Site 34. Blind Creek Billabong & Quarry, Ferntree Gully

A small strip of riparian vegetation with a shallow billabong, and adjoining vegetation beside a quarry. Melway ref. 64 H11.

Site Significance Level: State

- Contains vegetation belonging to four regionally Endangered vegetation types (Wetland, Swampy Riparian Woodland, Swampy Woodland and Valley Heathy Forest), some of which is in good ecological condition;
- The Swampy Woodland is particularly rich in plant species;
- Six plant species recorded from the site are Critically Endangered in Knox, and another eleven are either Endangered or Vulnerable in Knox;
- The bird fauna is rich for metropolitan Melbourne, and a statewide-vulnerable Grey Goshawk was observed.





Aerial photograph taken February 2007

Scale 1:4,000 0 20 40 60 80 100m

Boundaries

This 4.63 ha site is outlined in red and marked 'Site 34' on the aerial photograph on the previous page. The south-southwestern edge skirts the clay pit (as observed in June 2008) and partly follows the alignment of a series of survey pegs along the pit edge. The remaining boundaries coincide with property boundaries, except for straight lines that have been drawn across Blind Ck between corners of properties.

The site originally described in 2004 for the first edition of this report included an additional 0.65 ha of Valley Heathy Forest that has since been excavated, including all of the hatched area on the aerial photograph above.

Land use & tenure: Public reserve along the creek and a fenced bushland area within the fence around the quarry site. Council manages some of the fenced bushland and the remainder is the responsibility of the quarry owner.

Site description

This site includes some swampy vegetation along Blind Ck and some Valley Heathy Forest on a hillside inside the fence adjacent to a quarry, from which clay is periodically taken for brickmaking.

Elevations range from 89 m on the bank of the creek to 95 m in the southeastern corner. The slope is very shallow in the area labelled 'Swampy Woodland' on the aerial photograph (being a floodplain), and becomes progressively steeper to the south. Contours run generally east-west, the main exception being the billabong marked on the aerial photograph. There are also small depressions and shallow drainage excavations in the vicinity of the quarry pit.

The Swampy Woodland and Swampy Riparian Woodland are on alluvial soil (or probably colluvium near the southern edge) and the Valley Heathy Forest is on shallow, light grey loam. The subsoil is clay throughout, derived from decomposition of the underlying Lower Devonian sedimentary rocks of the Humevale formation.

The most significant vegetation is in three areas:

- The western third of the billabong;
- In a small patch beside the creek; and
- In the northwest corner of the fenced bushland.

The last of these areas retains large old trees and very rich understorey.

Other parts of the site have been ecologically degraded to varying degrees by weed invasion, past clearing, drainage works and dumping of overburden from the quarry. However, recent efforts by Knox City Council and the Friends of Blind Creek Billabong to rehabilitate the vegetation have been very successful and the ecological condition is steadily improving. There is extensive natural regeneration where slashing has ceased.

A more detailed (if dated) description of most of the site can be found in the 1997 report, 'A Management Plan for Blind Creek Billabong, Ferntree Gully', prepared for Knox City Council by J.C. Reid, G.S. Lorimer and H. Moss.

Relationship to other land

The site is part of the Blind Creek habitat corridor, and is treated here separately from Site 33 only because its vegetation stands out for its breadth, ecological condition, abundance of uncommon species and separate management regime.

The treed residential neighbourhood to the north forms Site 103 (see the aerial photograph above) represents an extension of the site's habitat for some wildlife, such as rosellas and Tawny Frogmouths. Land south of Blind Ck provides much less ecological linkage except for the Norvel Road Reserves (Site 35).

Bioregion: Gippsland Plain

Habitat types

Perennial Stream (No EVC number), barrel-drained but with parts of the original watercourse retained.

Wetland (the billabong – EVC 74, **regionally Endangered**): Estimated in c. 2003 to cover 1,000 m², comprising 350 m² in good ecological condition (rating B), 350 m² in fair ecological condition (rating C) and 300 m² in poor ecological condition (rating D). However, intervening drought has badly reduced the ecological condition (hopefully a temporary situation). 9 indigenous plant species were recorded in 1997.

Trees, vines and ferns: Absent.

Shrubs: Some Melaleuca ericifolia extend into the billabong.

Aquatic and semi-aquatic flora: Dominated by Carex appressa and rushes. Baumea rubiginosa is a character species.

Swampy Riparian Woodland (EVC 83, regionally Endangered) tending toward Riparian Forest (EVC 18): Estimated to occupy 4,400 m², comprising 500 m² in good ecological condition (rating B), 1,500 m² in fair ecological condition (rating C) and 2,400 m² in poor ecological condition (rating D). These figures do not include recent revegetation.

Dominant canopy trees: Eucalyptus ovata, E. obliqua, E. cephalocarpa, E. viminalis, E. melliodora.

Dominant lower trees: Acacia melanoxylon and Acacia mearnsii.

<u>Shrubs</u>: The presence of *Bursaria spinosa* is typical of Swampy Riparian Woodland, whereas the presence of *Prostanthera lasianthos* reflects the tendency toward Riparian Forest (in combination with the *Eucalyptus viminalis* and *E. melliodora* at the edge of the site).

Ground flora: Includes species of wet soil such as Lepidosperma elatior as well as species of drier soil such as L. gunnii.

Swampy Woodland (EVC 937, regionally Endangered): Estimated to occupy 22,000 m², comprising 2,000 m² in good ecological condition (rating B), 19,500 m² in fair ecological condition (rating C) and 500 m² in poor ecological condition (rating D). 95 indigenous plant species were recorded by the author, plus three others recorded by Mr Andrew Paget in May 1985.

<u>Dominant canopy trees</u>: *Eucalyptus ovata* and *E. cephalocarpa* with rather less *E. obliqua*.

<u>Dominant lower trees</u>: Acacia melanoxylon and Acacia mearnsii with rather less Exocarpos cupressiformis.

Shrubs: Patchy, becoming quite dense in places (particularly due to *Bursaria spinosa* and *Leptospermum scoparium*). Fairly rich in species. *Goodenia ovata, Ozothamnus ferrugineus, Prostanthera lasianthos* and *Pultenaea gunnii* are also abundant. *Coprosma quadrifida* and *Melaleuca ericifolia* are dense in small parts of the site.

Vines: Billardiera mutabilis, Clematis aristata and Cassytha melantha are present.

<u>Creepers</u>: Creepers are represented by no fewer than nine species, of which *Poa tenera* and *Centella cordifolia* are the most abundant. The ecological indicator species, *Gonocarpus micranthus, Goodenia elongata, Gratiola pubescens* and *Hemarthria uncinata* are all present.

Ferns: Lindsaea linearis is abundant and Pteridium esculentum rather less so. One Cyathea australis was found.

Ground flora: Moderately to very dense, dominated by Gahnia radula, Microlaena stipoides and Rytidosperma species.

Other abundant species are Deyeuxia quadriseta, Eragrostis brownii, Gonocarpus tetragynus, Juncus planifolius, Schoenus apogon, Austrostipa rudis and Themeda triandra. The ecological indicator species, Baumea rubiginosa, Empodisma minus, Schoenus tesquorum, Triglochin striatum and Villarsia reniformis are also present.

Valley Heathy Forest (EVC 127, regionally Endangered): Estimated to occupy 6,000 m², comprising 5,000 m² in fair ecological condition (rating C) and 1,000 m² in poor ecological condition (rating D). 59 indigenous plant species recorded by the author, plus one other recorded by Mr Andrew Paget in May 1985.

Canopy trees: Dominated by *Eucalyptus cephalocarpa* and *E. radiata*.

Lower trees: Scattered Acacia melanoxylon.

Shrubs: Low to moderate density, the most abundant species being *Acacia myrtifolia*, *A. stricta*, *Bursaria spinosa and Cassinia aculeata*. The locally rare species, *Viminaria juncea*, germinated at the edge of the quarry in c.1995 but was bulldozed in 1997 (along with the locally rare wildflower, *Wahlenbergia multicaulis*).

<u>Vines</u>: *Billardiera mutabilis* is fairly abundant.

Ferns: Small amounts of Lindsaea linearis.

Ground flora: Grassy but with the characteristic heathy elements of *Hibbertia riparia*, *Acrotriche serrulata*, *Epacris impressa*, *Dillwynia cinerascens*, *Lepidosperma gunnii*, *Platylobium obtusangulum* and *Xanthosia dissecta*. Dominant graminoids include *Gahnia radula*, *Microlaena stipoides*, *Austrostipa rudis* and *Themeda triandra*. Other species that help to characterise the vegetation include substantial numbers of *Dianella longifolia* and *Gonocarpus tetragynus*, as well as small numbers of *Leptorhynchos tenuifolius*.

Plant species

The following plant species were observed in the years indicated. 1985 records are from Mr Andrew Paget and the remainder are from the author. 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	Year	Risk	Indigenous Species	Year
	Acacia dealbata	1985		Arthropodium strictum	2001
V	Acacia mearnsii	2005		Austrostipa pubinodis	1997
V	Acacia melanoxylon	2005		Austrostipa rudis subsp. rudis	2009
Е	Acacia myrtifolia	2001	C	Baumea acuta	1997
E	Acacia stricta	1997	C	Baumea rubiginosa	1997
V	Acacia verticillata	2005		Billardiera mutabilis	2005
	Acaena novae-zelandiae	2005		Bossiæa prostrata	2005
	Acrotriche serrulata	2005		Burchardia umbellata	2005
C	Amyema pendula	2001		Bursaria spinosa	2005

Risk	Indigenous Species	Year	Risk	Indigenous Species	Year
V	Caesia parviflora	1997	Е	Juncus procerus	2005
	Carex appressa	1997		Juncus sarophorus	1997
	Carex breviculmis	2005	Е	Juncus subsecundus	1997
	Cassinia aculeata	2005		Kunzea ericoides spp. agg.	2001
	Cassinia arcuata	2001		Lachnagrostis filiformis	2005
V	Cassinia longifolia	2005	Е	Lagenophora stipitata	2001
E	Cassytha melantha	1997		Lepidosperma elatius	1997
E	Cassytha pubescens	1985		Lepidosperma gunnii	2005
E	Centella cordifolia	2001	V	Leptorhynchos tenuifolius	1997
C	Centrolepis strigosa	1997		Leptospermum continentale	2005
V	Clematis aristata	2001	Е	Leptospermum lanigerum	1997
V	Coprosma quadrifida	2005	Е	Leptospermum scoparium	1997
E	Cyathea australis	1997	V	Lindsaea linearis	2005
E	Daviesia latifolia	2001	E	Lobelia anceps	2005
	Deyeuxia quadriseta	2001		Lomandra filiformis	2005
	Dianella admixta	1985		Lomandra filiformis subsp. coriacea	1997
V	Dianella longifolia s.l.	2005		Lomandra filiformis subsp. filiformis	1997
V	Dianella tasmanica	2005		Lomandra longifolia	2001
	Dichondra repens	2005	V	Lythrum hyssopifolia	2001
V	Dillwynia cinerascens	1997	E	Melaleuca ericifolia	2009
E	Dipodium roseum	1997		Microlaena stipoides	2005
C	Diuris sp.	2001		Microtis parviflora	2001
V	Drosera peltata subsp. auriculata	1997	C	Muellerina eucalyptoides	1997
V	Drosera whittakeri	2001	V	Olearia lirata	2001
V	Empodisma minus	2005	V	Opercularia ovata	2001
V	Epacris impressa	2005	V	Opercularia varia	2005
	Ēragrostis brownii	2005		Oxalis exilis/perennans	2005
V	Eucalyptus cephalocarpa	2009	E	Ozothamnus ferrugineus	2005
V	Eucalyptus melliodora	1997	E	Pentapogon quadrifidus	1997
V	Eucalyptus obliqua	2005		Persicaria decipiens	1997
V	Eucalyptus ovata	2009	V	Pimelea humilis	2001
E	Eucalyptus radiata	2005	V	Platylobium formosum	1985
E	Eucalyptus viminalis ssp. viminalis	1997	V	Platylobium obtusangulum	2005
V	Euchiton collinus	2001	Е	Poa labillardierei var. labillardierei	2005
E	Euchiton involucratus	1997		Poa morrisii	2005
V	Exocarpos cupressiformis	2005	E	Poa tenera	2005
	Gahnia radula	2005	Е	Polyscias sambucifolia	2001
E	Gahnia sieberiana	1985		Poranthera microphylla	2005
C	Gonocarpus micranthus	1997	Е	Prostanthera lasianthos	2005
	Gonocarpus tetragynus	2005		Pteridium esculentum	2001
C	Goodenia elongata	2001	V	Pultenaea gunnii	2005
E	Goodenia humilis	2005		Rytidosperma laeve	1997
	Goodenia lanata	1985		Rytidosperma pallidum	2005
	Goodenia ovata	2009		Rytidosperma penicillatum	1997
C	Gratiola pubescens	1997		Rytidosperma racemosum	2001
V	Helichrysum luteoalbum	2009	E	Rytidosperma semiannulare	1997
V	Helichrysum scorpioides	2001		Rytidosperma setaceum	2001
V	Hemarthria uncinata	1997		Rytidosperma tenuius	1997
E	Hibbertia riparia	2005		Schoenus apogon	2005
E	Hypericum gramineum	2005	C	Schoenus lepidosperma	2001
C	Hypoxis hygrometrica	1997	C	Schoenus tesquorum	1997
E	Imperata cylindrica	1997		Senecio glomeratus	2005
E	Isolepis cernua var. platycarpa	1997		Senecio hispidulus	2001
V	Isolepis inundata	2005	E	Senecio minimus	1997
E	Isolepis marginata	1985		Senecio quadridentatus	2001
	Juncus amabilis	2005	C	Solanum aviculare	2005
	Juncus bufonius	1997	V	Solanum ?laciniatum	1997
	Juncus pallidus	2005	E	Stylidium armeria/graminifolium	2001
E	Juncus pauciflorus	1997		Tetrarrhena juncea	1985
E	Juncus planifolius	1997	V	Thelymitra sp.	2001
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Risk	Indigenous Species	Year	Risk	Indigenous Species	Year
	Themeda triandra	2005	C	Viminaria juncea	1997
	Tricoryne elatior	2001	E	Viola hederacea	2005
E	Triglochin striata (flat leaf variant)	2005	C	Wahlenbergia multicaulis	1997
E	Typha domingensis	2001	E	Wurmbea dioica	2001
V	Veronica gracilis	2001	V	Xanthorrhoea minor	1985
C	Villarsia reniformis	2005	E	Xanthosia dissecta	2005
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ntr	·odι	ıced	Sp	ecies

Introduced Species		
Acacia elata	Cynodon dactylon	Parentucellia viscosa
Acacia floribunda	Cyperus eragrostis	Paspalum dilatatum
Agrostis capillaris	Dactylis glomerata	Pennisetum clandestinum
Agrostis capillaris	Danthonia procumbens	Phalaris aquatica
Aira caryophyllea	Echinochloa crus-galli	Pinus radiata
Allium triquetrum	Ehrharta erecta	Pittosporum undulatum
Anagallis arvensis	Ehrharta longiflora	Plantago lanceolata
Anthoxanthum odoratum	Erica lusitanica	Plantago major
Arbutus unedo	Erodium moschatum	Poa annua
Arctotheca calendula	Freesia alba × leichtlinii	Prunella vulgaris
Asparagus asparagoides	Fumaria muralis	Prunus cerasifera
Asparagus scandens	Galium aparine	Raphanus raphanistrum
Aster subulatus	Gamochaeta purpurea	Romulea rosea
Bellis perennis	Genista monspessulana	Rubus anglocandicans
Briza maxima	Geranium dissectum	Rumex crispus
Briza minor	Gladiolus undulatus	Setaria parviflora
Bromus catharticus	Grevillea rosmarinifolia	Sisyrinchium iridifolium
Centaurium erythraea	Hedera helix	Solanum nigrum
Chrysanthemoides monilifera	Holcus lanatus	Sonchus oleraceus
Chrysanthemoides monilifera ssp. monilifera	Homalanthus populifolius	Taraxacum officinale spp. agg.
Cirsium vulgare	Hypochoeris radicata	Tradescantia fluminensis
Conyza bonariensis	Ilex aquifolium	Trifolium campestre
Coprosma repens	Juncus articulatus	Trifolium repens
Cordyline australis	Juncus tenuis	Ulex europaeus
Cortaderia selloana	Leontodon taraxacoides	Veronica arvensis
Cotoneaster glaucophyllus	Lonicera japonica	Vicia sativa
Cotoneaster pannosus	Lotus corniculatus	Watsonia meriana var. bul-
Cotoneaster simonsii	Lotus subbiflorus	billifera
Crepis capillaris	Medicago polymorpha	Zantedeschia aethiopica
$Crocosmia \times crocosmii flora$	Oxalis pes-caprae	

Notes concerning some of the locally threatened plant species

Wahlenbergia multicaulis (Tadgell's Bluebell) – Found beside the quarry in 1997 and subsequently destroyed. *Viminaria juncea* (Golden Spray) – Found beside the quarry in 1997 and subsequently destroyed.

Fauna of special significance

Grey Goshawk – listed as Vulnerable in Victoria. Seen incidentally during fieldwork. It is not known how frequently the bird visits the site but a much larger area is required to meet the needs of such a species over its lifecycle.

Fauna habitat features

- There are large eucalypts with hollows that provide suitable roosting or nesting sites for certain fauna;
- Some large Manna Gums (*Eucalyptus viminalis*) may provide nest sites for bird species that only breed in particularly tall trees;
- Patches of scrub provide habitat for small insect-eating birds such as wrens;
- · Mistletoe was seen harbouring a colony of Imperial White Butterflies, which are reliant on mistletoes for larval food;
- The ground layer of dense grasses and sedges in much of the site is excellent habitat for butterflies and probably skippers that rely on such plants. A survey for skippers would be worthwhile.

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 this site.

Endangered Vegetation Types

All the EVCs present in the site are listed as regionally Endangered. It follows from Appendix 3 of *Victoria's Native Vegetation Management - a Framework for Action* (NRE 2002a) that the site's vegetation is of at least High conservation significance. 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.

Rare or Threatened Fauna

Criterion 3.1.2 confers at least **Local** significance on sites that provide habitat for species that are threatened in Victoria. This applies to the present site if it is deemed to provide habitat for the Grey Goshawk that was seen during fieldwork. One cannot be sure that the sighting was not just of a vagrant, but taking into account the nature of the vegetation and its known fauna, it is prudent to treat the site as habitat for the goshawk.

Threats

- Clay extraction and ancillary activities;
- Invasion by environmental weeds, particularly Boneseed (*Chrysanthemoides monilifera*), Japanese Honeysuckle (*Lonicera japonica*), Sweet Pittosporum (*Pittosporum undulatum*), Blackberry (*Rubus discolor*) and Bulbil Watsonia (*Watsonia meriana*);
- Slashing in inappropriate areas or at an inappropriate frequency or time of year, although this appears to have been corrected in recent years;
- Rubbish dumping by local people;
- Children cutting and damaging vegetation such as paperbarks;
- Foxes (observed), which eat wildlife and spread weeds.

Management issues

- Management of most of the public land in this site is discussed in the 1997 report, 'A Management Plan for Blind Creek Billabong, Ferntree Gully' by J.C. Reid, G.S. Lorimer and H. Moss for Knox City Council;
- Ongoing weed control is the main priority for vegetation management in this site.

Administration matters

- It would be desirable to have an expert on skippers (insects that are intermediate between butterflies and moths) survey the site in spring and summer, due to the distinct possibility that rare species are present;
- This site is highly worthy of inclusion within the proposed Environmental Significance Overlay, ESO2, because of its State significance, the endangered EVCs, the areas of native vegetation with all strata present, the large number of significant plant species, the richness of the site's native vegetation and the habitat that it provides for fauna;
- A strip along the creek is zoned Urban Floodway Zone (UFZ) and the rest of the site is zoned Special Use 2 (SUZ2);
- Most of the site is included under the existing Vegetation Protection Overlay Schedule 1 of the Knox Planning Scheme, but not a strip along the creek (which is more biologically significant than much of the rest of the site). This is a result of the cursory and factually inaccurate treatment of this area in the study by Water Ecoscience (1998, see their Sites 269 and 286).

Information sources used in this assessment

- The 1997 report, 'A Management Plan for Blind Creek Billabong, Ferntree Gully' by J.C. Reid, G.S. Lorimer and H. Moss for Knox City Council, along with the supporting field data, including six lists of indigenous and introduced plant species for various parts of the site, a quadrat in the Swampy Woodland, incidental fauna observations, and checks for fauna habitat, ecological threats and management issues;
- 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. This included the same sorts of data as above (except for the absence of a quadrat) for parts of the site that were outside the area covered by the management plan just cited;
- Site inspections (without collecting species data) by Dr Lorimer in 2007 and on 7/6/08, including mapping of the interface between the clay pit and native vegetation;

- Data from three quadrats north of the former quarry fence (DSE numbers N13171-N13173) and five quadrats south of that fence (DSE numbers N13275-N13279), compiled by Mr Andrew Paget in May 1985;
- 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.