

Site 75. Tirhatuan Lakes Golf Course, Rowville

A public golf course and adjoining stream corridor, wedged between Dandenong Creek and Stud Rd. Melway ref. 81 G7-9.

Site Significance Level: State

- Contains remnants of the regionally endangered Ecological Vegetation Classes, Floodplain Riparian Woodland and Floodplain Wetland, although the former has been badly degraded by past clearing and grazing;
- Native vegetation and wetlands within the site provide relatively extensive habitat for a range of birds, possums, frogs, freshwater fish and other aquatic fauna associated with the Dandenong Creek and its floodplain, including significant waterbirds and fish;
- The nationally vulnerable fish, Dwarf Galaxias, was recorded in or near the site's northwestern corner in 1989, and could conceivably appear within the site again;
- The site contains four known plant species that are threatened in Knox, including a substantial population of Cluster Pomaderris (*Pomaderris racemosa*);
- It is a component of the Dandenong Creek wildlife corridor, contributing to the daily and seasonal movements of birds and other native fauna along the corridor.



Scale 1:8,000
0 50 100 150 200m

Aerial photograph taken April 2003

Boundaries

The site is outlined in red and labelled 'Site 75' on the aerial photograph, which also includes Site 76 and the southern edge of Site 74. It includes the whole golf course and extends to the centre of Dandenong Creek, which is also the border with the City of Greater Dandenong.

The site's biologically significant attributes are mostly within a narrow corridor along Dandenong Creek and in floodplain depressions, artificial wetlands and drainage lines scattered within the golf course (outlined in blue on the aerial photograph).

Land use & tenure: Public land owned by Melbourne Water, zoned PUZ7 ('Public Use Zone - Other Public Use'), with a public golf course and a floodway beside Dandenong Creek. Flood management is an important function of the land.

Site description

This 52 ha site is located on the Dandenong Creek floodplain west of the Lysterfield Hills. There is other public land on the other side of the creek (Tirhatuan Park), upstream (Tirhatuan Wetlands - Site 74) and downstream (Dandenong Police Paddocks - Site 76). The Dandenong Creek trail follows the opposite bank, which is in the City of Greater Dandenong.

Most of the site is an alluvial floodplain at an elevation of approximately 35 m, with very shallow slope. The exception is a slope in the northeastern corner, with a 10% gradient and a maximum elevation of approximately 49 m near the Police Rd - Stud Rd intersection. The golf course buildings are located on the slope.

The site's bedrock is Lower Devonian sedimentary rock of the Humevale formation, and it is exposed in places in the creek channel. It has decomposed to silty grey loam with clay subsoil on the slope in the site's northeast, and on the floodplain it has been covered with alluvium washed down by the creek.

The aerial photograph above shows a narrow corridor of vegetation along Dandenong Creek, flanked by a parallel, mown floodway on the northeastern side (the left bank). The golf course itself lies between the floodway, Stud Rd and Police Rd.

The corridor of vegetation between Dandenong Creek and the floodway supports a fair cover of indigenous vegetation regrowth, although the overstorey has been reduced to only a few scattered remnant trees because of past clearing and grazing. It has important identifying features of the regionally endangered Floodplain Riparian Woodland, particularly the presence of character species such as *Callistemon sieberi* and *Melicytus dentatus*, reinforced by the abundance of the highly indicative *Rapanea howittiana* just upstream (Site 74) where the forest has not been so emaciated. (Current BioMaps from the Department of Sustainability & Environment indicate Swampy Riparian Woodland, but the information that they are based on probably overlooked the above features.)

A fair cover of indigenous lower trees and shrubs is present along the creek. Patches of indigenous ground flora persist in the least disturbed areas supporting remnant shrub layer vegetation. Regeneration is being substantially suppressed by mowing or slashing adjacent to the creek and moderate rabbit infestations. Moderate to severe weed infestations are apparent along the creek, particularly of Bulbil *Watsonia* (*Watsonia meriana*). Some areas have relatively recently been planted with indigenous plants following bank stabilisation works along the creek.

The natural soil surface has been modified for the floodway and the golf course, including profiling of fairways and greens and the creation of water traps. This, and the change of vegetation cover, have altered the drainage characteristics of the site. The very elongated shape outlined in blue on the aerial photograph is now a linear wetland that appears to derive from a natural drainage line shown on old maps. The other blue outlines are also wetlands, some of which appear to originate from natural floodplain depressions, and some of which are entirely artificial. The largest water body, near the southeastern corner of the site, is a storage dam.

Indigenous wetland vegetation occurs within floodplain depressions and along drainage lines adjacent to Dandenong Creek and also within wetlands scattered throughout the golf course (outlined in blue on the aerial photograph). This includes patches of Tall Spike-rush (*Eleocharis sphacelata*) and Cumbungi (*Typha domingensis* and *Typha orientalis*), with regenerating Common Reed (*Phragmites australis*) in some mown areas. Some patches of indigenous sedges, rushes and semi-aquatic herbs occur in the least disturbed wetland areas adjacent to the creek.

Other sections of the golf course have been planted with a range of 'Australian natives' mainly 20-30 years old, including Southern Mahogany, Southern Blue Gum, Large-fruited Yellow Gum, Bracelet Honey-myrtle, Sheoaks and Heath Banksia.

Relationship to other land

The site is part of the Dandenong Creek habitat corridor.

Substantial remnant vegetation and wetland habitat occurs within the Tirhatuan Wetlands Conservation Reserve and Police Road Retarding Basin (Site 74, managed by Melbourne Water) and the Dandenong Police Paddocks Reserve (Site 76, managed by Parks Victoria). There are also ponds in Tirhatuan Park on the opposite side of Dandenong Ck, providing additional wetland habitat. All of these areas are strongly ecologically linked to each other and to the creek itself, with fauna no doubt moving freely throughout.

Bioregion: Gippsland Plain

Habitat types

Floodplain Riparian Woodland (EVC 56, **regionally Endangered**) in the narrow band along the creek. There is approximately 3.5 ha on the northeastern side of the creek, all in poor ecological condition (rating D). 21 indigenous plant species were found on 15th July 2002.

Canopy trees: A few scattered *Eucalyptus viminalis* and *E. ovata* trees. Most overstorey trees have been cleared.

Lower trees: Scattered specimens of *Acacia mearnsii* and *A. dealbata*. Mostly in poor condition due to insect attack.

Shrubs: A fair cover of shrubs, including *Melaleuca ericifolia*, *Melicytus dentatus*, *Ozothamnus ferrugineus*, *Coprosma quadrifida* and *Goodenia ovata*, with some *Pomaderris racemosa* and a single *Callistemon sieberi*. There are moderate infestations of woody weeds.

Vines and ferns: Absent.

Ground flora: Limited to a few patches of *Poa labillardierei* in shrubby areas. Mostly very scarce due to past clearing and grazing. There are severe infestations of Bulbil *Watsonia* (*Watsonia meriana*) and a range of other ground layer weeds.

Semi-aquatic plants: Patches of *Phragmites australis* occur along the creek margins.

Floodplain Wetland Complex (EVC 172, **regionally Endangered**), including both natural and artificial depressions and drainage lines, indicated with blue outlines on the aerial photograph. The total area is 1.2 ha, of which approximately 0.1 ha is in good ecological condition (rating B), 0.5 ha is in fair ecological condition (rating C) and 0.6 ha is in poor ecological condition (rating D). 11 indigenous plant species were found on 15th July 2002.

Trees, shrubs, vines and ferns: Absent from the wetlands, but there are a few remnant *Acacia melanoxylon* and *A. dealbata* trees at the edges of constructed wetlands, along with planted native trees and shrubs.

Aquatic and semi-aquatic flora: Dominated by patches of *Phragmites australis*, *Typha* spp. and *Eleocharis sphacelata*. Some semi-aquatic herbs occur in natural wetland depressions near the creek, including *Carex appressa*, *Juncus* spp., *Persicaria decipiens* and *Alisma plantago-aquatica* (additional species potentially occur in these areas).

Plant species

The following plant species were observed by the author on 15th July 2002. The column headed 'Risk' indicates the indigenous species' risk of extinction in Knox as follows: 'C'=Critically Endangered; 'E'=Endangered; and 'V'=Vulnerable. Additional species would no doubt be detectable in other seasons. In addition, *Pomaderris racemosa* is rare throughout the Melbourne region.

Risk	Indigenous Species	Risk	Indigenous Species
	<i>Acacia dealbata</i>		<i>Goodenia ovata</i>
V	<i>Acacia mearnsii</i>		<i>Juncus pallidus</i>
V	<i>Acacia melanoxylon</i>		<i>Juncus</i> sp.
	<i>Acaena novae-zelandiae</i>	E	<i>Melaleuca ericifolia</i>
	<i>Alisma plantago-aquatica</i>	E	<i>Melicytus dentatus</i>
	<i>Bursaria spinosa</i>	E	<i>Ozothamnus ferrugineus</i>
C	<i>Callistemon sieberi</i>		<i>Persicaria decipiens</i>
	<i>Carex appressa</i>	E	<i>Phragmites australis</i>
	<i>Cassinia arcuata</i>	E	<i>Poa labillardierei</i> var. <i>labillardierei</i>
V	<i>Coprosma quadrifida</i>	C	<i>Pomaderris racemosa</i>
	<i>Eleocharis sphacelata</i>		<i>Senecio quadridentatus</i>
	<i>Eucalyptus goniocalyx</i>	V	<i>Solanum laciniatum</i>
V	<i>Eucalyptus ovata</i>	E	<i>Typha domingensis</i>
E	<i>Eucalyptus viminalis</i> subsp. <i>viminalis</i>	E	<i>Typha orientalis</i>
V	<i>Exocarpos cupressiformis</i>		
Introduced Species			
	<i>Acacia baileyana</i>		<i>Solanum nigrum</i>
	<i>Allium triquetrum</i>		<i>Solanum pseudocapsicum</i>
	<i>Chrysanthemoides monilifera monilifera</i>		<i>Tradescantia fluminensis</i>
	<i>Cirsium vulgare</i>		<i>Ulex europaeus</i>
	<i>Cortaderia selloana</i>		<i>Vinca major</i>
	<i>Cotoneaster glaucophyllus</i>		<i>Watsonia meriana</i> var. <i>bulbillifera</i>
	<i>Crataegus monogyna</i>		
	<i>Cyperus eragrostis</i>		
	<i>Genista linifolia</i>		
	<i>Paspalum dilatatum</i>		
	<i>Phalaris aquatica</i>		
	<i>Romulea rosea</i>		
	<i>Rubus anglocandicans</i>		
	<i>Rumex crispus</i>		
	<i>Salix</i> × <i>rubens</i>		
	<i>Solanum mauritianum</i>		

Notes concerning some of the locally threatened plant species

Callistemon sieberi (River Bottlebrush). A single shrub along Dandenong Creek.

Melicytus dentatus (Tree Violet). A number of shrubs scattered along Dandenong Creek.

Poa labillardierei (Common Tussock-grass). Small patches in the least disturbed locations along Dandenong Creek.

Pomaderris racemosa (Cluster Pomaderris). Approximately 20 shrubs scattered along Dandenong Creek (mainly towards the upstream end).

Fauna of special significance

Vulnerable Nationally

Dwarf Galaxias (*Galaxiella pusilla*). Found in a pond near the site's northwestern corner in 1989, and in the same vicinity in 1985 and 1986. Not seen in recent years despite searches. See the Atlas of Victorian Wildlife and also Koehn *et al.* (1986)*.

Vulnerable in Victoria

Hardhead (*Aythya australis*). Two birds were observed on the water storage dam during the site inspection.

Uncommon in the Melbourne area (although recently becoming common in park-like areas)

Crested Pigeon (*Ocyphaps lophotes*). 17 birds were observed foraging on the golf course by Dr Lorimer on 8/5/04.

Uncommon in Knox

Red-rumped Parrot (*Psephotus haematonotus*). 35 birds observed with the Crested Pigeons just mentioned.

Other significant waterbirds associated with the Dandenong Creek floodplain are likely to be frequent visitors. Significant frogs, freshwater fish and other aquatic fauna also potentially occur within the creek and wetland areas.

Fauna habitat features

The fair to good cover of shrub layer vegetation along Dandenong Creek provides habitat for small native birds, possums and insects. A substantial population of Red-browed Finches was observed along the creek during field surveys. Woody weeds contribute to this habitat to some degree. Some Common Ringtail Possum dreys are located in Hawthorn shrubs.

Shallow floodplain depressions and constructed wetlands scattered throughout the golf course provide relatively extensive foraging habitat and potential nesting sites for ducks, swamphens and other waterbirds. They are also likely to provide habitat for frogs, freshwater fish and other aquatic fauna.

Planted native trees throughout the golf course provide habitat for honeyeaters, lorikeets and other forest and woodland birds. Habitat values are likely to increase over time as the trees mature.

Native vegetation and floodplain/wetland habitat within the site would inevitably contribute to the daily and seasonal movements of native fauna along the Dandenong Creek habitat corridor, particularly of waterbirds.

Significance ratings

The following is an assessment of the site's significance against the Department of Sustainability & Environment's standard criteria (Amos 2004).

Ecological Integrity & Viability

Criterion 1.1.1 attributes **Local** significance to 'All parts of riparian systems with riparian vegetation present', which applies to this site.

The site provides a substantial amount of habitat for native wildlife associated with the Dandenong Creek and its floodplain (including vulnerable species in Victoria and Australia) and forms a component of the Dandenong Creek habitat corridor. This corridor is important on a scale larger than just local and smaller than state-wide. This represents **Regional** significance under criterion 1.2.6.

Regionally Threatened Ecological Vegetation Class

This site contains a remnant patch of a regionally endangered EVC. According to the criteria of 'Victoria's Native Vegetation Management – A Framework for Action' (NRE 2002a), remnant patches of an endangered EVC have a conservation significance rating of High. This, in turn, gives the site **State** significance under criterion 3.2.3 of Amos (2004).

Rare or Threatened Flora

The site contains sixteen species of plants that are threatened in Knox, including a substantial population of Cluster Pomaderris (*Pomaderris racemosa*). This gives the site **Local** significance under criterion 3.1.5.

* Koehn, J.D. (1986) 'Dandenong Creek: Fishes, their Habitats and Management Recommendations'. Arthur Rylah Institute for Environmental Research Technical Report Series No. 51. Department of Conservation, Forests and Lands, Victoria.

Rare or Threatened Fauna

The nationally vulnerable Dwarf Galaxias was found in a pond next to the golf course in 1989 and at other locations in the immediate vicinity in 1985 and 1986. More recent surveys suggest that the species has declined drastically in numbers in the catchment. It is not certain whether this species will recover from this decline, but it may conceivably do so after the current period of many years of drought.

Criterion 3.1 regards all known habitat of nationally listed threatened fauna such as Dwarf Galaxias as being of at least State significance. In this case, however, the significance is treated here as **Regional** in view of the population crash of Dwarf Galaxias and the real possibility that the fish will never again use the site for habitat.

The site is also known to be current habitat for Hardhead, a species which is listed by the Department of Sustainability & Environment as vulnerable. However, it would add little to the state's total habitat of this species. Criterion 3.1.2 recognises such sites as **Regionally** significant.

Waterway Protection

All riparian vegetation has a Very High hazard rating for waterway protection according to Appendix 1 of Victoria's Native Vegetation Framework (NRE 2002a). This is separate from conservation significance, and indicates the level of importance that should be placed on protecting, restoring and revegetating riparian vegetation such as in the present site.

Threats

- Climate change and drought, particularly affecting wetland vegetation;
- Fragmentation of habitat associated with the depletion of indigenous trees along the creek;
- Consequently, reduced visitation of the site by small insect-eating birds, possibly leading to a worsening of plant pests and diseases;
- Intensive mowing activities within the golf course preventing the natural regeneration of indigenous vegetation;
- Invasion by environmental weeds along the creek and around wetland areas. Mowing activities are particularly contributing to the spread of Bulbil *Watsonia*;
- Loss or decline of plant species whose populations are so small that they are vulnerable to inbreeding, poor reproductive success or elimination by incidents such as trampling or flood damage. The single *Callistemon sieberi* is the most important example;
- Potential nutrient overload in the wetlands due to the application of fertilisers and other chemicals on the golf course;
- Disturbances to wetland habitat by golfers and maintenance work.

Management issues

- The significance of the habitat corridor along Dandenong Creek warrants extensive revegetation along the creek to enhance habitat connectivity;
- Mowing should be discontinued in areas supporting remnant indigenous vegetation, particularly wetland vegetation along drainage lines adjacent to the creek;
- Indigenous revegetation areas should be established around wetlands and at strategic locations within the golf course to enhance habitat values and minimise disturbances to wildlife;
- Specifically utilise indigenous plants in plantings undertaken throughout the golf course. There are substantial opportunities for the future re-establishment of indigenous vegetation to enhance habitat values compatible with recreational uses of the golf course;
- Weed control should be improved, particularly of 'very serious' infestations of Bulbil *Watsonia* (*Watsonia meriana*) and 'serious' infestations of Gorse (*Ulex europaeus*), along with a range of other woody weeds, creepers and exotic grasses. Removal of woody weeds along Dandenong Creek should be integrated with indigenous revegetation activities to minimise the loss of habitat for birds and possums;
- Implement specific measures to minimise the use of fertilisers and other chemicals in proximity of wetland areas;
- The issues above could be well addressed in a management plan, which could draw on the '*Environmental Strategy for Australian Golf Courses*' (Australian Golf Union, 1998).

Administration matters

- This site is suited to the proposed Environmental Significance Overlay (ESO2) because of its State significance. Note that the overlay is proposed to exempt maintenance of the golf course and associated assets;
- This site is not covered by any of Knox Planning Scheme's existing Vegetation Protection Overlays, and it was not recognised as significant by Water Ecoscience (1998);
- There may be benefit in Council having discussions with the golf course management and Melbourne Water regarding protection and rehabilitation of indigenous vegetation and habitat values.

Information sources used in this assessment

- A site survey undertaken during this study by Rik Brown (15/7/02), including compilation of lists of indigenous and introduced plant species, incidental fauna observations and vegetation mapping/descriptions according to the procedures discussed in Section 2.4 of Volume 1;
- The Atlas of Victorian Wildlife;
- Aerial photography from February 2001, April 2003 and February 2007;
- Satellite imagery of the district;
- The Department of Sustainability & Environment's BioMaps of the area;
- Maps of geology and topography produced by agencies of the Victorian government.