

## Site 66. Corhanwarrabul Creek and its Tributaries

Floodplain and riparian habitat of the Corhanwarrabul Ck catchment, upstream of Stud Rd.

Summary of significant features:

- State significance: native vegetation belonging to various regionally-endangered vegetation types;
- State significance: habitat for Latham's Snipe, which is listed as Vulnerable under Commonwealth law;
- State significance: habitat for the endangered Freckled Duck, recorded at Waterford Valley Golf Course;
- Regionally significant: waterbirds that are listed as vulnerable under Victorian law, easily found at artificial wetlands within the site;
- Locally significant: part of a corridor for daily and/or seasonal movements of fauna, including waterbirds, fish and Platypus;
- Locally significant: one of only two known natural stands of River Red Gum in Knox;
- Locally significant: viable populations of many other locally-threatened plant species.

### Boundaries

The site comprises the polygons outlined with dashed blue lines on the aerial photograph on the next page, totalling 170 ha. The precise boundary alignments are better viewed in the Knox Biodiversity Atlas, which accompanies this report.

The most easterly polygon – on Ferny Creek at Kings Park, Ferntree Gully – has been added to this third edition in recognition that revegetation has produced good habitat for movement of mobile fauna. The next polygon downstream – beside St Joseph's College – has been added because despite its current paucity of habitat, it provides one of the best opportunities in Knox for connecting habitat by way of revegetation. The polygon extending west-southwest from the intersection of Burwood Hwy and Glenfern Rd has been added due to a combination of improvement in the ecological value of its maturing revegetation and the potential for further improvement through revegetation.

Some of the site has been delineated to exclude shared paths running adjacent to the rear fences of private properties. Most of the remaining boundaries abutting private land follow cadastral boundaries.

Some boundaries have been slightly refined in this third edition due to changes in the state cadastre. At the time of the second edition, the state cadastre showed only an interim boundary around the Waterford Park retirement village, and this edition now conforms with updates to the cadastre. Slight refinements have also been made to follow the edges of shared paths, now that more precise aerial imagery is available.

The sections of the site along Monbulk Ck east of Blackwood Park Drive have been widened to provide a 20 m setback from the creek banks, thereby matching Melbourne Water's (2012) stream setback guidelines for greenfield development (see Section 4.3.3 of Volume 1). The same approach has been taken close to Stud Rd.

The site includes strips of road verge beside Stud Rd and Karoo Rd. The latter corresponds to a fenced reserve for the larger of Knox's only two populations of River Red Gum (*Eucalyptus camaldulensis*).

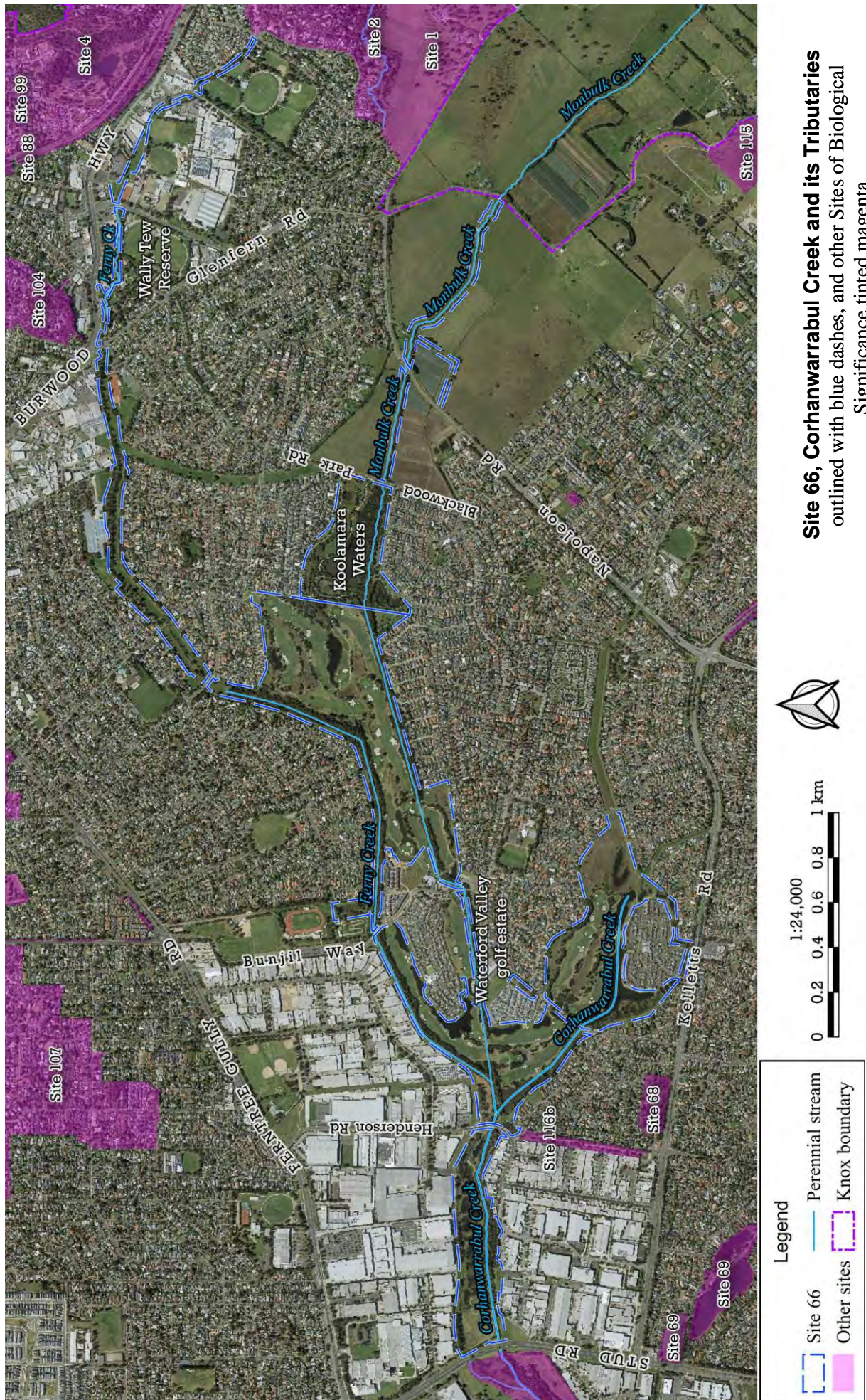
Two reserves within the site are given special attention below because of their importance to Knox City Council and its community. They are Koolamara Waters and Wally Tew Reserve, both in Ferntree Gully. The former is delineated by cadastral boundaries; the latter mostly by the edge of riparian native vegetation.

The areas tinted magenta on the aerial photograph below are boundaries of other sites in this report, labelled with their site numbers.

**Land use & tenure:** Mostly Council land and the private Waterford Valley Golf Course. There are small sections of road verge and a strip of unused road reservation that intersects Napoleon Rd. The strips along Monbulk Ck upstream of Blackwood Park Drive are on private agricultural land.

### Site description

Almost the whole site has alluvial soil. The exception is the western half of the strip of road reserve extending east from Napoleon Rd, where clay loam soil has formed from weathering of the underlying Devonian hornfels.



The rest of the site would have been part of a swamp of more than 400 ha prior to settlement. The elevations vary from 56 m to 112 m and the average slope is 0.6%. The pre-colonial native vegetation of the swamp or floodplain probably had sparse eucalypts (mainly Swamp Gums, *Eucalyptus ovata*) and much of it would have been almost impenetrable due to bogginess and dense scrub of paperbark and reeds. Streams would have meandered across the floodplain, leaving billabongs behind as their courses altered during floods.

The nature of the topography and the presence of species such as River Red Gum (*Eucalyptus camaldulensis*), Muttonwood (*Myrsine howittiana*), Tree Violet (*Meliccytus dentatus*), Hazel Pomaderris (*Pomaderris aspera*) and an abundance of Hemp Bush (*Gynatrix pulchella*) suggest that the pre-European vegetation belonged to the Ecological Vegetation Classes (EVCs), Floodplain Riparian Woodland and Floodplain Wetland Complex, rather than the Swampy Woodland mapped by the Department of Energy, Environment & Climate Action. All of these EVCs are now regionally endangered, having been cleared and drained for agriculture or urbanisation in most of their original range, including this site.

Early settlers converted the floodplain to farmland by decimating the dense vegetation and replacing the creeks with numerous straight drains. Native plants were mostly replaced by pasture, with willows and other woody weeds colonising the drainage channels. The limited regrowth of native flora predominantly comprised thickets of Blackwood (*Acacia melanoxylon*) or Swamp Paperbark (*Melaleuca ericifolia*), with scattered eucalypts and patches of Common Reed (*Phragmites australis*). There were also wetlands with predominantly indigenous plants at the time of an ecological survey in 1997\*.

Since late 2000, the Waterford Valley and Koolamara Waters developments have further changed the area's landscape and hydrological parameters such as water table depth and flows along the creek channels. Many new stormwater treatment wetlands were constructed.

#### Koolamara Waters Reserve

Koolamara Waters Reserve contains exemplary artificial wetland habitat. When the 1997 ecological study was conducted, this part of the site contained the drainage channel of Monbulk Creek, lined by Blackwoods (*Acacia melanoxylon*) and surrounded by weedy, marshy, disused pasture. Only a handful of indigenous plant species grew there, all very common and hardy except for a few of the uncommon species, Hairy Knotweed (*Persicaria subsessilis*). The knotweed was destroyed during construction of wetlands in 2000 but there has since been a large net improvement in the site's conservation value. The combination of the stormwater treatment waterbodies, associated planting and natural immigration of wetland plants now supports abundant waterbirds and other pondlife. A high density of iNaturalist observational records indicates the site is also popular with people who take an interest in nature.

#### Wally Tew Reserve

The site's Wally Tew Reserve segment (between Glenfern Rd and Brenock Park Dr) follows Ferny Creek, with elevations of 90–95 m. This is the only section of stream within the site that has not been replaced by a straightened drain. It is also the only section with Manna Gum (*Eucalyptus viminalis*) or Yellow Box (*Eucalyptus melliodora*), associated with Riparian Forest and Valley Grassy Forest, respectively. Although the tree canopy is fragmented and the native understorey mostly comprises relatively young revegetation, this is the only representation of the EVC known as Riparian Forest in the whole site. Some of the Manna Gums are large, old and impressive, and the revegetated understorey is slowly returning the vegetation toward a natural structure. Adjacent to the site delineated here, native gardens and trees around the library and the Knox Environment Society plant nursery provide additional habitat for urban-adapted wildlife.

#### Karoo Rd Red Gum Reserve

The large Waterford Valley land development has been required to avoid the larger of Knox's two patches of wild River Red Gums (*Eucalyptus camaldulensis*). A reserve (89R Karoo Rd, Rowville) has been set aside to protect the trees and create a more natural environment around them through bushland management and revegetation.

---

\* Reid J.C., Moss H. and Lorimer G.S. (1997). *Vegetation Survey of Linear Reserves: A Management Strategy for Riparian and Flood Plain Vegetation*. Knox City Council, Wantirna South.

## Remainder of the Site

When the site was inspected by the author in June 2008 for the second edition of this report, a high diversity of waterbirds was observed in the site's wetlands (even without a formal bird survey), including three listed threatened species. The wetland plantings had reproduced naturally and been supplemented by indigenous plants that appeared to have been brought in by waterbirds. Of the birds of prey that had been noted hunting daily across the site in 1997, Brown Goshawk is still recorded periodically at the golf course but the Black-shouldered Kite and other birds of prey have disappeared or become rare visitors.

Along the creeks, weed control and planting since 2000 has been very successful despite harsh conditions during the Millennium Drought. There are more indigenous plants (particularly of the locally rare species) and far fewer environmental weeds such as blackberries. The great majority of locally threatened plants that were mapped in 1996–7 were found again in 2008 at their original locations, and those which could not be re-found were more than compensated by plantings and new discoveries of the same species. There were also some new discoveries of locally rare plants. A vegetation survey in 2017 around Henderson Rd in preparation for construction of the bridge there also confirmed the continuing existence of most of the locally rare plants mapped there in 1996–7.

There is an interesting patch of regrowth along the remains of the winding, pre-European course of Corhanwarabul Ck, 200–350 m east of Stud Rd. Although the original creek course is now disconnected from the flow except during floods, its banks are (or were, in 2017) well populated with the locally rare Hemp Bush, *Gynatrix pulchella*, just as would have been the case prior to the arrival of early settlers. There is also a Hazel Pomaderris, *Pomaderris aspera*, which had become scarce along the site's waterways prior to plantings this century. These locally rare plants are (or were) embedded in a dense regrowth scrub dominated by the indigenous coloniser, Tree Everlasting (*Ozothamnus ferrugineus*). The environmental weeds, Blackberry, Gorse and Toowoomba Canary-grass were also abundant in the most recent (2017) vegetation survey of that area.

Other notable patches of remnant vegetation within the site – as documented in 2017 or in the second (2010) edition of this report – are located:

- On the south bank of Corhanwarabul Ck, extending westward from the Henderson Rd bridge, where there is a mature stand of Swamp Gums and at least 13 of the locally rare *Gynatrix pulchella*;
- Each side of the 16th tee in the northeast of the Waterford Valley golf course, where there is a mature stand of Swamp Gums with sixteen indigenous understorey species, including the locally rare *Poa labillardierei*;
- North of the golf course's 12th green (near the western end of Koolamara Blvd), where there is a rich wetland adjoining a patch containing twelve indigenous plant species, including the locally-threatened *Calystegia marginata* and *Carex fascicularis*;
- In the far southeast of the Waterford Valley golf course (behind houses fronting Kellbourne Drive), where scalping of the ground in c. early 2008 initiated mass regeneration of indigenous plants. This patch was dominated in June 2008 by *Cassinia sifton*, *Goodenia ovata* and *Rytidosperma setaceum* and much of it retains native vegetation regrowth in 2024.

The ecological condition of the native vegetation in the site was rated in 2010 as ranging between fair and poor (ratings C and D). Revegetation, along with the construction of wetlands, have greatly increased the proportion of vegetation in the 'fair' category rather than 'poor'. The vegetation still contains a substantial number of wild, locally threatened plants. It also represents extensive habitat for native fauna such as waterbirds, frogs, invertebrates and – at the upstream end - Platypus.

## Relationship to other land

The site is part of a corridor for daily and seasonal movements of fauna, particularly waterbirds, fish and occasionally Platypus. Such movements are corroborated by the regular observations along the corridor of fish (including Shortfin Eels) and nomadic or highly mobile waterbirds (e.g. egrets and ducks), and recent records of Platypus in Monbulk Creek. Common forest birds such as Crimson Rosellas and Grey Fantails were observed moving along the corridor each day that the site was surveyed for the second edition of this report. Many of the site's waterbirds, including vulnerable species such as Great Egret, are expected to move between this site and other habitat areas, both nearby (e.g. Lakewood Nature Reserve and Caribbean Lake) or as far away as Siberia.

Fish – particularly eels and Broadfin Galaxias – rely on movement between the site and reaches further upstream and downstream. Barrel-drains and retarding basins represent barriers to such movements for most fish species.

The aerial photograph above outlines neighbouring sites with magenta tinting.

**Bioregion:** Gippsland Plain

### Habitat types

The following information is based on the second edition of this report with some updates from the less thorough 2024 botanical survey.

Stream / drain (No EVC number or conservation status available). 13 indigenous plant species recorded.

Riparian Forest (EVC 18, **Vulnerable** in the Gippsland Plain bioregion): Approximately 1.0 ha in many fragments upstream of Glenfern Rd, varying between fair and poor ecological condition (ratings C and D). 15 indigenous plant species were reported in the second edition of this report, plus a record of the former existence of *Olearia argophylla* from Darren Wallace.

Dominant canopy trees: *Eucalyptus viminalis* and *E. melliodora* with smaller numbers of *E. ovata* and *E. radiata*.

Dominant sub-canopy trees: *Acacia melanoxylon* and *A. mearnsii*, with fewer *Exocarpos cupressiformis*, *Melaleuca ericifolia* and three *Myrsine howittiana*.

Shrubs: *Coprosma quadrifida* and *Bursaria spinosa*.

Vines: *Cassytha melantha* is present but very scarce. The introduced *Hedera helix/hibernica*, *Lonicera japonica* and *Rubus anglocandicans* are also present.

Ferns: None.

Groundcover: The indigenous groundcover has been heavily replaced by introduced species, – reduced to some *Phragmites australis* and small numbers of *Lomandra longifolia* and *Juncus gregiflorus*.

Floodplain Riparian Woodland (EVC 56, **regionally Endangered**), possibly incorporating some vegetation that might be more associated with Swampy Woodland (which is also regionally Endangered): Estimated as 6.1 ha in fair ecological condition (rating C) and 8.8 ha in poor ecological condition (rating D). 67 indigenous plant species were recorded in 1997, 2002 or 2008.

Canopy trees: In the small remnants where eucalypts remain, the dominant species are *Eucalyptus ovata* or (beside Karoo Rd) *E. camaldulensis*.

Sub-canopy trees: *Acacia melanoxylon* and *Melaleuca ericifolia* are abundant. *Pomaderris aspera* and *Acacia mearnsii* are less common. There is a single *Exocarpos cupressiformis* near the 16th tee of the golf course. *Myrsine howittiana* seedlings and saplings are scattered along the creek banks but it is unclear whether they are planted or wild.

Shrubs: Few of the shrubs in 2008 were wild. Among them are *Acacia paradoxa*, *A. verticillata*, *Coprosma quadrifida*, *Goodenia ovata*, *Gynatrix pulchella*, *Ozothamnus ferrugineus*, *Solanum ?laciniatum* and a solitary *Melicytus dentatus*.

Vines: Represented a few *Billardiera mutabilis* in the Red Gum reserve and *Calystegia marginata* in the golf course.

Ferns: There is a single, dense patch of *Pteridium esculentum* beside the drainage channel north of the 12th green.

Groundcover: *Phragmites australis* is common along much of the stream banks. *Persicaria decipiens* and *Juncus* species are abundant beside the water of the creeks, with *P. subsessilis* high within the creek channels. On rarely-inundated land, *Rytidosperma racemosum* and *Juncus* species are fairly abundant, and the following species grow at the Red Gum reserve: *Dichondra repens*, *Microtis parviflora*, *Oxalis exilis/perennans*, *Thelymitra peniculata*, *Schoenus apogon* and *Veronica gracilis*.

Valley Heathy Forest (EVC 127, **Endangered**): In the western half of the unused road reserve connected to the eastern side of Napoleon Rd, estimated as 0.1 ha, all in poor ecological condition (rating D).

Canopy trees: Three *Eucalyptus cephalocarpa* (one with an *Amyema pendula* growing on it) and two *E. radiata*.

Sub-canopy trees: A few *Acacia melanoxylon* and two *Exocarpos cupressiformis*.

Shrubs, vines and ferns: None, due to historical clearing.

Groundcover: A single wild *Lomandra longifolia*, plus some planted species.

Floodplain Wetland Complex (EVC 172, **regionally Endangered**): If one includes the artificially created wetlands (which are mostly good replicas of natural wetlands), the total area is approximately 24 ha. The ecological condition of most of the areas of open water is hard to assess without investigating the bed, but it

is estimated that 75% is in fair ecological condition (rating C) and 25% in poor ecological condition (rating D). 25 indigenous plant species were found in 2008.

Aquatic and semi-aquatic flora: Dominated variously by *Phragmites australis*, *Typha domingensis* or species of *Pericaria*, *Eleocharis* or *Juncus* (of which eight species are present).

## Plant species

### Wally Tew Reserve

The following wild plant species were recorded between Brenock Park Dr and Glenfern Rd in 1997 for the abovementioned ecological report. There were also planted trees: an oak, some willows and some non-indigenous eucalypts. There are now so many more planted plants – indigenous and otherwise – that the list below provides an important baseline to understand which species are natural. Entries in the ‘Risk’ column indicate species whose risk of dying out in Knox is rated as Critically Endangered (C), Endangered (E) or Vulnerable (V). In addition, Muttonwood (shown in bold) is rare throughout the Melbourne region.

Risk Species	Risk Species
<u>Indigenous species</u>	<i>Crataegus monogyna</i> , Hawthorn
V <i>Acacia mearnsii</i> , Black Wattle	<i>Cyperus eragrostis</i> , Drain Flat-sedge
V <i>Acacia melanoxylon</i> , Blackwood	<i>Dactylis glomerata</i> , Cocksfoot
<i>Alisma plantago-aquatica</i> , Water Plantain	<i>Delairea odorata</i> , Cape Ivy
<i>Bursaria spinosa</i> , Sweet Bursaria	<i>Ehrharta erecta</i> , Panic Veldt-grass
E <i>Cassytha melantha</i> , Coarse Dodder-laurel	<i>Foeniculum vulgare</i> , Fennel
V <i>Coprosma quadrifida</i> , Prickly Currant-bush	<i>Fraxinus angustifolia</i> subsp. <i>angustifolia</i> , Desert Ash
V <i>Eucalyptus goniocalyx</i> , Bundy	<i>Hedera helix/hibernica</i> , Ivy
E <i>Eucalyptus melliodora</i> , Yellow Box	<i>Helminthotheca echioides</i> , Ox-tongue
V <i>Eucalyptus ovata</i> , Swamp Gum	<i>Hypochaeris radicata</i> , Cat’s Ear
E <i>Eucalyptus radiata</i> , Narrow-leaved Peppermint	? <i>Ligustrum lucidum</i> , Large-leaved Privet
V <i>Exocarpos cupressiformis</i> , Cherry Ballart	<i>Lonicera japonica</i> , Japanese Honeysuckle
E <i>Gynatrix pulchella</i> , Hemp Bush (planted?)	<i>Phalaris aquatica</i> , Toowoomba Canary-grass
<i>Isolepis inundata</i> , Swamp Club-rush	<i>Plantago lanceolata</i> , Ribwort
<i>Juncus gregiflorus</i> , Green Rush	<i>Plantago major</i> , Greater Plantain
<i>Lomandra longifolia</i> subsp. <i>longifolia</i> , Spiny-headed Mat-rush	<i>Prunella vulgaris</i> , Self-heal
E <i>Melaleuca ericifolia</i> , Swamp Paperbark	<i>Prunus cerasifera</i> , Cherry-plum
<b>C <i>Myrsine howittiana</i>, Muttonwood</b>	<i>Pyracantha angustifolia</i> , Orange Firethorn
<i>Pericaria decipiens</i> , Slender Knotweed	<i>Quercus</i> sp., Oak
E <i>Phragmites australis</i> , Common Reed	<i>Ranunculus repens</i> , Creeping Buttercup
E <i>Potamogeton ochreatus</i> , Blunt Pondweed	<i>Rubus anglocandicans</i> , Blackberry
<u>Introduced species</u>	<i>Rumex crispus</i> , Curled Dock
<i>Callitriche stagnalis</i> , Pond Water-starwort	<i>Salix babylonica</i> s.l., Weeping Willow
<i>Cenchrus clandestinus</i> , Kikuyu	<i>Symphotrichum subulatum</i> , Aster-weed
	<i>Tradescantia fluminensis</i> , Wandering Trad

### Karoo Rd Red Gum Reserve

The author recorded the following wild plant species recorded within the River Red Gum reserve this century. Asterisks indicate the indigenous species not seen in 2024; they were last seen in 2011. Entries in the ‘Risk’ column indicate species whose risk of dying out in Knox is rated as Critically Endangered (C), Endangered (E) or Vulnerable (V).

Indigenous bryophyte species	Risk Wild indigenous flowering species
? <i>Barbula</i> sp., a moss	<i>Acacia paradoxa</i> , Hedge Wattle
<i>Campylopus introflexus</i> , Heath Star Moss	<i>Billardiera mutabilis</i> , Common Apple-berry
<i>Chiloscyphus semiteres</i> , Green Worms	<i>Calocephalus lacteus</i> , Milky Beauty-heads (offspring of planted plants)
Risk Wild indigenous flowering species	<i>Carex inversa</i> , Knob Sedge
V <i>Acacia melanoxylon</i> , Blackwood	<i>Dichondra repens</i> , Kidney-weed

Risk Wild indigenous flowering species

- V *Eleocharis acuta*, Common Spike-rush  
*Eucalyptus ? × studleyensis*, Studley Park Gum\*<sup>6</sup>  
 C *Eucalyptus camaldulensis*, River Red-gum  
 E *Eucalyptus cephalocarpa*, Mealy Stringybark  
 V *Eucalyptus ovata*, Swamp Gum  
*Juncus amabilis*, Hollow Rush  
*Juncus gregiflorus*, Green Rush  
 C *Juncus fockei/holoschoenus*, a joint-leaf rush\*  
 E *Juncus procerus*, Tall Rush  
*Juncus sarophorus*, Broom Rush  
 E *Juncus subsecundus*, Finger Rush\*  
*Lachnagrostis filiformis*, Common Blown-grass\*  
 V *Microtis parviflora*, Slender Onion-orchid  
*Oxalis exilis/perennans*, a wood-sorrel  
 E *Phragmites australis*, Common Reed  
 E *Poa morrisii*, Soft Tussock-grass  
*Rytidosperma laeve*, Smooth Wallaby-grass  
*Rytidosperma racemosum*, Clustered Wallaby-grass  
*Rytidosperma setaceum*, Bristly Wallaby-grass  
*Rytidosperma tenuius*, Purplish Wallaby-grass  
*Schoenus apogon*, Common Bog-rush  
*Senecio quadridentatus*, Cotton Fireweed

Risk Wild indigenous flowering species

- E *Thelymitra peniculata*, Trim Sun-orchid  
 V *Veronica gracilis*, Slender Speedwell (planted?)

Wild introduced species

- Agrostis capillaris*, Brown-top Bent  
*Cassinia sifton*, Sifton Bush  
*Cirsium vulgare*, Spear Thistle  
*Cynodon dactylon*, Couch  
*Cyperus eragrostis*, Drain Flat-sedge  
*Hypochaeris radicata*, Cat's Ear  
*Juncus articulatus*, Jointed Rush  
*Leontodon saxatilis*, Lesser Hawkbit  
*Paspalum dilatatum*, Paspalum  
*Paspalum distichum*, Water Couch  
*Phalaris aquatica*, Toowoomba Canary-grass  
*Plantago coronopus*, Buck's-horn Plantain  
*Plantago lanceolata*, Ribwort  
*Romulea rosea*, Common Onion-grass  
*Rubus anglocandicans*, Blackberry  
*Rumex crispus*, Curled Dock  
*Tribolium acutiflorum*, Crested Desmazeria  
*Ulex europaeus*, Gorse (Furze)  
*Vulpia bromoides*, Squirrel-tail Fescue

## Overall

The following wild plant species were observed within the site as a whole, almost solely by the author or his colleague, John C. Reid, between 1997 and 2024. As shown in the Knox Biodiversity Atlas, numerous other species have since been recorded by others (mostly citizen scientists); however, the vast majority have been planted and are omitted here to avoid misrepresenting the site's natural vegetation. The column headed 'Risk' indicates the indigenous species' risk of dying out in Knox as follows: 'C'=Critically Endangered; 'E'=Endangered; and 'V'=Vulnerable. In addition, the species with names in bold are rare throughout metro Melbourne.

Indigenous bryophyte species

- ?*Barbula* sp., a moss  
*Campylopus introflexus*, Heath Star Moss  
*Chiloscyphus semiteres*, Green Worms  
*Eurhynchium praelongum*, Common Feather-moss  
*Lunularia cruciata*, Moonwort  
*Sematophyllum homomallum*, a moss  
*Thuidiopsis furfurosa*, Golden Weft-moss

Risk Wild indigenous flowering species

- Acacia dealbata*, Silver Wattle (wild & planted)  
 V *Acacia mearnsii*, Black Wattle (wild & planted)  
 V *Acacia melanoxylon*, Blackwood  
*Acacia paradoxa*, Hedge Wattle  
 V *Acacia verticillata*, Prickly Moses (wild & planted)  
*Acaena novae-zelandiae*, Bidgee-widgee  
 N *Alisma plantago-aquatica*, Water Plantain  
 V *Alternanthera denticulata*, Lesser Joyweed  
 C *Amyema pendula*, Drooping Mistletoe

Risk Wild indigenous flowering species

- E *Amyema quandang*, Grey Mistletoe  
*Austrostipa rudis*, Veined Spear-grass  
 V *Azolla pinnata*, Ferny Azolla  
 V *Azolla rubra*, Pacific Azolla  
*Billardiera mutabilis*, Common Apple-berry  
*Bursaria spinosa*, Sweet Bursaria (wild & planted)  
*Calocephalus lacteus*, Milky Beauty-heads (offspring of planted plants)  
 E ***Calystegia marginata*, Forest Bindweed**  
*Carex appressa*, Tall Sedge  
*Carex breviculmis*, Short-stem Sedge  
 E *Carex fascicularis*, Tassel Sedge  
 E ***Carex gaudichaudiana*, Fen Sedge**  
*Carex inversa*, Knob Sedge  
*Cassinia aculeata*, Common Cassinia  
 E *Cassytha melantha*, Coarse Dodder-laurel  
 E *Cassytha pubescens*, Downy Dodder-laurel  
 E *Centella cordifolia*, Centella

<sup>6</sup> Studley Park Gum is a fertile hybrid between *Eucalyptus camaldulensis* and *E. ovata*. A hybrid between those two species occurs in the reserve but it is probably sufficiently different from the type specimen of Studley Park Gum not to be regarded as the same taxon.

Risk Wild indigenous flowering species

- Clematis decipiens*, a small-leafed clematis  
 V *Coprosma quadrifida*, Prickly Currant-bush  
 V *Crassula helmsii*, Swamp Crassula  
*Dichondra repens*, Kidney-weed  
 V *Eleocharis acuta*, Common Spike-rush  
*Eleocharis sphacelata*, Tall Spike-rush (wild & planted)  
*Epilobium hirtigerum*, Hairy Willow-herb  
 C *Eucalyptus camaldulensis*, River Red-gum  
 E *Eucalyptus cephalocarpa*, Mealy Stringybark  
 V *Eucalyptus goniocalyx*, Bundy  
 E *Eucalyptus melliodora*, Yellow Box  
 V *Eucalyptus ovata*, Swamp Gum  
 E *Eucalyptus radiata*, Narrow-leaved Peppermint  
 C *Eucalyptus viminalis*, Manna Gum  
 E *Euchiton involucratus*, Common Cudweed  
 V *Exocarpos cupressiformis*, Cherry Ballart  
 C *Gahnia radula*, Thatch Saw-sedge  
*Geranium* sp., a crane's-bill  
*Gonocarpus tetragynus*, Common Raspwort  
*Goodenia ovata*, Hop Goodenia (wild & planted)  
 E *Gynatrix pulchella*, Hemp Bush  
 V *Hemarthria uncinata*, Mat Grass  
*Isolepis inundata*, Swamp Club-rush  
*Juncus amabilis*, Hollow Rush  
 C *Juncus australis*, Austral Rush  
*Juncus gregiflorus*, Green Rush  
 C *Juncus fockei/holoschoenus*, a joint-leaf rush  
*Juncus pallidus*, Pale Rush  
 E *Juncus pauciflorus*, Loose-flower Rush  
 E *Juncus planifolius*, Broad-leaf Rush  
 E *Juncus procerus*, Tall Rush (wild & planted)  
*Juncus sarophorus*, Broom Rush  
 E *Juncus subsecundus*, Finger Rush  
 C ***Juncus vaginatus*, Clustered Rush**  
*Lachnagrostis filiformis*, Common Blown-grass  
*Lemna disperma*, Common Duckweed  
*Lepidosperma elatius*, Tall Sword-sedge  
 C *Leptospermum continentale*, Prickly Tea-tree  
 E *Lobelia anceps*, Angled Lobelia  
*Lomandra longifolia* subsp. *longifolia*, Spiny-headed Mat-rush (wild & planted)  
 E *Lycopus australis*, Australian Gipsywort (partly or wholly planted)  
*Lythrum hyssopifolia*, Lesser Loosestrife  
 E *Melaleuca ericifolia*, Swamp Paperbark  
 C ***Melaleuca parvistaminea*, Rough-barked Honey-myrtle (planted?)**  
 V *Melicytus dentatus*, Tree Violet  
*Microlaena stipoides*, Weeping Grass  
 V *Microtis parviflora*, Slender Onion-orchid  
 C ***Myrsine howittiana*, Muttonwood (wild & planted)**  
*Oxalis exilis/perennans*, a wood-sorrel  
 V *Ozothamnus ferrugineus*, Tree Everlasting  
*Persicaria decipiens*, Slender Knotweed  
 E *Persicaria hydropiper*, Water-pepper  
 E *Persicaria lapathifolia*, Pale Knotweed  
 E ***Persicaria subsessilis*, Hairy Knotweed**

Risk Wild indigenous flowering species

- E *Phragmites australis*, Common Reed  
 E *Poa labillardierei*, Common Tussock-grass  
 E *Poa morrisii*, Soft Tussock-grass  
 V *Pomaderris aspera*, Hazel Pomaderris  
 C ***Pomaderris racemosa*, Cluster Pomaderris (planted?)**  
 E *Potamogeton crispus*, Curly Pondweed  
 E *Potamogeton ochreatus*, Blunt Pondweed  
*Pteridium esculentum*, Austral Bracken  
*Rytidosperma laeve*, Smooth Wallaby-grass  
*Rytidosperma racemosum*, Clustered Wallaby-grass  
 E *Rytidosperma semiannulare*, Tasmanian Wallaby-grass  
*Rytidosperma setaceum*, Bristly Wallaby-grass  
*Rytidosperma tenuius*, Purplish Wallaby-grass  
*Schoenus apogon*, Common Bog-rush  
 V *Senecio glomeratus*, Annual Fireweed  
*Senecio minimus*, Shrubby Fireweed  
*Senecio quadridentatus*, Cotton Fireweed  
 V *Sigesbeckia orientalis*, Indian Weed  
 V *Solanum laciniatum*, Large Kangaroo Apple  
 E *Thelymitra peniculata*, Trim Sun-orchid  
*Themeda triandra*, Kangaroo Grass  
 V *Triglochin striata*, Streaked Arrow-grass  
*Typha domingensis*, Cumbungi  
*Typha orientalis*, Cumbungi  
 V *Veronica gracilis*, Slender Speedwell (planted?)

Wild introduced species

- Acacia longifolia* subsp. *longifolia*, Sallow Wattle  
*Acetosa sagittata*, Rambling Dock  
*Agrostis capillaris*, Brown-top Bent  
*Allium triquetrum*, Angled Onion  
*Alopecurus pratensis*, Meadow Fox-tail  
*Anthoxanthum odoratum*, Sweet Vernal-grass  
*Araujia sericifera*, White Bladder-flower  
*Atriplex prostrata*, Hastate Orache  
*Bromus catharticus*, Prairie Grass  
*Callitriche stagnalis*, Pond Water-starwort  
*Cardamine hirsuta*, Common Bitter-cress  
*Cassinia sifton*, Sifton Bush  
*Cenchrus clandestinus*, Kikuyu  
*Cirsium vulgare*, Spear Thistle  
*Cortaderia selloana*, Pampas Grass  
*Cotoneaster pannosus*, Cotoneaster  
*Crataegus monogyna*, Hawthorn  
*Cynodon dactylon* var. *dactylon*, Couch  
*Cyperus eragrostis*, Drain Flat-sedge  
*Dactylis glomerata*, Cocksfoot  
*Delairea odorata*, Cape Ivy  
*Dittrichia graveolens*, Stinkweed  
*Echium plantagineum*, Paterson's Curse  
*Ehrharta erecta*, Panic Veldt-grass  
*Ehrharta longiflora*, Annual Veldt-grass  
*Erigeron sumatrensis*, Fleabane  
*Foeniculum vulgare*, Fennel  
*Fraxinus angustifolia*, Desert Ash

Wild introduced species

*Fumaria capreolata*, Ramping Fumitory  
*Galium aparine*, Cleavers  
*Genista linifolia*, Flax-leafed Broom  
*Genista monspessulana*, Montpellier Broom  
*Geranium dissectum*, Cut-leaf Crane's-bill  
*Gladiolus undulatus*, Wild Gladiolus  
*Grevillea robusta*, Southern Silky Oak  
*Hakea salicifolia*, Willow-leaf Hakea  
*Hedera helix/hibernica*, Ivy  
*Helminthotheca echioides*, Ox-tongue  
*Holcus lanatus*, Yorkshire Fog  
*Hypericum tetrapterum*, Square-stem St John's Wort  
*Hypochaeris radicata*, Cat's Ear  
*Juncus articulatus*, Jointed Rush  
*Juncus pallescens*, a rush  
*Leontodon saxatilis*, Lesser Hawkbit  
 ?*Ligustrum lucidum*, Large-leafed Privet  
*Lolium multiflorum*, Italian Rye-grass  
*Lonicera japonica*, Japanese Honeysuckle  
*Lotus uliginosus*, Greater Bird's-foot Trefoil  
*Lythrum junceum*, Mediterranean Loosestrife  
*Malus pumila*, Domestic Apple  
*Modiola caroliniana*, Carolina Mallow  
*Nasturtium officinale*, Watercress  
*Oxalis incarnata*, Pale Wood-sorrel  
*Oxalis pes-caprae*, Soursob  
*Paraserianthes lophantha*, Cape Wattle  
*Paspalum dilatatum*, Paspalum  
*Paspalum distichum*, Water Couch  
*Persicaria maculosa*, Persicaria  
*Phalaris aquatica*, Toowoomba Canary-grass  
*Pinus radiata*, Monterey Pine  
*Plantago coronopus*, Buck's-horn Plantain  
*Plantago lanceolata*, Ribwort  
*Plantago major*, Greater Plantain

Wild introduced species

*Poa annua/infirma*, a meadow-grass  
*Prunella vulgaris*, Self-heal  
*Prunus cerasifera*, Cherry-plum  
*Pyracantha angustifolia*, Orange Firethorn  
*Pyracantha* sp., an unidentified fire-thorn  
*Quercus robur*, English Oak  
*Ranunculus repens*, Creeping Buttercup  
*Raphanus raphanistrum*, Wild Radish  
*Romulea rosea*, Common Onion-grass  
*Rosa rubiginosa*, Sweet Briar  
*Rubus anglocandicans*, Blackberry  
*Rumex conglomeratus*, Clustered Dock  
*Rumex crispus*, Curled Dock  
*Salix × rubens*, White Crack Willow  
*Salix babylonica / sepulcralis*, Weeping Willow  
*Solanum americanum*, Glossy Nightshade  
*Solanum chenopodioides*, Whitetip Nightshade  
*Solanum mauritianum*, Tobacco-bush  
*Solanum nigrum*, Black Nightshade  
*Solanum pseudocapsicum*, Madeira Winter-cherry  
*Soliva sessilis*, Jo Jo  
*Sonchus asper*, Rough Sow-thistle  
*Sonchus oleraceus*, Sow-thistle  
*Symphotrichum subulatum*, Aster-weed  
*Taraxacum* sect. *Taraxacum*, Garden Dandelion  
 ?*Torilis arvensis*, Spreading Hedge-parsley  
*Tradescantia fluminensis*, Wandering Trad  
*Trifolium repens*, White Clover  
*Tropaeolum majus*, Nasturtium  
*Ulex europaeus*, Gorse (Furze)  
*Verbena bonariensis* s.l., Purple-top Verbena  
*Vicia sativa*, Common Vetch  
*Viola odorata*, Common Violet  
*Vulpia bromoides*, Squirrel-tail Fescue  
*Zantedeschia aethiopica*, White Arum Lily

## Notes concerning some of the locally-threatened plant species

*Eucalyptus camaldulensis* (River Red Gum) – The larger of the only two stands in Knox grows in the Karoo Rd Red Gum Reserve, mostly fenced for protection. It includes four old trees and scores of other trees of various ages.

*Myrsine howittiana* (Muttonwood) – found at Wally Tew Reserve and scattered along Monbulk Ck and Ferny Ck, but only the first of these is certainly wild rather than planted.

**Fauna of special significance**

The full range of faunal observations can be obtained from the Knox Biodiversity Atlas. The following species are the most significant, taking into account their conservation status and apparent extent of usage of habitat in the site, as well as the recency of the observations.

Listed as Vulnerable under Commonwealth law

Latham's Snipe – 93 records up to 2022, with up to 8 individuals per observation.

Listed as Endangered under Victorian law

Freckled Duck – 4 records up to 2017, with up to 2 birds per observation.

Listed as Vulnerable under Victorian law

Platypus – found along Monbulk Ck on four surveys up to 2021.

Eastern Great Egret – 69 records up to 2021, so a regular user of habitat in the site.

Royal Spoonbill – recorded in the Atlas of Victorian Wildlife on the basis of a species list up to 1988 – More potential habitat exists now than in the 1980s and both local species of spoonbill are likely to visit occasionally.

Blue-billed Duck – 14 records up to 2017, with up to 5 birds per observation.

Hardhead – 242 records up to 2023, with up to 9 birds per observation.

#### Uncommon in metro Melbourne

White-necked Heron – 8 records up to 2023, so at least an occasional visitor.

Fairy Martin – 188 records up to 2023, with up to 8 birds per observation.

Golden-headed Cisticola – 72 records up to 2022, with up to 9 birds per observation.

#### **Fauna habitat features**

- The streams provide habitat and for Platypus, fish and their food sources;
- The large areas of wetland are used by frogs, invertebrates, microbes and a wealth of waterbirds;
- The corridors of riparian vegetation are expected to facilitate movement of a range of mobile wildlife (confirmed by the author for some common forest birds);
- There are some large eucalypts, particularly Manna Gums (*Eucalyptus viminalis*) with tree hollows that represent nesting or roosting sites of birds, bats, possums or invertebrates;
- Open spaces such as at Waterford Valley golf course are used as hunting grounds by birds of prey such as Brown Goshawk, Nankeen Kestrel and Black-Shouldered Kite, particularly where there are scattered trees (even dead ones).

#### **Significance ratings**

The following is an assessment of the site's biological significance against the Department of Energy, Environment & Climate Action's standard criteria (Amos 2004).

##### *Ecological Integrity and Viability*

Criterion 1.1.1 attributes **Local** significance to 'All parts of riparian systems with riparian vegetation present', which applies to the native vegetation beside the site's watercourses.

The riparian vegetation was observed to be used by various common forest birds for nomadic movements. The extent of such usage suggests that it is important for bird movements at a Local scale. Criterion 1.2.6 takes such corridors to represent **Local** significance.

The segment of the site between Brenock Park Drive and Acacia Rd has been added in this edition because it fits the **Local** significance category 1.3.3 described as 'Cleared or degraded area which may with suitable habitat reconstruction or rehabilitation work form a strategically important corridor ... Site (or one of a group of such sites) to form a strategic corridor of local importance and scale'.

##### *Regionally Threatened Ecological Vegetation Classes*

The native vegetation in this site includes remnants and regrowth of regionally-endangered EVCs. Some of it meets the Department of Energy, Environment & Climate Action's definition of a remnant patch, i.e. at least 0.24 hectares in which the cover of native understorey is at least 10% throughout. According to the criteria of 'Victoria's Native Vegetation Management – A Framework for Action' (NRE 2002a), patches of native vegetation belonging to an endangered EVC have a conservation significance rating of High if they are in a substantially degraded state (as in the present site). Criterion 3.2.3 assigns **State** significance to any 'remnant patch' of High conservation significance due to the presence of a threatened EVC.

This State significance affects the segments of the site at Wally Tew Reserve, Koolamara Waters, west of Henderson Rd and all wetland habitat or uninterrupted strips of riparian native vegetation larger than 0.25 ha.

##### *Threatened Plants*

Many of the locally-threatened plant species listed above have viable populations, thereby meeting criterion 3.1.5 for **Local** significance.

##### *Threatened Fauna*

Latham's Snipe is listed as Vulnerable under Commonwealth law and this site has a substantial area of known habitat for it, reported each year in numbers up to 8 individuals at a time. Criterion 3.1.1 attributes **State**

significance to known habitat for such species, other than ‘important sites’ (which does not appear to apply here).

The site is known habitat for the Freckled Duck, which is listed as Endangered in Victoria and also occurs interstate. These attributes meet criterion 3.1.2 for a site of **State** significance. One of the observations of Freckled Duck is from just west of Henderson Rd and the other three are from the southeastern end of the Waterford Valley golf course.

The five fauna species above that are listed as Vulnerable under Victorian law all occur interstate. Known habitat for any such species meets criterion 3.1.2 for **Regional** significance.

The remaining species listed above under the heading, ‘Fauna of special significance’ are sufficiently threatened locally that their habitat qualifies for at least **Local** significance under criterion 3.1.5. Criterion 3.1.4 may also confer Regional significance on some of the species.

### Threats

- Human-induced climate change, which is predicted to cause more severe droughts, heatwaves, floods and storms, as well as substantially lower rainfall (particularly in winter);
- Environmental weeds. Along the streams, the most concerning species recorded in 2010 were Angled Onion (*Allium triquetrum*), Couch (*Cynodon dactylon*), Drain Flat-sedge (*Cyperus eragrostis*), Panic Veldt-grass (*Ehrharta erecta*), Fumitory (*Fumaria* sp.), Cleavers (*Galium aparine*), Wood-sorrels (*Oxalis pes-caprae* and *Oxalis incarnata*), Kikuyu Grass (*Pennisetum clandestinum*), Toowoomba Canary-grass (*Phalaris aquatica*), Creeping Buttercup (*Ranunculus repens*), Watercress (*Rorippa nasturtium-aquaticum*) and Wandering Trad (*Tradescantia albiflora*). In the wetlands, the most concerning species reported were Couch, Drain Flat-sedge, Water Couch (*Paspalum distichum*) and Creeping Buttercup (*Ranunculus repens*). Blackberry (*Rubus anglocandicans*) and Gorse (*Ulex europaeus*) are locally dense;
- Incremental removal of native vegetation on private land east of Napoleon Rd;
- Fertiliser leaching from the golf course’s fairways and greens into wetlands and streams;
- Removal of old habitat trees (alive and dead), because such trees may be removed for the safety of golfers or the public;
- Loss or decline of plant species that have such small populations that they are vulnerable to inbreeding, poor reproductive success or chance events;
- Carp, which have already caused serious ecological harm in nearby Jells Lake and could do so in this site;
- Foxes, which kill wildlife and spread the seeds of woody environmental weeds and blackberries.

### Management

- Revegetation that has occurred along Ferny Ck and Monbulk Ck has established very well but the task remains to plug the substantial gap in the corridor between Brenock Park Dr and Acacia Rd, Ferntree Gully. Revegetation of this gap would complete a link from the Dandenong Ranges to the Dandenong Creek floodplain west of Stud Rd. This should bring about a significant increase in the diversity of bird and insect species moving along the corridor;
- Care should be taken not to over-use fertiliser on the golf course.

### Strategic planning

- Schedule 2 of the Environmental Significance Overlay (ESO2) covers the version of Site 66 that was delineated in the 2nd edition of this report. That edition cited the riparian habitat, the potential for environmental damage from earthworks, the threatened EVCs and the other attributes discussed under the heading ‘Significance ratings’ above. These attributes are undiminished and have expanded over additional land, as discussed above. While not urgent, it is recommended to amend the ESO2 boundaries to those adopted here.
- The importance of ESO2 on the land has further heightened since 2010 due to policy changes by the Victorian Government to reduce the baseline planning protection given to native vegetation.

### Information sources used in this assessment

- The 1997 report, ‘Vegetation Survey of Linear Reserves – A Management Strategy for Riparian and Flood Plain Vegetation’, by Reid, Moss and Lorimer for Knox City Council, along with the supporting field data. The work included descriptions of vegetation composition, compilation of forty-four lists of indigenous and introduced plant species for different parts of the site, three quadrats (Department of Energy, Environment &

- Climate Action's numbers N04062, N04063 and N04067), incidental fauna observations, and checks for fauna habitat, ecological threats and management issues;
- Re-inspections of the site in and around the Waterford Valley development by Dr Lorimer during March 2001 to assist Knox City Council's environmental oversight of the development works;
  - An ecological survey of the Karoo Rd roadside undertaken during for the 1st edition of this report by Rik Brown on 15/7/02. This included descriptions of the composition and condition of the vegetation, compilation of lists of indigenous and introduced plant species, incidental fauna observations, and checks for fauna habitat, ecological threats, management issues and populations of scarce or threatened plant species;
  - A survey on foot and bicycle of all parts of the site west of Blackwood Park Drive and Glenfern Rd by Dr Lorimer on 16th and 18th June 2008 for a total of eleven hours, including:
    - Mapping of vegetation types, ecological condition, wildlife habitat features and locations of rare plants, rare bird sightings and serious weeds;
    - Compilation of lists of indigenous and introduced plant species for nine sections of the site, including estimates of the abundance of each species;
    - Checking the survival of rare plants that had been mapped in 1997;
    - Assessment of the severity of each weed species within each section;
    - Checking for ecological threats and management issues;
    - Observations of wildlife, with particular attention to waterbirds on the wetlands.
  - Written reports of the Australian Platypus Conservancy about Platypus surveys conducted within the site almost annually from 1994 to 2001. In the November 2000 survey, five Platypus, four fish species and at least one Water Rat were found;
  - A 2011 botanical survey by Dr Lorimer of vegetation along Karoo Rd (including the Red Gum reserve);
  - A 2017 botanical survey by Dr Lorimer of riparian and floodplain vegetation within 1 km of the (then proposed) Henderson Rd bridge;
  - An inspection of parts of the site by Dr Lorimer on 2/4/24, 2/6/24 and 3/10/24;
  - Records of flora and fauna observations stored in Knox City Council's biodiversity database;
  - Records of flora and fauna observations stored in the Atlas of Living Australia;
  - The Victorian Government's 'NatureKit' website;
  - Aerial and satellite imagery from between 1946 and 2025;
  - Maps of geology, topography and strategic planning information produced by agencies of the Victorian Government.