Site 81. Lysterfield Hills

The ridgetop and slopes of the Lysterfield Hills, excluding land within parks.

Summary of significant features:

- National significance: known habitat of the Dandenong Range Cinnamon Wattle (*Acacia stictophylla*), which is listed as Endangered in Victoria and has a very small geographic range;
- State significance: known habitat of two less geographically-confined plant species listed as Endangered in Victoria: the spear-grass *Austrostipa rudis* subsp. *australis* and the Bulging Fireweed (*Senecio campylocarpus*);
- State significance: patches of the regionally-threatened vegetation types, Valley Heathy Forest, Creekline Herb-rich Woodland, Grassy Forest and Valley Grassy Forest;
- Regionally significant: known habitat of the Powerful Owl, which is listed as Vulnerable in Victoria;
- Regionally significant: part of a large habitat corridor;
- Locally significant: viable populations of dozens of plant species threatened with dying out in Knox.

Note

Permission was not obtained to enter the quarry land that makes up the majority of this site. This may have caused some biologically significant attributes to be overlooked. The Precautionary Principle should be applied when considering protection of this site in the absence of full scientific certainty about its attributes.

Aerial photograph and plan: See page 532.

Boundaries

The site boundary is outlined in mid-blue and marked '81' on the aerial photograph. It includes the western road verge of Cornish Rd but not the verge of Wellington Rd, which is part of Site 96. The only changes to the boundary since the previous (2010) edition of this report are very minor, to adjust to the VicGrid 2020 datum and associated digital cadastre.

Land use & tenure: The site includes two rock quarries (owned by Hanson and Boral), four residential lots adjoining the Boral quarry, an 'old title' lot with a small, disused reservoir in the site's extreme southwest, three vacant former grazing lots between the reservoir lot and Heany Park (Site 80), and a property occupied by a Girl Guides camp immediately east of Heany Park. The zigzag line abutting Lysterfield Park runs through a Crown land property, dividing it between part that is gazetted as part of the park and the rest made available to Boral for its quarry.

Site description

This 285-hectare site straddles the Lysterfield Hills ridge, which is oriented southwest to northeast. Elevations vary from approximately 80 m in the southwestern corner to 240 m on the ridge. The upper slopes have a gradient up to 40% and the lower slopes (below the 120 m contour) have much more gentle gradients because rock and earth has gravitated from uphill and deposited there (called colluvium). The site's two quarries extract hornfels (and also granodiorite at the Hanson quarry), with pits spanning both sides of the ridge.

On the upper slopes, the hornfels and granodiorite have weathered at the surface to form a shallow, stony, rather infertile clay loam that does not drain well and dries hard. On the lower slopes, the colluvium has formed a soil that is deeper than the upper slopes but still rather infertile.

There is a marked difference in the natural vegetation between the side of the ridge that faces northwest and the side that faces southeast. On the northwestern side, above the level where colluvium has deposited, the native vegetation is best regarded as an atypical form of the regionally-vulnerable Ecological Vegetation Class (EVC), Grassy Forest, as at Heany Park (Site 80).

The native vegetation on the lower northwestern slopes, in the colluvium, is predominantly Valley Grassy Forest (another regionally vulnerable EVC). This gives way to Valley Heathy Forest (a regionally-endangered EVC) in

the southwestern corner of the site, but the line of disjunction between these two EVCs lies within native pasture and cannot be seen or determined with any precision.

The southeastern side of the ridge has a quite different pattern of vegetation, with Herb-rich Foothill Forest on the spurs and Damp Forest in the headwaters of gullies. A 1998 report by Mueck and Timewell about the Hanson Quarry land states that Creekline Herb-rich Woodland is present, but the report provides little evidence for this and it was written before the limits of that EVC were well understood. An ecological survey would be required to check whether the 1998 report is consistent with current conventions.

Quarrying and associated activities have removed a substantial proportion of the site's native vegetation, as can be seen (in part) on the aerial photograph. That process appears to have accelerated over the past two decades. Some of the quarry excavations have been planted with Australian native trees and shrubs. Environmental weeds and rabbits are a serious problem on the quarry land.

Although ecological information about the quarry land is incomplete (for lack of access), it appears that the ridgetop and southeastern slopes are in better condition on average than the northwestern slopes. A 1998 report by Mueck and Timewell on the Hanson Quarry site indicated that some vegetation was in good condition with a large number of indigenous plant species, many of which are unique or critically endangered in Knox. However, at least some of this vegetation has been cleared since that report was written.

The small, treed lot in the site's southwestern corner (27 Reservoir Crescent, Rowville) has a disused reservoir that was once part of Dandenong's early water supply, being fed by a pipe from Monbulk Creek via Heany Park. The disused reservoir has been naturally colonised by around two dozen indigenous wetland plant species, including uncommon ones such as Tiny Duckweed (*Wolffia australiana*). Valley Heathy Forest surrounds the reservoir. Three of the eucalypts are *Eucalyptus viminalis* subsp. *pryoriana* (or possibly hybrids between this species and *Eucalyptus cephalocarpa*), which had never been recorded in Knox prior to the study for this report's 2010 edition.

This treed lot and the three private lots between it and Heany Park were grazed by stock for perhaps the whole of the 20th Century. They are now grazed only by wild animals – particularly kangaroos – and scrubby regrowth has established since the end of the Millennium Drought. The groundcover is predominantly indigenous, including substantial populations of some species that are threatened in Knox, such as Curved Rice-flower (*Pimelea curviflora*). The properties' conservation significance far exceeds expectations of grazing land in this part of Victoria.

Relationship to other land

The site is effectively part of a larger area of biological significance in combination with the Dandenong Police Paddocks Reserve, Heany Park (Site 80), Churchill National Park, Lysterfield Park (Site 82) and bushland to the northeast of Lysterfield Park. Many species of fauna move between these sites and some must rely on doing so in order to have enough habitat. Some fauna carry pollen or seeds, thereby linking plant populations across the area.

Bioregion: The Valley Heathy Forest and disused reservoir on the lower slopes in the site's southwestern corner are in the Gippsland Plain bioregion. The other vegetation types are in the Highlands Southern Fall bioregion.

Habitat types

Herb-rich Foothill Forest (EVC 23, conservation status rated 'Least Concern' in the bioregion): in the headwaters of gullies on the southeastern side of the ridge, particularly within the Crown land that has been made available to Boral for quarrying. The following assessment has had to be based on the small fraction of the EVC in this site that is not fenced to keep out the public.

Canopy trees: Strongly dominated by *Eucalyptus obliqua*.

Sub-canopy trees: *Acacia melanoxylon* is fairly abundant and there are a few *Exocarpos cupressiformis*.

Shrubs: There are dense patches of *Acacia paradoxa*. *Acacia mucronata*, *A. stictophylla*, *Goodenia ovata* and *Ozothamnus ferrugineus* are fairly abundant, as is the shrubby herb, *Senecio minimus*.

Ferns: *Adiantum aethiopicum* is scattered. Strangely, no *Pteridium esculentum* has been recorded.

Groundcover: Densely grassy with abundant *Poa ensiformis Rytidosperma* species, *Lepidosperma gunnii*, *L. laterale* and *Lomandra longifolia* subsp. *longifolia*.

Damp Forest (EVC 29, conservation status listed as of 'Least Concern' in the bioregion): In gullies on the southeastern slopes, extending only slightly into Site 81. Over recent decades, almost all the trees in the Damp Forest have died, apparently due to quarrying causing a falling water table and a reduction in catchment area. The ecological condition has become fair (at best) and in decline. An abundance of *Olearia argophylla, Pomaderris aspera* and ferns are the best remaining indicators of the Damp Forest.

Valley Grassy Forest (EVC 47, **regionally Vulnerable**): Estimated to cover 12 ha. The ecological condition is unclear, but a rough estimate is equal proportions in each of ratings C and D (fair and poor).

Canopy trees: Dominated by Yellow Box (*Eucalyptus melliodora*) with fewer Narrow-leafed Peppermint (*Eucalyptus radiata*) and Bundy (*Eucalyptus goniocalyx*). A few Candlebarks (*Eucalyptus rubida*) were present until they apparently all died during the Millennium Drought.

Sub-canopy trees: *Allocasuarina littoralis, Exocarpos cupressiformis*, *Acacia mearnsii, Acacia implexa* and *Acacia melanoxylon*.

Shrubs: Dense regrowth of *Acacia paradoxa* or '*Kunzea* sp. (Upright form)' have arisen on land that has been cleared and left to regenerate. *Bursaria spinosa* is fairly abundant, as is *Goodenia ovata* in less-disturbed areas. Otherwise, the natural shrub layer has been mostly replaced by environmental weeds, particularly *Chrysanthemoides monilifera* subsp. *monilifera* and *Pittosporum undulatum*.

Groundcover: Densely grassy with abundant *Rytidosperma* species, *Lepidosperma gunnii, L. laterale* and *Lomandra longifolia* subsp. *longifolia*.

Valley Heathy Forest (EVC 127, **Endangered**): Estimated to cover 1 ha, comprising 0.2 ha in fair ecological condition (rating C) and 0.8 ha in poor ecological condition (rating D).

Canopy trees: Dominated by *Eucalyptus cephalocarpa*, with fewer *E. radiata* and *E. goniocalyx*.

Sub-canopy trees: Dominated by *Allocasuarina littoralis, Acacia melanoxylon, Acacia mearnsii, Acacia implexa* and *Exocarpos cupressiformis*.

Shrubs: *Acacia paradoxa, Bursaria spinosa, Cassinia longifolia, Kunzea* sp. (Upright form) and *Leptospermum continentale*.

Ferns: None seen.

Groundcover: Densely grassy and dominated by *Microlaena stipoides*. Grasses in the genera *Rytidosperma, Austrostipa* and *Themeda* are also abundant. *Lomandra filiformis* subsp. *coriacea* is also abundant. The characteristic species, *Drosera aberrans* and *Hibbertia australis*, are present, as are *Dianella revoluta* and *Oxalis perennans* (both typically present in Valley Heathy Forest).

Grassy Forest (EVC 128, **regionally Vulnerable** – an atypical form with affinities to Grassy Dry Forest EVC 22): Extent uncertain but reducing due to quarrying.

Canopy trees: Dominated by *Eucalyptus radiata* and *E. goniocalyx*, typically 10 m tall.

Sub-canopy trees: Dominated by *Acacia mearnsii, Acacia implexa, Allocasuarina littoralis* and *Exocarpos cupressiformis*.

Shrubs: Indigenous shrubs are sparse except for patches of regrowth of *Acacia paradoxa* or *Kunzea* sp. (Upright form). Other indigenous species include *Cassinia aculeata, Cassinia longifolia* and *Leptospermum continentale*. The environmental weeds, *Chrysanthemoides monilifera* subsp. *monilifera* and *Pittosporum undulatum* are dense in much of the area seen by the author.

Vines: *Comesperma volubile* is abundant.

Ferns: Very scarce.

Groundcover: Grassy and apparently naturally sparse; Dominated by *Rytidosperma pallidum, Microlaena stipoides* and *Lomandra filiformis* subsp. *coriacea*.

Creekline Herb-rich Woodland (EVC 164, **regionally Endangered**): unable to be inspected for this report (for lack of access to quarry land) but documented by Mueck and Timewell (1998), who characterised it by species such as *Eucalyptus ovata* and *Gratiola peruviana*.

Wetland (EVC 74, listed as regionally Endangered but in this case the wetlands are artificial):

(a) A disused reservoir of 1,000 m² in the southwest corner of the site, all in good ecological condition (rating B):

Trees, shrubs, vines and ferns: Absent.

Aquatic and semi-aquatic flora: Dominated by *Carex fascicularis* and *Juncus* species in shallower water, and *Eleocharis sphacelata* and *Typha* sp. in deeper water. Other abundant species include *Carex appressa*,

Centella cordifolia, Epilobium hirtigerum, Persicaria decipiens and *Senecio minimus*. The tiny floating species, *Lemna disperma* and *Wolffia australiana,* are both present in large numbers but small total area.

(b) Waterbodies on the quarry land that aerial photographs show to have fringing wetland vegetation. No details of the vegetation are available.

Plant species

The following plant species have been recorded as growing wild in Site 81 (excluding dubious records). Indigenous species not seen by the author in his very inexhaustive 2023–2024 survey are indicated by superscripts showing the year of the most recent record. Records from 2007–2009 are the author's. Additional species would no doubt be detectable if the whole area were to be surveyed. The column headed 'Risk' indicates the indigenous species' risk of dying out in Knox as follows: 'C'=Critically Endangered; 'E'=Endangered; 'V'=Vulnerable; 'N'=Near threatened; and 'X'=presumed already locally extinct. In addition, *Acacia stictophylla*, *Austrostipa rudis* subsp. *australis* and *Senecio campylocarpus* are listed as Endangered in Victoria and species with names in bold are rare in the Melbourne area.

Indigenous mosses and liverworts

Achrophyllum dentatum, a moss [2004]
Atrichum androgynum, a moss [2004]
Breutelia affinis, Common Breutelia [2004]
Campylopus introflexus, Heath Star Moss
Chiloscyphus semiteres, Green Worms
Fissidens asplenioides, a pocket-moss [2004]
Funaria hygrometrica, Common Fire-moss [2004]
Heteroscyphus fissistipus, Crestwort [2004]
Hypnodendron vitiense, Umbrella Moss [2004]
Hypnum cupressiforme var. *filiforme,* Slender Hypnum [2004]
Hypnum cupressiforme, Common Hypnum [2009]
Lunularia cruciata, Moonwort
Marchantia sp., a liverwort [2004]
Polytrichum juniperinum, Common Juniper-moss
Ptychomnion aciculare, Paper Moss, Pipe-cleaners
Racopilum cuspidigerum convolutaceum, a moss [2004]
Rosulabryum billarderi, Common Thread-moss [2004]
Thuidiopsis furfurosa, Golden Weft-moss
Triquetrella papillata, a moss [2004]
Wijkia extenuata, Spear Moss [2004]

Risk Wild indigenous vascular species

Wild fern species

V *Adiantum aethiopicum*, Common Maidenhair
C *Asplenium flabellifolium,* Necklace Fern [1998]
V *Azolla pinnata,* Ferny Azolla
V *Azolla rubra,* Pacific Azolla [2004]
E *Blechnum cartilagineum*, Gristle Fern
V *Calochlaena dubia*, Common Ground-fern
C *Cheilanthes austrotenuifolia*, Green Rock Fern [1998]
C *Cyathea australis,* Rough Tree-fern [2004]
C *Histiopteris incisa*, Bat's Wing Fern [1994]
V *Lindsaea linearis,* Screw Fern [2004]
E *Polystichum proliferum,* Mother Shield-fern [2004]
Pteridium esculentum, Austral Bracken [2020]
Pteris tremula, Tender Brake

Risk Wild indigenous vascular species

Wild flowering species

Acacia dealbata, Silver Wattle [2004]
V *Acacia implexa*, Lightwood
V *Acacia mearnsii*, Black Wattle
V *Acacia melanoxylon*, Blackwood
E *Acacia mucronata*, Variable Sallow Wattle
Acacia paradoxa, Hedge Wattle
V *Acacia stictophylla*, Dandenong Range Cinnamon Wattle
E *Acacia stricta*, Hop Wattle [1998]
V *Acacia verticillata*, Prickly Moses [2020]
Acaena novae-zelandiae, Bidgee-widgee
E *Acrotriche serrulata,* Honey-pots [2007]
V *Allocasuarina littoralis*, Black Sheoak
C *Amyema pendula*, Drooping Mistletoe
Anthosachne scabra, Common Wheat-grass [2014]
C *Arthropodium milleflorum* s.l., Pale Vanilla-lily [2004]
Arthropodium strictum, Chocolate Lily
C *Asperula conferta*, Common Woodruff [2004]
V *Austrostipa mollis*, a Spear-grass [2013]
Austrostipa pubinodis, Tall Spear-grass [2014]
V *Austrostipa rudis* subsp. *australis*, Veined Spear-grass [2009]
Austrostipa rudis subsp. *rudis*, Veined Spear-grass
C *Banksia marginata*, Silver Banksia [2004]
Billardiera mutabilis, Common Apple-berry
N *Bossiaea prostrata,* Creeping Bossiaea [2014]
Burchardia umbellata, Milkmaids [2007]
Bursaria spinosa, Sweet Bursaria [2009]
V *Caesia parviflora*, Pale Grass-lily [2004]
V *Callitriche muelleri*, Round Water-starwort
Carex appressa, Tall Sedge
Carex breviculmis, Short-stem Sedge
E *Carex fascicularis*, Tassel Sedge
Carex inversa, Knob Sedge [2013]
Cassinia aculeata, Common Cassinia
Cassinia longifolia, Shiny Cassinia

Risk	Wild indigenous vascular species
C	*Cassinia trinerva*, Three-nerved Cassinia
E	*Cassytha melantha*, Coarse Dodder-laurel [2004]
E	*Centella cordifolia*, Centella
C	*Centrolepis strigosa*, Hairy Centrolepis [1998]
C	*Chamaescilla corymbosa*, Blue Stars [2009]
V	*Chiloglottis valida*, Common Bird-orchid
V	*Clematis aristata*, Mountain Clematis
	Clematis decipiens, a small-leafed clematis [2004]
E	*Comesperma volubile*, Love Creeper
V	*Coprosma quadrifida*, Prickly Currant-bush
C	*Coronidium scorpioides*, Button Everlasting [2004]
	Cotula australis, Common Cotula [1998]
V	*Crassula colligata*, a Crassula [1998]
	Crassula decumbens, Spreading Crassula
C	*Cymbonotus preissianus*, Austral Bear's-ear [2004]
C	***Cyperus lucidus*, Leafy Flat-sedge** [1998]
E	*Desmodium gunnii*, Southern Tick-trefoil
	Deyeuxia quadriseta, Reed Bent-grass
C	***Deyeuxia rodwayi*, Tasman Bent-grass**
	Dianella longifolia var. *longifolia*, Pale Flax-lily
	Dianella revoluta, Black-anther Flax-lily [2014]
	Dianella tasmanica, Tasman Flax-lily
	Dichelachne rara, Common Plume-grass [2007]
C	*Dichelachne sieberiana*, Plume-grass [1998]
	Dichondra repens, Kidney-weed
E	*Dipodium roseum*, Rosy Hyacinth-orchid [1985]
X	***Diuris sulphurea*, Tiger Orchid [2004]**
V	*Drosera aberrans*, Scented Sundew [2009]
V	*Drosera auriculata*, Tall Sundew
N	*Drosera hookeri*, Branched Sundew
E	*Echinopogon ovatus*, Common Hedgehog-grass
	Einadia nutans, Nodding Saltbush [2009]
V	*Eleocharis acuta*, Common Spike-rush
	Eleocharis sphacelata, Tall Spike-rush
C	*Epacris impressa*, Common Heath
V	*Epilobium billardiereanum* subsp. *cinereum*, Variable Willow-herb [2004]
	Epilobium hirtigerum, Hairy Willow-herb [2004]
	Eragrostis brownii, Common Love-grass [1998]
E	*Eucalyptus cephalocarpa*, Mealy Stringybark
V	*Eucalyptus cypellocarpa*, Mountain Grey Gum [2004]
V	*Eucalyptus goniocalyx*, Bundy
E	*Eucalyptus melliodora*, Yellow Box
E	*Eucalyptus obliqua*, Messmate Stringybark
V	*Eucalyptus ovata*, Swamp Gum
E	*Eucalyptus radiata*, Narrow-leaved Peppermint
C	*Eucalyptus rubida*, Candlebark [1994]
C	*Eucalyptus* ?*viminalis* subsp. *pryoriana*, Coast Manna Gum [2007]

Risk	Wild indigenous vascular species
C	*Eucalyptus viminalis* subsp. *viminalis*, Manna Gum
	Eucalyptus hybrids
E	*Euchiton involucratus*, Common Cudweed
	Euchiton japonicus, Creeping Cudweed [2004]
V	*Exocarpos cupressiformis*, Cherry Ballart
C	*Gahnia radula*, Thatch Saw-sedge
E	*Gahnia sieberiana*, Red-fruit Saw-sedge
	Galium ?*australe* s.l., Tangled Bedstraw [2004]
E	*Galium gaudichaudii*, Rough Bedstraw
E	*Galium leiocarpum*, Maori Bedstraw
C	*Gastrodia sesamoides*, Cinnamon Bells
E	***Geranium gardneri*, Rough Crane's-bill** [1998]
E	*Geranium potentilloides*, Soft Crane's-bill [2004]
V	*Geranium* sp. 2, Variable Crane's-bill
C	*Glossodia major*, Wax-lip Orchid [2021]
E	*Glycine clandestina*, Twining Glycine
E	***Glycine microphylla*, Small-leaf Glycine**
V	*Gonocarpus humilis*, Shade Raspwort [1998]
	Gonocarpus tetragynus, Common Raspwort [2013]
N	*Goodenia lanata*, Trailing Goodenia [2004]
	Goodenia ovata, Hop Goodenia
C	***Goodia lotifolia*, Common Golden-tip** [2004]
C	*Gratiola peruviana*, Austral Brooklime [2004]
C	***Gratiola pubescens*, Glandular Brooklime**
C	*Hackelia suaveolens*, Sweet Hound's-tongue [2009]
E	*Hardenbergia violacea*, Purple Coral-pea [2004]
C	*Hibbertia australis*, Upright Guinea-flower
C	*Hovea heterophylla*, Common Hovea [1998]
C	*Hydrocotyle callicarpa*, Small Pennywort [2004]
E	*Hydrocotyle foveolata*, Yellow Pennywort [2009]
V	*Hydrocotyle hirta*, Hairy Pennywort
C	***Hydrocotyle tripartita*, Slender Pennywort** [1998]
E	*Hypericum gramineum*, Small St John's Wort
C	*Hypericum japonicum*, Matted St John's Wort
	Hypoxis hygrometrica, Golden Weather-glass [2007]
C	*Imperata cylindrica*, Blady Grass [1998]
E	*Isolepis cernua*, Nodding Club-rush [1998]
E	*Isolepis hookeriana*, Grassy Club-rush [1998]
	Isolepis inundata, Swamp Club-rush
V	*Isolepis platycarpa*, a club-rush
	Juncus amabilis, Hollow Rush
	Juncus bufonius, Toad Rush
C	*Juncus fockei*, Slender Joint-leaf Rush
	Juncus gregiflorus, Green Rush
	Juncus pallidus, Pale Rush
E	*Juncus pauciflorus*, Loose-flower Rush
E	*Juncus planifolius*, Broad-leaf Rush
	Juncus sarophorus, Broom Rush
E	*Juncus subsecundus*, Finger Rush
C	*Kennedia prostrata*, Running Postman [2020]
	Kunzea sp. (Upright form), Forest Burgan

Risk	Wild indigenous vascular species
	Lachnagrostis filiformis, Common Blown-grass [2014]
E	*Lagenophora adenosa/stipitata*, a bottle-daisy
V	*Lagenophora sublyrata*, Slender Bottle-daisy [2009]
	Laphangium luteoalbum, Jersey cudweed
	Lemna disperma, Common Duckweed
	Lepidosperma elatius, Tall Sword-sedge
	Lepidosperma gunnii, Slender Sword-sedge
V	*Lepidosperma laterale*, Variable Sword-sedge
C	*Leptospermum continentale*, Prickly Tea-tree [2014]
	Leptospermum scoparium, Manuka
E	*Lobelia anceps*, Angled Lobelia [2007]
	Lomandra filiformis subsp. *coriacea*, Wattle Mat-rush
	Lomandra filiformis subsp. *filiformis*, Wattle Mat-rush [2014]
	Lomandra longifolia subsp. *longifolia*, Spiny-headed Mat-rush
V	*Luzula meridionalis*, Common Woodrush
X	*Lyperanthus suaveolens*, Brown-beaks [1998]
	Lythrum hyssopifolia, Lesser Loosestrife [2007]
E	*Melaleuca ericifolia*, Swamp Paperbark [2004]
	Microlaena stipoides, Weeping Grass
E	*Microtis* ?*unifolia*, Common Onion-orchid [2004]
C	*Montia australasica*, White Purslane [1998]
C	*Muellerina eucalyptoides*, Creeping Mistletoe [2003]
E	*Olearia argophylla*, Musk Daisy-bush
E	*Olearia lirata*, Snowy Daisy-bush
V	*Opercularia ovata*, Broad-leaf Stinkweed [2009]
V	*Opercularia varia*, Variable Stinkweed
	Oxalis exilis/perennans, Wood-sorrel
V	*Ozothamnus ferrugineus*, Tree Everlasting
	Pandorea pandorana, Wonga Vine
C	*Pelargonium australe*, Austral Stork's-bill [1998]
C	*Pelargonium inodorum*, Kopata [2004]
C	*Pentapogon quadrifidus*, Five-awned Spear-grass [2007]
	Persicaria decipiens, Slender Knotweed
	Pimelea curviflora, Curved Rice-flower [2008]
E	*Pimelea humilis*, Common Rice-flower
C	***Poa* ?*clelandii*, Matted Tussock-grass** [2004]
	Poa ensiformis, Sword Tussock-grass
E	*Poa labillardierei*, Common Tussock-grass [2007]
	Poa morrisii, Soft Tussock-grass
E	*Poa tenera*, Slender Tussock-grass
V	*Polyscias sambucifolia*, Elderberry Panax [2004]
V	*Pomaderris aspera*, Hazel Pomaderris
	Poranthera microphylla, Small Poranthera
E	*Pterostylis melagramma*, Tall Greenhood [2020]
	Pterostylis nutans, Nodding Greenhood [2020]
C	*Pterostylis pedunculata*, Maroonhood
V	*Pultenaea gunnii*, Golden Bush-pea

Risk	Wild indigenous vascular species
C	***Ranunculus amphitrichus*, Small River Buttercup** [1998]
C	***Ranunculus glabrifolius*, Shining Buttercup**
C	*Ranunculus lappaceus*, Australian Buttercup
C	*Ranunculus pumilio*, Fan-leaf Buttercup [1998]
E	*Rubus parvifolius*, Small-leaf Bramble [2004]
E	*Rytidosperma caespitosum*, Common Wallaby-grass [2007]
	Rytidosperma fulvum, Leafy Wallaby-grass [2014]
	Rytidosperma geniculatum, Kneed Wallaby-grass
	Rytidosperma ?*indutum*, Tall Wallaby-grass [2004]
	Rytidosperma laeve, Smooth Wallaby-grass [2007]
E	*Rytidosperma pallidum*, Red-anther (or Silvertop) Wallaby-grass
	Rytidosperma penicillatum, Slender Wallaby-grass [2014]
	Rytidosperma pilosum, Velvet Wallaby-grass [2014]
	Rytidosperma racemosum, Clustered Wallaby-grass
E	*Rytidosperma semiannulare*, Tasmanian Wallaby-grass [1998]
	Rytidosperma setaceum, Bristly Wallaby-grass
	Rytidosperma tenuius, Purplish Wallaby-grass
	Schoenus apogon, Common Bog-rush
E	***Senecio campylocarpus*, Bulging Fireweed**
V	*Senecio glomeratus*, Annual Fireweed
	Senecio hispidulus, Rough Fireweed [2020]
C	***Senecio linearifolius*, Fireweed Groundsel** [2004]
	Senecio minimus, Shrubby Fireweed
V	*Senecio prenanthoides*, Common Fireweed [2014]
	Senecio quadridentatus, Cotton Fireweed
V	*Sigesbeckia orientalis*, Indian Weed
C	*Solanum aviculare*, Kangaroo Apple
V	*Solanum laciniatum*, Large Kangaroo Apple
C	***Solanum prinophyllum*, Forest Nightshade**
C	*Stellaria pungens*, Prickly Starwort
E	*Stylidium armeria*, Common Triggerplant
C	*Thelymitra ixioides*, Dotted Sun-orchid [2004]
E	*Thelymitra peniculata*, Trim Sun-orchid [2004]
	Themeda triandra, Kangaroo Grass [2014]
E	*Thysanotus patersonii*, Twining Fringe-lily [2004]
	Tricoryne elatior, Yellow Rush-lily [2014]
	Typha ?*domingensis*, Cumbungi
C	*Veronica calycina*, Hairy Speedwell
C	*Veronica derwentiana*, Derwent Speedwell
E	*Veronica plebeia*, Trailing Speedwell
E	*Viola hederacea*, Ivy-leaf Violet
C	*Wahlenbergia gracilenta*, Hairy Annual Bluebell [2004]
	Wahlenbergia gracilis, Sprawling Bluebell

Risk	Wild indigenous vascular species
E	*Wahlenbergia stricta*, Tall Bluebell
V	***Wolffia australiana*, Tiny Duckweed** [2007]
E	*Wurmbea dioica*, Common Early Nancy [2009]
E	*Xanthorrhoea minor*, Small Grass-tree [1998]

Introduced species

Acacia baileyana, Cootamundra Wattle
Acacia floribunda, White Sallow-wattle
Acacia longifolia subsp. *longifolia*, Sallow Wattle
Agapanthus praecox, Agapanthus
Agrostis capillaris, Brown-top Bent
Aira caryophyllea, Silvery Hair-grass
Aira cupaniana, Small Hair-grass
Aira elegantissima, Delicate Hair-grass
Allium triquetrum, Angled Onion
Anthoxanthum odoratum, Sweet Vernal-grass
Arctotheca calendula, Cape Weed
Asparagus asparagoides, Bridal Creeper
Billardiera fusiformis, Bluebell Creeper
Briza maxima, Large Quaking-grass
Briza minor, Lesser Quaking-grass
Bromus hordeaceus, Soft Brome
Callitriche stagnalis, Pond Water-starwort
Cassinia sifton, Sifton Bush
Cenchrus clandestinus, Kikuyu Grass
Centaurium erythraea, Common Centaury
Centaurium tenuiflorum, Branched Centaury
Cerastium glomeratum s.l., Common Mouse-ear Chickweed
Chamaecytisus palmensis, Tree Lucerne
Chrysanthemoides monilifera subsp. *monilifera*, Boneseed
Cicendia filiformis, Slender Cicendia
Cirsium vulgare, Spear Thistle
Cortaderia selloana, Pampas Grass
Cotoneaster sp., Cotoneaster
Crataegus monogyna, Hawthorn
Cynodon dactylon, Couch
Cyperus eragrostis, Drain Flat-sedge
Cytisus scoparius, English Broom
Dactylis glomerata, Cocksfoot
Dipogon lignosus, Common Dipogon
Echium plantagineum, Paterson's Curse
Ehrharta erecta, Panic Veldt-grass
Ehrharta longiflora, Annual Veldt-grass
Erigeron bonariensis, Flaxleaf Fleabane
Erigeron sumatrensis, Fleabane
Eriobotrya japonica, Loquat
Eucalyptus cladocalyx, Sugar Gum
Fraxinus angustifolia, Desert Ash
Galium aparine, Cleavers
Galium murale, Small Bedstraw
Gamochaeta purpurea, Spiked Cudweed

Introduced species

Genista linifolia, Flax-leafed Broom
Genista monspessulana, Montpellier Broom
Helminthotheca echioides, Ox-tongue
Holcus lanatus, Yorkshire Fog
Hypochaeris radicata, Cat's Ear
Jasminum sp., Jasmine
Juncus articulatus, Jointed Rush
Juncus capitatus, Dwarf Rush
Juncus pallescens, a rush
Leontodon saxatilis, Lesser Hawkbit
Lolium perenne, Perennial Rye-grass
Lonicera japonica, Japanese Honeysuckle
Lotus corniculatus, Bird's-foot Trefoil
Lotus subbiflorus, Hairy Bird's-foot Trefoil
Lysimachia arvensis, Pimpernel
Melaleuca armillaris, Bracelet Honey-myrtle
Moenchia erecta, Erect Chickweed
Oxalis pes-caprae, Soursob
Paspalum dilatatum, Paspalum
Phalaris aquatica, Toowoomba Canary-grass
Phytolacca octandra, Red-ink Weed
Pinus radiata, Monterey Pine
Pittosporum undulatum, Sweet Pittosporum
Plantago lanceolata, Ribwort
Poa annua/infirma, a meadow-grass
Polypogon monspeliensis, Annual Beard-grass
Prunella vulgaris, Self-heal
Pseudoscleropodium purum, Neat Feather-moss
Ranunculus repens, Creeping Buttercup
Romulea rosea, Common Onion-grass
Rosa rubiginosa, Sweet Briar
Rubus anglocandicans, Blackberry
Rumex ?*pulcher*, Fiddle Dock
Senecio pterophorus, South African Daisy
Sisyrinchium micranthum, Blue Pigroot
Solanum americanum, Glossy Nightshade
Solanum nigrum, Black Nightshade
Sonchus asper, Rough Sow-thistle
Sonchus oleraceus, Sow-thistle
Sporobolus africanus, Rat-tail Grass
Stellaria media, Chickweed
Stenotaphrum secundatum, Buffalo Grass
Symphyotrichum subulatum, Aster-weed
Trifolium glomeratum, Cluster Clover
Trifolium subterraneum, Subterranean Clover
Ulex europaeus, Gorse (Furze)
Veronica arvensis, Wall Speedwell
Vicia sativa subsp. *nigra*, Narrow-leaf Vetch
Vinca major, Blue Periwinkle
Vulpia bromoides, Squirrel-tail Fescue
Vulpia myuros, Rat's-tail Fescue
Watsonia meriana var. *bulbillifera*, Bulbil Watsonia
Zantedeschia aethiopica, White Arum Lily

Notes concerning some of the significant plant species

Listed as Endangered under Victorian law

Acacia stictophylla (Dandenong Range Cinnamon Wattle): Fairly abundant in the Crown land that has been made available to Boral for its quarry.

Austrostipa rudis subsp. *australis* (a subspecies of Veined Spear-grass): Seen by the author in July 2009 at the Girl Guides camp. A broader survey at a better time of year would be needed to determine the distribution and population size.

Senecio campylocarpus (Bulging Fireweed): Three were seen by the author in September 2024 in drying mud beside the disused reservoir in the site's southwest corner. Numbers are likely to fluctuate as the water level rises and falls.

Rare and threatened in metro Melbourne

Callitriche muelleri (Round Water Starwort): Fairly abundant in the gullies facing southeast, though mostly downhill of the site boundary, in Lysterfield Park. The species is not known to occur anywhere else in Knox.

Deyeuxia rodwayi (Tasman Bent-grass): The author found small numbers beside Quarry Track in October 2023. Many more could have escaped detection due to the time of year and exclusion of the public from most of the potential habitat, which is on the Crown land that has been made available to Boral for its quarry.

Glycine microphylla (Small-leaf Glycine): as for *Deyeuxia rodwayi*.

Locally threatened

Austrostipa mollis (a Spear-grass): Moderately common in the site's west, and perhaps elsewhere.

Carex fascicularis (Tassel Sedge): A dominant species fringing the disused reservoir in the site's southwestern corner.

Eucalyptus viminalis subsp. ?*pryoriana*. Found in the site's southwestern corner in 2004 (albeit with flowers predominantly in sevens, suggesting possible interbreeding with *E. cephalocarpa*): The *Eucalyptus viminalis* reported by Mueck and Timewell is likely to be the same subspecies. The only other records in Knox are nearby in Lysterfield Park.

Gratiola peruviana (Austral Brooklime): Recorded by Mueck and Timewell (1998).

Gratiola pubescens (Glandular Brooklime): The author found 35 plants beside Quarry Track in 2023, adjacent to the *Ranunculus glabrifolius*.

Lemna disperma (Common Duckweed): The author found large numbers on the reservoir in the site's southwestern corner, in every site inspection (2004, 2007 and 2024).

Montia australasica (White Purslane): Recorded by Mueck and Timewell (1998).

Pelargonium australe (Austral Stork's-bill): Recorded by Mueck and Timewell (1998), one of only two records of the species in Knox.

Pimelea curviflora (Curved Rice-flower): Present in unknown numbers on private grazing land in the site's west.

Poa labillardierei (Common Tussock-grass): Found by the author beside Cornish Rd in 2003, in the site's southwest in 2007, and by Mueck & Timewell at the Hanson Quarry in 1998.

Ranunculus amphitrichus (Small River Buttercup): Recorded by Mueck and Timewell (1998), the only record in Knox's history.

Ranunculus glabrifolius (Shining Buttercup): The author found a small patch beside Quarry Track in 2023, adjacent to the *Gratiola pubescens*.

Ranunculus pumilio (Fan-leaf Buttercup): Recorded by Mueck and Timewell (1998), the only record in Knox.

Rytidosperma geniculatum (Kneed Wallaby-grass): Moderately common in the site's southwest and perhaps elsewhere.

Wahlenbergia gracilenta (Hairy Annual Bluebell): Recorded by Mueck and Timewell (1998); one of only two records in Knox, the other being just outside the site boundary in Heany Park.

Wolffia australiana (Tiny Duckweed): Large numbers were found by the author in 2004 and 2007 on the disused reservoir in the site's southwestern corner.

Fauna of special significance

Listed as Vulnerable under Victorian law

Powerful Owl. Reported repeatedly from the area, including two nest trees.

Rare and threatened in metro Melbourne

Spotted Brown Butterfly: The Lysterfield Hills are one of the strongholds of this generally localised species.

Tree Dragon: Photographed by Adam Loy in the site's southwestern corner in 2019.

Peregrine Falcon. A pair is (or has been) resident, nesting on a quarry cliff.

Locally threatened

Fan-tailed Cuckoo
White-throated Treecreeper
Yellow-faced Honeyeater
White-eared Honeyeater
Rufous Whistler
Grey Shrike-thrush

} Each recorded in ten or more years, including recent years.

Black Wallaby. Reported by both John Erwin (Knox City Council) and in the 1998 report by Mueck and Timewell.

Fauna habitat features

- Quarry cliffs have been used as nest sites for Peregrine Falcons;
- The combination of shrubby, treed areas and open grassland is ideal for the large kangaroo population;
- The tree canopy and shrubs provide habitat for invertebrates, bats, possums and a wide variety of forest birds;
- There are mature trees with hollows suitable for nesting or other occupation by native birds, bats, possums or invertebrates;
- Fallen timber provides the sort of cover required by many reptiles and invertebrates;
- The abundant large wattles produce sap that is eaten by Krefft's Gliders (aka Sugar Gliders), which have been seen in this site and the adjacent Heany Park;
- The grassy groundcover provides fodder for butterfly caterpillars and other invertebrates, including Spotted Brown butterflies;
- It is likely that some butterfly species congregate on the ridgetop (a common behaviour known as hilltopping);
- The disused reservoir in the site's southwest, along with its wetland vegetation, provide habitat for waterbirds, frogs and aquatic invertebrates, and drinking water for other native fauna such as kangaroos and wallabies. It is unclear what habitat value there may be in the waterbodies on the quarry land.

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

This site is part of a large habitat corridor extending from Dandenong Ck in the Dandenong Police Paddocks Reserve to Birdsland Reserve in Belgrave Heights, and beyond. Criterion 1.2.6 attributes **Regional** significance to any corridor that meets the description 'Important at regional scale (link within bioregion or catchment)', which is a reasonable description of the corridor of interest here. Criterion 1.1.2 also awards Local significance to 'areas of 100 ha or more of contiguous native vegetation in a heavily fragmented landscape', which applies to the Lysterfield Hills.

Regionally Threatened Ecological Vegetation Classes

Valley Heathy Forest is a regionally-endangered EVC and most of it in the site's southwestern corner meets the definition of a 'remnant patch' adopted by the standard criteria, i.e. a continuous area of at least 0.25 ha in which the cover of native understorey is at least 10% throughout. Under Appendix 3 of *Victoria's Native Vegetation Management – a Framework for Action* (NRE 2002a), any remnant patch of a regionally-endangered EVC has a conservation significance rating of at least 'High'. This translates to **State** significance under criterion 3.2.3 of Amos (2004).

Creekline Herb-rich Woodland is also regionally-endangered but this study could not check whether any of it within Site 81 meets the definition of a 'remnant patch'. If so, it is of State significance on the same basis as the Valley Heathy Forest.

Grassy Forest is regionally vulnerable. Much of the site's Grassy Forest visible from publicly-accessible land meets the definition of a 'remnant patch' and has a habitat score clearly exceeding the threshold of 0.3 to have a conservation significance of 'High' under the abovementioned Appendix 3. Again, a 'High' conservation significance in Appendix 3 translates to **State** significance under criterion 3.2.3 of Amos (2004).

At least some of the Valley Grassy Forest meets the definition of a 'remnant patch' and it is very likely to have a habitat score above 0.3, thereby achieving **State** significance on the same basis as the Grassy Forest.

Under the guidelines of the Department of Energy, Environment and Climate Action, the disused reservoir's wetland vegetation does not qualify as representing any EVC because the reservoir is an artificial feature. That is despite its vegetation matching that of some natural wetlands of high conservation significance.

Threatened Plants

The Herb-rich Foothill Forest on the southeastern slopes contains a sizeable population of Dandenong Range Cinnamon Wattle (*Acacia stictophylla*). That species is listed as Endangered under the *Flora and Fauna Guarantee Act* and it does not occur outside Victoria. Any known habitat for such a species meets criterion 3.1.2 for **National** significance.

The area surrounding the reservoir in the site's southwestern corner is known habitat for the Bulging Fireweed (*Senecio campylocarpus*) in 2024. That species is listed under the *Flora and Fauna Guarantee Act* as Endangered in Victoria and it also occurs interstate. Any known habitat for such a species meets criterion 3.1.2 for **State** significance.

The spear-grass, *Austrostipa rudis* subsp. *australis*, is similarly listed as Endangered and it also occurs outside Victoria. It was seen by the author on the Girl Guides land next to Heany Park in July 2009. It is very unlikely to have died out throughout the whole site. Therefore, its habitat in the site is of **State** significance on the same basis as the Bulging Fireweed. A broader survey at a better time of year would be needed to determine the distribution and population size.

Dozens of the site's locally-threatened plant species have clearly viable populations, thereby meeting criterion 3.1.5 for **Local** significance. Many others would probably qualify in the same way if a survey were done to check their population sizes.

Threatened Fauna

The Powerful Owl is listed as Vulnerable in Victoria and its distribution is not confined to Victoria. It has been known to frequent, roost and nest in the Lysterfield Hills. The birds in the site are part of the wider ranging population in and around the Dandenong Ranges. This represents **Regional** significance under criterion 3.1.2.

The other species listed in the section above headed 'Fauna of special significance' are believed to be threatened locally or in the Melbourne area, but not throughout the whole of the relevant bioregion. They are likely to have viable populations (at least at the current point on the quarries' trajectory of habitat destruction). This represents **Local** significance under criterion 3.1.5.

Threats

- Continuing habitat destruction to facilitate quarry expansion, particularly into the Crown land;
- Continuing tree deaths and consequent habitat collapse due to the hydrological effects of extending the edges of quarry pits into lower terrain (i.e. reduced catchment size and a falling water table), affecting the Damp Forest and Herb-rich Foothill Forest of the southeastern slopes within the site and far into Lysterfield Park;
- Displacement of indigenous flora and fauna by environmental weeds. The species of greatest concern are Boneseed (*Chrysanthemoides monilifera* subsp. *monilifera*), Sweet Pittosporum (*Pittosporum undulatum*), Gorse (*Ulex europaeus*) and broom species. South African Daisy (*Senecio pterophorus*) appears to be in a phase of rapid expansion and may come to rival the species just mentioned;
- Human-induced climate change, which is predicted to cause more severe droughts, heatwaves, floods, fires and storms, as well as substantially lower rainfall (particularly in winter);

- Continuing decline in the health of eucalypts, which are quite vulnerable to the abovementioned droughts and storms and many are already suffering water stress from the abovementioned hydrological effects of quarry expansion;
- Loss or decline of plant species that have such small populations that they are vulnerable to inbreeding, poor reproductive success or chance events such as being struck by a falling tree limb.

Strategic planning

- Schedule 1 of the Environmental Significance Overlay (ESO1) was created in 2009 specifically for 27 Reservoir Crescent (the property with the disused reservoir in the site's southwestern corner). As a result of the previous (2010) edition of this report, Schedule 2 (ESO2) replaced ESO1 and was applied to sites of biological significance throughout Knox, including the whole of Site 81. The reasons for applying ESO2 to Site 81 were the matters of biological significance known at that time plus the likelihood of additional such matters on land that had not been examined by biologists. The only subsequent material changes affecting those reasons are: (a) the discovery of additional threatened species; (b) the listing of the Dandenong Range Cinnamon Wattle, Bulging Fireweed and *Austrostipa rudis* subsp. *australis* as Endangered in Victoria, raising the site's significance; (c) the loss of a sizeable amount of significant habitat due to quarry expansion; and (d) profound ecological harm done to habitat in the site's southeast and Lysterfield Park due to hydrological changes from quarry expansion. These changes strengthen the rationale for applying ESO2 to the site. The only recommendation to amend ESO2 for the site is to make the very minor boundary refinements needed to match the site boundary adopted here.
- The site is outside the Urban Growth Boundary.

Information sources used in this assessment

- A draft report prepared for Pioneer Concrete (Vic) Pty Ltd: Mueck S.G. and Timewell C.A. (1998), *'Ecological Assessment of Native Vegetation Adjacent to a Proposed Extension of the Lysterfield Quarry'*;
- An ecological survey by Dr Lorimer for 3 hours 50 minutes on 25/7/04 within the most southwesterly lot in the site (27 Reservoir Crescent, Rowville, with the disused reservoir), including:
  - Compilation of lists of indigenous and introduced plant species in each of two vegetation types;
  - Description of the structural and floristic composition of each type of native vegetation;
  - Mapping and documentation of rare species populations and the ecological condition of the vegetation;
  - Incidental fauna observations;
  - Checks for fauna habitat, ecological threats and management issues;
- Similar information collected by Dr Lorimer on 25/11/97 along Wellington Rd (the site's northern edge), looking into the Boral Quarry land, in preparation for the report, *'A Survey and Management Plan for Significant Vegetation of Roadsides in Knox'* by G.S. Lorimer for Knox City Council (May 1998, 137 pp.);
- Similar information collected by Dr Lorimer on 25/4/03 along Cornish Rd (the site's northeastern edge), looking into the Boral Quarry land;
- Similar information collected by Dr Lorimer on 10/12/07 at 5A Reservoir Crescent;
- A follow-up survey of 27 Reservoir Crescent by Dr Lorimer on 10/12/07 to provide up-to-date information that was presented at a planning panel hearing for ESO1 on 31/1/08;
- A walk by Dr Lorimer with parties to the abovementioned planning panel on 31/1/08 across the three most southwesterly lots within the site;
- A botanical survey of 1&29 Summit Rd, Lysterfield by Dr Lorimer on 19th March 2014;
- A botanical survey along (and adjacent to) Quarry Track led by Dr Lorimer with members of the Knox Environment Society and the Field Naturalists Club of Victoria on 21st October 2023;
- Inspection of part of the site's western fringe by Dr Lorimer from Heany Park and Reservoir Crescent on 26th September 2024;
- A brief follow-up botanical survey of 27 Reservoir Crescent by Dr Lorimer on 26th September 2024, compiling two lists of wild indigenous plant species (one for the reservoir and one for dry land) and checking for changes in features relevant to this report compared with pre-existing information;
- An inspection of 1276 Wellington Rd, Lysterfield on 28th September 2024;
- Records of flora and fauna observations stored in the Atlas of Living Australia;
- Aerial and satellite imagery from between 1946 and 2025;

- The Victorian Government's 'NatureKit' website;
- Maps of geology, topography and strategic planning information produced by agencies of the Victorian Government.