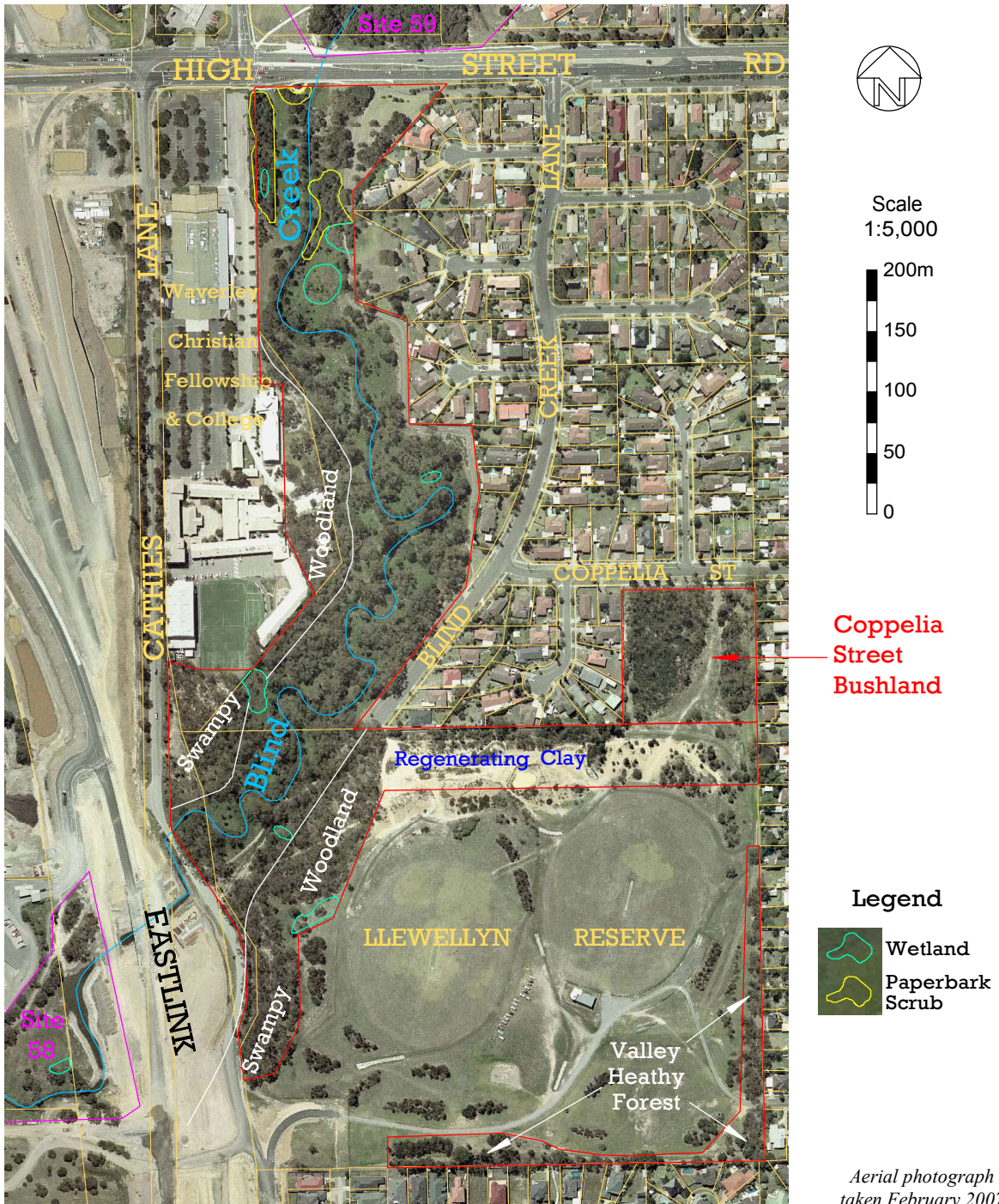


Site 60. Cathies Lane Bushland & Llewellyn Reserve, Wantirna South

Parkland with native vegetation along Blind Ck and in the adjoining Llewellyn Reserve. Melway ref. 72 E3.

Site Significance Level: State

- Being on Blind Creek, the site is on a corridor for daily and seasonal movements of birds, insects and fish;
- Although the vegetation is mostly seriously degraded, some is in fair to good ecological condition and all of it belongs to various regionally endangered Ecological Vegetation Classes;
- Some of the plants (mainly in wetlands) are rare or threatened locally or throughout the Melbourne area.



Aerial photograph taken February 2007

Boundaries

The two parts that make up this 12.0 ha site are outlined in red on the aerial photograph on the previous page: a larger part along Blind Ck, and a narrow strip along the southern and eastern edges of Llewellyn Reserve. The square labelled as Coppelia Street Bushland and outlined in red is a separate site (Site 61).

Site boundaries have been aligned with property boundaries where feasible. In the southwest, the site abuts Cathies Lane. (In the first edition of this report, it extended to the other side of what is now the EastLink Rd.) Within Llewellyn Reserve, the boundary encompasses all the native vegetation, including largely bare slopes of clay along a 51 m-wide strip along the reserve's northern edge, where natural regeneration of indigenous plants (e.g. *Thelymitra pauciflora*) is occurring.

Land use & tenure: Mostly Council reserve, also part of the Waverley Christian Fellowship and College.

Site description

This site includes a band of vegetation along Blind Creek, as well as peripheral strips of Llewellyn Reserve that have native vegetation.

The strip to the north of the Llewellyn Reserve playing fields that appears on the aerial photograph to be mostly bare clay is a disturbed section of a former clay pit and municipal rubbish tip. It is included within the site because it has shown signs of natural regeneration of indigenous plants (e.g. *Thelymitra pauciflora*), which, as the Coppelia Street Bushland has shown, can develop into significant vegetation.

Blind Ck retains its natural course from 120 m south of High Street Rd to Cathies Lane. There are indigenous plants scattered all along the stream channel, including species that are permanently submerged (in whole or in part) or frequently immersed at times of high water. The other native vegetation in this site comprises the regionally Endangered EVCs, Swampy Riparian Woodland (EVC 83), Swampy Woodland (EVC 937), Valley Heathy Forest (EVC 127) and Wetland (EVC 74).

Swampy Riparian Woodland occurs in patches within a band along the creek. The approximate edges of this band are marked with white outlines on the aerial photograph on the previous page, with some imprecision due to sparseness of native vegetation. Swampy Woodland flanks the Swampy Riparian Woodland, giving way to Valley Heathy Forest at higher elevations along the southern and eastern edges of Llewellyn Reserve.

The elevations in the Valley Heathy Forest are approximately 65-77 m and the soil there is poorly draining, silty clay formed from decomposition of the underlying Devonian sedimentary bedrock. The other vegetation types all grow in alluvium along the creek, at elevations of 57-61 m.

In addition to the site's native vegetation, there are treeless areas covered with exotic grass that is invading the native vegetation. These areas can be seen from the aerial photograph. Where there is a canopy of indigenous trees, the density of trees is mostly less than natural, and the foliage in the eucalypt crowns is often thin due to dieback disease.

The understorey of the Swampy Riparian Woodland and Swamp Scrub has been decimated, mainly by the effects of creeping and climbing weeds that have smothered the native plants. Japanese Honeysuckle (*Lonicera japonica*) and Greater Bindweed (*Calystegia silvatica*) have climbed more than ten metres into the tree canopy, destroying a large proportion of the naturally dense Swamp Paperbarks (*Melaleuca ericifolia*) as well as smaller indigenous shrubs. Council has put a lot of effort into removing these vine weeds. The three remaining notable examples of dense stands of paperbarks are outlined in yellow on the aerial photograph, and could be regarded as the EVC, Swamp Scrub, but are treated here as disclimax regrowth of Swampy Riparian Woodland. The bindweed, as well as Creeping Buttercup (*Ranunculus repens*) and Wandering Jew (*Tradescantia albiflora*), form a dense carpet within most of the Swampy Riparian Woodland, allowing few indigenous plants to survive.

The areas of wetland and Swampy Woodland are less afflicted by weeds, with small proportions of each being in good ecological condition (rating B). The most ecologically intact area of Swampy Woodland retains predominantly native plants in all vegetation strata.

Despite the low density of mature trees and the incidence of dieback, a highlight of this site is the high diversity of native birds, including species that are uncommon in suburban Melbourne. This was concluded independently by the present author and by Biosis Pty Ltd. (Biosis Pty Ltd surveyed the site for the Environment Effects Statement for the Scoresby Transport Corridor in 1998). The location on the Blind Creek habitat corridor is the explanation for the diversity of birdlife. It is yet to be seen whether the new EastLink road will act as a barrier to wildlife movement.

Knox City Council has been responsible for extensive revegetation within the site, which is starting to mature and provide a substitute (however imperfect) for the past loss of naturally occurring trees and shrubs.

More details about the site can be obtained from 'A Management Plan for Cathies Lane Bushland, Wantirna South' by G.S. Lorimer (1997) for Knox City Council.

Relationship to other land

As noted above, the site's diverse birdlife can be attributed to movements along the Blind Ck habitat corridor. Insects, frogs and bats may also use the corridor. The ecological functioning of the habitat corridor relies on the native vegetation upstream and downstream of the site in question, particularly the Timmothy Drive Bushland (Site 59) upstream and through the Dandenong Valley Parklands (Site 58) downstream.

Fish in Blind Ck are similarly reliant on the condition of the stream and its fringing vegetation, upstream and downstream.

Exchange of pollen and seeds by birds and insects moving along the corridor have probably minimised inbreeding problems that affect more isolated patches of urban bushland. However, this may no longer apply if the new EastLink road acts as a barrier to pollinating fauna.

Bioregion: Gippsland Plain

Habitat types

Perennial Stream (No EVC number). 5 aquatic flora species found: *Juncus gregiflorus*, *Persicaria hydropiper*, *Potamogeton crispus*, *Potamogeton ochreatus* and *Triglochin procerum*.

Wetland (EVC 74, **regionally Endangered**) in eight patches: Estimated as 0.50 ha in total area, comprising 0.14 ha in good ecological condition (rating B), 0.34 ha in fair ecological condition (rating C) and 0.02 ha in poor ecological condition (rating D). 24 indigenous plant species have been recorded.

Trees, vines and ferns: Absent.

Shrubs: Sparse *Melaleuca ericifolia* extend into some of the wetlands.

Aquatic and semi-aquatic flora: The fully aquatic species, *Triglochin procerum* and *Potamogeton crispus*, are present in some of the wetlands, but most of the species are amphibious. Four species of *Juncus* and five species of *Persicaria* are prominent among the dominant species, sometimes accompanied by *Carex* species or *Eleocharis acuta*.

Swampy Riparian Woodland (EVC 83, **regionally Endangered**) in numerous patches: Estimated as 3.0 ha in total area, comprising 1.0 ha in fair ecological condition (rating C) and 2.0 ha in poor ecological condition (rating D). 32 indigenous plant species have been recorded.

Dominant canopy trees: *Eucalyptus ovata*.

Dominant lower trees: *Acacia melanoxylon*, *A. mearnsii* and *Melaleuca ericifolia*. The first of these has formed patches of scrub where it has regenerated naturally after soil disturbance.

Shrubs: *Bursaria spinosa*, *Coprosma quadrifida*, *Goodenia ovata*, *Gynatrix pulchella*, *Leptospermum scoparium* and *Ozothamnus ferrugineus*. There is a single plant of the ecological indicator, *Leptospermum lanigerum*.

Vines: The only native climber is the parasite, *Cassytha pubescens*, but introduced vines have been rampant and could reinfest the area.

Ferns: none.

Ground flora: The native ground flora is decimated, but retains *Acena novae-zelandiae*, *Carex appressa*, *Gonocarpus tetragynus*, *Juncus* species, *Microlaena stipoides*, *Austrostipa rudis*, *Rytidosperma setaceum*, *Eragrostis brownii*, *Persicaria decipiens*, *Persicaria hydropiper* and *Persicaria lapathifolia*.

Swampy Woodland (EVC 937, **regionally Endangered**): Estimated as 2.6 ha in area, comprising 0.10 ha in good ecological condition (rating B), 1.2 ha in fair ecological condition (rating C) and 1.3 ha in poor ecological condition (rating D). Approximately 58 indigenous plant species have been recorded (the number uncertain due to difficulty discerning a boundary between Swampy Woodland and Valley Heathy Forest).

Dominant canopy trees: *Eucalyptus ovata* and *E. cephalocarpa*.

Dominant lower trees: *Acacia melanoxylon*, *A. mearnsii*, *Exocarpos cupressiformis* and *Melaleuca ericifolia*.

Shrubs: The main species are *Acacia verticillata*, *Bursaria spinosa*, *Cassinia arcuata*, *Goodenia ovata*, *Leptospermum scoparium* and *Ozothamnus ferrugineus*. In addition, *Solanum laciniatum*, *Spyridium parvifolium* and the ecological indicator species, *Hakea nodosa*, are present.

Vines: The light twiner, *Billardiera mutabilis*, is abundant and the climbing parasite, *Cassytha pubescens* is also present.

Ferns: *Pteridium esculentum* is scarce.

Ground flora: Densely grassy, with eleven species of native grass recorded as well as three types of *Lomandra* and substantial numbers of *Lepidosperma gunnii*. The most abundant grasses are *Microlaena stipoides*, *Eragrostis brownii*, *Austrostipa rudis* and *Themeda triandra*. There is also a scattering of four *Juncus* species. *Gahnia radula* is present but abnormally scarce. Non-grassy species are seriously depleted, and the most abundant one is *Gonocarpus tetragynus*. The ecological indicator species, *Centella cordifolia*, *Senecio minimus* and *Rytidosperma semiannulare*, are present.

Valley Heathy Forest (EVC 127, **regionally Endangered**): Estimated as 0.5 ha in area, comprising 0.2 ha in fair ecological condition (rating C) and 0.3 ha in poor ecological condition (rating D).

Canopy trees: Dominated by *Eucalyptus cephalocarpa* and fewer *E. obliqua*, *E. radiata* and *E. ovata*.

Lower trees: *Acacia melanoxylon*, *A. mearnsii*, *Exocarpos cupressiformis*.

Shrubs: Depleted by past clearing. Remaining species include *Bursaria spinosa*, *Cassinia arcuata*, *Epacris impressa* and *Platylobium obtusangulum*.

Vines: *Billardiera mutabilis*.

Ground flora: Grassy; depleted by mowing. The most abundant graminoids are *Microlaena stipoides*, *Austrostipa rudis*, *Rytidosperma setaceum*, *Themeda triandra* and *Lomandra filiformis*. Other species include *Acrotriche serrulata*, *Dianella admixta* and *Gonocarpus tetragynus*.

Plant species

The following plant species were observed by the author in 1997. The column headed 'Risk' indicates the indigenous species' risk of extinction in Knox as follows: 'C'=Critically Endangered; 'E'=Endangered; and 'V'=Vulnerable. In addition, the species with names in bold are rare throughout the Melbourne region.

Risk	Indigenous Species	Risk	Indigenous Species
V	<i>Acacia mearnsii</i>		<i>Juncus sarophorus</i>
V	<i>Acacia melanoxylon</i>		<i>Kunzea ericoides</i> spp. agg.
V	<i>Acacia verticillata</i>		<i>Lachnagrostis filiformis</i>
	<i>Acaena novae-zelandiae</i>		<i>Lepidosperma gunnii</i>
	<i>Acrotriche serrulata</i>		<i>Leptospermum continentale</i>
	<i>Alisma plantago-aquatica</i>	E	<i>Leptospermum lanigerum</i>
V	<i>Alternanthera denticulata</i>		<i>Lomandra filiformis</i> subsp. <i>coriacea</i>
C	<i>Amyema pendula</i>		<i>Lomandra filiformis</i> subsp. <i>filiformis</i>
	<i>Austrostipa rudis</i>		<i>Lomandra longifolia</i>
	<i>Billardiera mutabilis</i>	E	<i>Melaleuca ericifolia</i>
	<i>Bursaria spinosa</i>		<i>Microlaena stipoides</i>
	<i>Carex appressa</i>	C	<i>Olearia ramulosa</i> (possibly planted)
	<i>Carex ?breviculmis</i>	E	<i>Ozothamnus ferrugineus</i>
E	<i>Carex fascicularis</i>		<i>Persicaria decipiens</i>
	<i>Cassinia arcuata</i>	E	<i>Persicaria hydropiper</i>
E	<i>Cassytha pubescens</i>	E	<i>Persicaria lapathifolia</i>
E	<i>Centella cordifolia</i>	E	<i>Persicaria praetermissa</i>
V	<i>Coprosma quadrifida</i>	C	<i>Persicaria subsessilis</i>
	<i>Deyeuxia quadriseta</i>	E	<i>Phragmites australis</i>
	<i>Dianella admixta</i>	V	<i>Platylobium obtusangulum</i>
V	<i>Eleocharis acuta</i>		<i>Poa morrisii</i>
V	<i>Epacris impressa</i>	V	<i>Potamogeton crispus</i>
	<i>Epilobium hirtigerum</i>	V	<i>Potamogeton ochreatus</i>
	<i>Eragrostis brownii</i>		<i>Pteridium esculentum</i>
V	<i>Eucalyptus cephalocarpa</i>		<i>Rytidosperma linkii</i> var. <i>fulvum</i>
V	<i>Eucalyptus obliqua</i>		<i>Rytidosperma penicillatum</i>
V	<i>Eucalyptus ovata</i>	E	<i>Rytidosperma semiannulare</i>
E	<i>Eucalyptus radiata</i>		<i>Rytidosperma setaceum</i>
V	<i>Exocarpos cupressiformis</i>		<i>Schoenus apogon</i>
	<i>Gahnia radula</i>		<i>Senecio hispidulus</i>
	<i>Gonocarpus tetragynus</i>	E	<i>Senecio minimus</i>
	<i>Goodenia ovata</i>		<i>Senecio quadridentatus</i>
E	<i>Gynatrix pulchella</i>	V	<i>Solanum laciniatum</i>
C	<i>Hakea nodosa</i>	E	<i>Spyridium parvifolium</i>
E	<i>Hypericum gramineum</i>		<i>Themeda triandra</i>
V	<i>Isolepis inundata</i>	C	<i>Triglochin procera</i>
	<i>Juncus amabilis</i>	E	<i>Triglochin striata</i> (flat leaf variant)
	<i>Juncus bufonius</i>	E	<i>Typha orientalis</i>
	<i>Juncus gregiflorus</i>	V	<i>Veronica gracilis</i>
	<i>Juncus pallidus</i>	V	<i>Xanthorrhoea minor</i>
E	<i>Juncus procerus</i>		

Introduced Species

<i>Acacia longifolia</i> subsp. <i>longifolia</i>	<i>Echinochloa crus-galli</i>	<i>Persicaria maculosa</i>
<i>Acer</i> ? <i>negundo</i>	<i>Ehrharta erecta</i>	<i>Phalaris aquatica</i>
<i>Agrostis capillaris</i>	<i>Erica lusitanica</i>	<i>Pinus radiata</i>
<i>Allium triquetrum</i>	<i>Foeniculum vulgare</i>	<i>Pittosporum undulatum</i>
<i>Anthoxanthum odoratum</i>	<i>Fraxinus angustifolia</i>	<i>Plantago lanceolata</i>
<i>Aster subulatus</i>	<i>Fumaria</i> ? <i>officinalis</i> spp. agg.	<i>Plantago major</i>
<i>Atriplex prostrata</i>	<i>Galium aparine</i>	<i>Prunella vulgaris</i>
<i>Billardiera heterophylla</i>	<i>Hedera helix</i>	<i>Prunus cerasifera</i>
<i>Bromus catharticus</i>	<i>Helminthotheca echioides</i>	<i>Psoralea pinnata</i>
<i>Bromus diandrus</i>	<i>Holcus lanatus</i>	<i>Ranunculus repens</i>
<i>Callitriche stagnalis</i>	<i>Hypochoeris radicata</i>	<i>Raphanus</i> ? <i>raphanistrum</i>
<i>Calystegia silvatica</i>	<i>Juncus articulatus</i>	<i>Rorippa palustris</i>
<i>Centaurium erythraea</i>	<i>Juncus microcephalus</i>	<i>Rosa rubiginosa</i>
<i>Cirsium vulgare</i>	<i>Leontodon taraxacoides</i>	<i>Rubus anglocandicans</i>
<i>Conyza</i> ? <i>sumatrensis</i>	<i>Linum trigynum</i>	<i>Rumex crispus</i>
<i>Cotoneaster glaucophyllus</i>	<i>Lolium perenne</i>	<i>Solanum nigrum</i>
<i>Cotula coronopifolia</i>	<i>Lonicera japonica</i>	<i>Solanum pseudocapsicum</i>
<i>Crataegus monogyna</i>	<i>Lotus subbiflorus</i>	<i>Sonchus oleraceus</i>
<i>Crocasmia</i> × <i>crocosmiiflora</i>	<i>Malus pumila</i>	<i>Tradescantia fluminensis</i>
<i>Cynodon dactylon</i>	<i>Mentha spicata</i>	<i>Trifolium repens</i>
<i>Cyperus eragrostis</i>	<i>Modiola caroliniana</i>	<i>Ulex europaeus</i>
<i>Cytisus scoparius</i>	<i>Paspalum dilatatum</i>	<i>Vulpia bromoides</i>
<i>Dactylis glomerata</i>	<i>Paspalum distichum</i>	<i>Watsonia meriana</i>
<i>Daucus carota</i>	<i>Pennisetum clandestinum</i>	<i>Zantedeschia aethiopica</i>

Notes concerning some of the locally threatened plant species

Carex fascicularis (Tassel Sedge). Several plants were found.

Carex ?*gaudichaudiana* (Fen Sedge). One patch was found, perhaps a single plant.

Gynatrix pulchella (Hemp Bush). Two plants were found.

Hakea nodosa (Yellow Hakea). Three plants were found.

Leptospermum lanigerum (Woolly Tea-tree). A single plant was found.

Persicaria lapathifolia (Pale Knotweed). Found in wetland and on the stream bank, numbers not recorded.

Persicaria praetermissa (Spotted Knotweed). Many plants were found in two wetlands.

Persicaria subsessilis (Hairy Knotweed). Many plants were found in a single wetland.

Potamogeton crispus (Curly Pondweed). Many plants were found all along the creek.

Spyridium parvifolium (Australian Dusty Miller). A single plant was found, near Cathies Lane bridge.

Triglochin striatum (Streaked Arrow-grass). Found in two wetlands, number of individuals indeterminate.

Fauna of special significance

Nationally Vulnerable

The nationally vulnerable fish, Dwarf Galaxias, has been recorded 1 km upstream as well as downstream, and has undoubtedly passed through the site during the 1990s. It could conceivably appear in this site's wetlands or the stream, but fish experts such as Mr John McGuckin (of Streamline Research Pty Ltd) fear that the species may have become extinct in the Dandenong Creek catchment in recent years.

Uncommon in the Melbourne Region

Weasel Skink. Seen in c.1998, as reported in the Scoresby Transport Corridor Environment Effects Statement.

Striped Marsh Frog. As above.

Fauna habitat features

- The canopy of indigenous trees, fragmented though it is, was seen to support an unusually high density of native birds for suburbia, including such species as White-Browed Tree-Creeper;
- Some of the mature trees are old enough and large enough to have hollows that could be used by native fauna for nesting or roosting;
- A relatively high density and diversity of shrubs in Llewellyn Reserve near Cathies Lane significantly improves the habitat for native insects and birds, including White-Browed Scrubwrens. The prickliness of many of the shrubs helps protect birds from cats;
- The stream and wetlands are used extensively by frogs, ducks and some other waterbirds, and probably by aquatic invertebrates;

- Fish migrate up and down Blind Ck through this site;
- Fragmentation of the native vegetation is to some degree offset by the diversity of habitat (scrubby to open, aquatic to dry), which is beneficial to some native fauna.

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 and Viability

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

Endangered Vegetation Types

All the EVCs present are regionally Endangered. The significance of this might be discounted in the substantial areas of the site with little if any native understorey, but not in many of the wetlands, nor a substantial fraction of the Swampy Woodland. In these latter cases, it follows from Appendix 3 of *Victoria's Native Vegetation Management - a Framework for Action* (NRE 2002a) that the site's native vegetation is of at least High conservation significance because of the Endangered status of the EVCs. This, in turn, gives the site **State** significance under criterion 3.2.3.

Rare or Threatened Flora

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

Threats

- Invasion by environmental weeds, of which the greatest threats (when last inspected in 2000) were:
 - The grass weeds Sweet Vernal-grass (*Anthoxanthum odoratum*), Cocksfoot (*Dactylis glomerata*) and Yorkshire Fog (*Holcus lanatus*);
 - Possible reinfestation of the creepers and climbers, Blackberry (*Rubus discolor*), Greater Bindweed (*Calystegia silvatica*) and/or its hybrids, Japanese Honeysuckle (*Lonicera japonica*), Creeping Buttercup (*Ranunculus repens*) and Wandering Jew (*Tradescantia albiflora*) if not kept in check; and
 - Possible reinfestation of Gorse (*Ulex europaeus*) or English Broom (*Cytisus scoparius*) in Llewellyn Reserve, if not kept in check;
- Dieback disease;
- Critically small population sizes of several plant species;
- Garden waste dumping from neighbouring residences;
- Fragmentation of habitat caused by the EastLink road, leading to reduced visitation by small insect-eating birds and hence a risk of worsening plant pests and diseases.

Management issues

- Guidance for management of the reserve's habitat is discussed in detail in '*A Management Plan for Cathies Lane Bushland, Wantirna South*' by G.S. Lorimer (1997) for Knox City Council, although this is in need of updating;
- A new management plan is almost due. Conditions have changed due to EastLink and updates are necessary to bring classification of the vegetation types and the ecological condition of the vegetation into conformity with this *Sites of Biological Significance* report.

Administration matters

- This site is worthy of inclusion within the proposed Environmental Significance Overlay, ESO2, because of the matters considered under the heading, 'Significance ratings';
- The site is not included under the existing Vegetation Protection Overlay of the Knox Planning Scheme and was not recognised in the report by Water Ecoscience (1998).

Information sources used in this assessment

- Site surveys by Dr Lorimer and Mr John Reid on 25/3/97 and by Dr Lorimer on 23/4/97 and 25/4/97. These were for the two reports, '*A Management Plan for Cathies Lane Bushland, Wantirna South*' (Lorimer 1997) and '*Vegetation Survey of Linear Reserves – A Management Strategy for Riparian and Flood Plain Vegetation*' (Reid, Moss & Lorimer 1997) for Knox City Council. They included:
 - Compilation of lists of indigenous and introduced plants within each of sixteen parts of the site;
 - Detailed mapping and documentation of rare species populations and the ecological condition of the vegetation;

- A description of the vegetation's structural and floristic composition;
- Compilation of detailed data from a quadrat;
- Incidental fauna observations;
- Checks for fauna habitat, ecological threats and management issues; and
- Recommendations for the care and maintenance of the vegetation, including weed control;
- A re-inspection of the part of the site downstream from Cathies Lane, conducted by Dr Lorimer on 14/1/04 to update the above information and fill any gaps in the data;
- Another re-inspection by Dr Lorimer on 10/3/08 to update the above information in response to construction of the EastLink road;
- Information about Dwarf Galaxias verbally from fish expert, Mr John McGuckin (Streamline Research Pty Ltd), in October 2003;
- A report, '*Assessment of Native Vegetation on the Mitcham to Frankston Freeway Alignment in Knox*', by Dr Lorimer in July 2003 for Knox City Council;
- The 1998 '*Scoresby Transport Corridor Environment Effects Statement*', particularly Supplement Volume H: Flora and Fauna by Williams L.M., Yugovic J.V., McGuckin J., Humphrey P. and Larwill S. (1998), in which part of this site is labelled as 'Site 6';
- 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.