Daviesia leptophylla & *Platylobium obtusangulam*

Pultenaea gunnii

SEDGES, LILIES, RUSHES & GRASSES (40% cover)

Arthropodium strictum

Austrodanthonia laevis & *Austrodanthonia racemosa*

Carex iynx

Dianella amoena & *Dianella laevis*

Deyeuxia quadriseta & *Elymus scaber*

Lomandra filiformis & *Lomandra longifolia*

Microlaena stipoides

Notodanthonia semiannularis

Poa labillardieri & *Poa morrisii*

Themeda triandra

DICOT HERBS including DAISIES (30% cover)

Acaena agnipila

Dichondra repens

Gonocarpus tetragynus & *Helichrysum scorpioides*

Haloragis heterophylla

Ranunculus lappaceus

Senecio spp.

Stackhousia monogyna

Veronica gracilis & *Viola hederacea*

Wahlenbergia stricta

SUBSTRATE (10% cover): litter/logs

Long-leaf Box

Red Stringybark & Yellow Box

Candlebark

Lightwood & Black Wattle

Blackwood & Sweet Bursaria

Dogwood & Small-leaved Clematis

Twining Glycine & Yarra Burgan

Tree Violet

Spreading Wattle & Honeypots

Prickly Currant-bush & Common Correa

Common Flat-pea & Narrow-leaf Bitter-pea

Golden Bush-pea

Chocolate Lily

Smooth Wallaby-grass & Stiped Wallaby-grass

Tussock Sedge

Matted Flax-lily & Pale Flax-lily

Reed Bent-grass & Common Wheat-grass

Wattle Mat-rush & Spiny-headed Mat-rush

Weeping Grass

Wetland Wallaby-grass

Common Tussock-grass & Soft Tussock-grass

Kangaroo Grass

Hairy Sheep's Burr

Kidney-weed

Common Raspwort & Button Everlasting

Varied Raspwort

Australian Buttercup

fireweeds/groundsels

Creamy Candles

Slender Speedwell & Ivy-leaf Violet

Tall Bluebell

Conservation status in Greater Melbourne: regionally threatened

Distribution: Valleys of the Plenty River and Diamond Creek catchments

Landform: foothill (valley & foot-slope); valleys and sheltered foot-slopes

Vegetation: VGFsf has an open eucalypt layer, prominent tall shrub layer (wattles and bursaria in undisturbed stands), open low shrub layer and diverse and prominent field layer adapted to damp, shaded environments (Common Maiden-hair, Pale Vanilla-lily, Weeping Grass, Soft Tussock-grass, Austral Bear's-ears, Kidney-weed, Annual Buttercup). These species also occur in HFFsl on the adjoining sheltered hill-slopes (and higher rainfall mountain areas). Valleys support riparian species from CHWdl adapted to higher soil moisture and fertility (Centella, Swamp Gum, Tussock Sedge, Thatch-Saw-sedge, Varied Raspwort, Slender Speedwell). VGFsf is replaced by plains grassy woodland (PGWOtv) on the alluvial plains at Heidelberg.

Most intact stand(s): small area relatively intact in south-eastern part of Yandell Reserve.

Wetland Formation (EVC 74)Sub-community **WFeh****Definition:** Common Reed - Cumbungi - Tall Spike-sedge (emergent herbfield).**FERNS & NON-VASCULARS** (5-10% cover)*Azolla filiculoides**Chara* sp.**SEDGES, LILIES, RUSHES & GRASSES** (50-60% cover)*Alisma plantago-aquatica**Amphibromus nervosus**Carex appressa* & *Carex inversa**Eleocharis acuta****Eleocharis sphacelata****Glyceria australis**Isolepis inundata* & *Juncus* spp.*Lachnagrostis filiformis**Microlaena stipoides****Phragmites australis****Poa labillardierei**Potamogeton ochreatus**Schoenoplectus tabernaemontanii**Schoenus tesquorum**Triglochin procera* & *Triglochin striata****Typha domingensis* & *T. orientalis*****DICOT HERBS including DAISIES** (20-30% cover)*Acaena novae-zelandiae**Alternanthera denticulata**Centella cordifolia**Centipeda cunninghamii* & *Centipeda minima**Crassula helmsii**Elatine gratioloides**Epilobium hirtigerum**Euchiton involucratus**Gratiola peruviana**Lobelia anceps* & *Lobelia pedunculata**Lythrum hyssopifolia**Myriophyllum crispatum**Persicaria decipiens* & *P. praetermissa**Persicaria prostrata**Pseudognaphalium luteoalbum***SUBSTRATE** (20-30% cover): *water/bare ground/mudflats*

Pacific Azolla

Stonewort (non-vascular)

Water Plantain

Veined Swamp Wallaby-grass

Tall Sedge & Knob Sedge

Common Spike-sedge

Tall Spike-sedge

Australian Sweet-grass

Swamp Club-sedge & rushes

Common Blown-grass

Weeping Grass

Common Reed

Common Tussock-grass

Blunt Pondweed

River Club-sedge

Soft Bog-sedge

Upright Water-ribbons & Streaked Arrowgrass

Cumbungi

Bidgee-widgee

Lesser Joyweed

Centella

Common Sneezeweed & Spreading Sneezeweed

Swamp Crassula

Waterwort

Hairy Willow-herb

Star Cudweed

Austral Brooklime

Angled Lobelia & Matted Pratia

Small Loosestrife

Upright Water-milfoil

Slender Knotweed & Spotted Knotweed

Creeping Knotweed

Jersey Cudweed

Conservation Status in Greater Melbourne: secure**Distribution:** localised at Viewbank**Landform:** *wetland*; fringes of dams

Vegetation: WFeh consists of aquatic and semi-aquatic vegetation zones growing in succession from permanent water through seasonally inundated shallows to banks. Emergent herbfield in deeper water is dominated by Tall Spike-sedge, Broad-leaf Cumbungi (*T. orientalis*) and Common Reed. Other aquatics include Upright Water-ribbons and Blunt Pondweed. Seasonally inundated shallows support Water Plantain, Tall Sedge, Common Spike-sedge, River Club-sedge, rushes and Narrow-leaf Cumbungi (*T. domingensis*). This is fringed on the banks by amphibious herbfield that colonises the receding water. This consists of Lesser Joyweed, Common Sneezeweed, Matted Pratia, Swamp Crassula, Purple Crassula, Waterwort, Upright Water-milfoil, Slender Knotweed and Spotted Knotweed, mostly riparian species from the Yarra. Each stand has differing dominants and many species are planted.

Significant flora - Reg Thr: *Schoenus tesquorum*.**Stand quality:** partially intact (Viewbank).

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