

## Site 3. End of The Avenue, Ferntree Gully

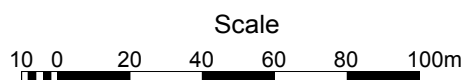
Private land and Council reserve between the dead end of The Avenue and Aldi supermarket. Melway ref. 74 B4.

### Site Significance Level: *State*

- The Ecological Vegetation Class of the vegetation on the site (Valley Heathy Forest) is endangered;
- It is moderately degraded but has mature, remnant eucalypts and three lower strata of native vegetation;
- The site's flora is not particularly rich for Valley Heathy Forest due to the small area, past clearing and weed invasion.



Aerial photograph taken February 2007



### Boundaries

The site is outlined in red above, measuring 7,900 m<sup>2</sup>. It includes 56 The Avenue (two parcels), 59 The Avenue and adjacent Common Property on and above the cliff face from a former quarry.

**Land use & tenure:** 56 The Avenue is a Council reserve, acquired in 2007. 59 The Avenue is vacant private land, formerly an unused road reservation. The rest of the site (the cliff and its brow) is Common Property of the adjacent shops.

### Site description

The site includes an old quarry cliff (5-15 m high) and two properties bordering the top of the cliff. Apart from the cliff, the slope is shallow (typically 1:6), lying midway down the southern slope of a knoll at the southern end of a ridge. The elevation varies from 100 m at the base of the cliff to 123m at the northwestern corner of 59 The Avenue. The quarry exposes the hornfels bedrock that was formed by metamorphism at the interface between the Lower Devonian sedimentary geology to the west and the Upper Devonian volcanic flows of the Mt Dandenong group to the east. The hardness of hornfels has resulted in the formation of the north-south ridge on which the site is situated. The soil is a light grey loam over clay subsoil.

All of the native vegetation surveyed shows marked signs of past clearing, excavation and consequent weed invasion, but the extent of weed invasion is highly variable.

There are some large remnant eucalypts, many decades old. The understorey comprises three strata and has regrown following clearing several decades ago.

The most natural native understorey occurs in a strip along the brow of the cliff, on the shopping centre's Common Property. Several indigenous plant species in this strip are either not found elsewhere in the site or only in smaller numbers, including the locally threatened Sweet Hound's-tongue (*Cynoglossum suaveolens*) and a solitary Curved Rice-flower (*Pimelea curviflora*). This strip also supports a large population of Yellow Bulbine-lily (*Bulbine bulbosa*) in Knox, whose only other two recorded occurrences in Knox were over a decade ago, with much smaller numbers and quite likely since destroyed by residential development.

The vegetation of the cliff face is in a quite immature stage of regeneration, comprising a mixture of wildflowers, eucalypt saplings, young pines and other woody weeds. Depending on how it is managed in the next few years, it could become either an effective wildflower sanctuary or a grove of pines with a few hardy indigenous plants. A less steep section at the eastern end of the cliff supports substantial populations of some indigenous plant species that are absent elsewhere in the area, such as substantial numbers of *Leptorhynchus tenuifolius* and *Thelymitra ?peniculata*, but none of these species are rare or threatened throughout Knox.

The ecological condition of more than half of the survey area is the bottom rating, 'D'. The worst ecological condition is in the northwestern corner and on much of the lower slopes of the cliff.

Most of the native understorey on 59 The Avenue was bulldozed, sprayed with herbicide and sown with ryegrass in 2007. The ryegrass failed to establish properly and native understorey is regenerating. A proper assessment of the property's ecological condition will probably become possible by spring 2008, unless further destructive activities are conducted.

The site's history of clearing, excavation and weeds has resulted in the undoubted loss of some species, but the large number of indigenous plant species recorded (80 species of flowering plant and one fern) suggests that the vegetation retains a good basis for ecological recovery if properly managed.

### Relationship to other land

There is a canopy of scattered remnant eucalypts over the kilometre-long ridge on which this site is situated. This canopy, combined with mature non-indigenous trees, appears to facilitate movement of some birds and possums to and from the site. However, the size of the site is too small for birds to spend much time there, and many species of native birds and insects may be discouraged from visiting because native understorey is practically non-existent for a radius of 700 m from the site. More mobile fauna may visit the site *en route* between more substantial areas of habitat, particularly the Dandenong Ranges National Park 1.2 km away. Some birds probably visit while following the general route of Ferny Creek (Site 66).

Overall, the tree canopy is moderately well connected to more substantial habitat, but the understorey is quite isolated. That isolation no doubt creates a significant risk of inbreeding of plants, given that the site is too small to have healthy numbers of many species.

**Bioregion:** Mapped by the Department of Sustainability & Environment as being a few hundred metres within the Gippsland Plain bioregion; however the topography, geology and botanical composition of the vegetation have some affinities with the Highlands Southern Fall bioregion.

### Habitat type

Valley Heathy Forest (EVC 127, **regionally Endangered**), approaching Valley Grassy Forest (EVC 47, regionally Vulnerable). Estimated as 7,000 m<sup>2</sup> of native vegetation, comprising 200 m<sup>2</sup> in ecological condition B (good), 900 m<sup>2</sup> in ecological condition C (fair) and 6,800 m<sup>2</sup> in ecological condition D (poor).

**Dominant canopy trees:** In the more natural areas, *Eucalyptus melliodora* dominates, followed by (in decreasing order) *E. goniocalyx*, *E. macrorhyncha*, *E. radiata* and *E. obliqua*. The tree crowns overlap slightly except where clearing has opened the canopy. *Pinus radiata* (planted and wild) are abundant in the west and on the cliff face.

**Dominant lower trees:** *Exocarpos cupressiformis* is abundant and *Acacia melanoxylon* is scattered. *Acacia mearnsii* was present on 59 The Avenue until 2007, when the property was mostly cleared.

**Shrubs:** Mostly 2-3 m tall and of variable density, depending on the recent history of weed growth, weed control and other disturbance. *Bursaria spinosa* is abundant. *Cassinia aculeata*, *Coprosma quadrifida*, *Leptospermum scoparium* and *Ozothamnus ferrugineus* are scattered thinly. *Acacia leprosa* is represented by four individuals. Visibility is typically 50 m in the less weed-affected areas.

**Vines:** *Cassytha melanantha* is in small numbers. *Clematis aristata* is represented by four plants. *Comesperma volubile* and *Hardenbergia violacea* are each represented by two plants. *Pandorea pandorana* is represented by a few individuals.

**Ferns:** The only fern is a single, small *Pteridium esculentum* whose above-ground parts had recently been destroyed during the November 2007 survey.

**Ground flora:** Densely grassy. The dominant indigenous species are *Poa morrisii*, *Rytidosperma racemosum* and *Microlaena stipoides*. The following species are abundant (at least in some parts of the site) but with less foliage cover than the dominant grasses: *Lomandra filiformis* subsp. *coriacea*, *Arthropodium strictum*, *Rytidosperma pallidum*, *Rytidosperma setaceum*, *Rytidosperma tenuius*, *Deyeuxia quadriseta*, *Elymus scaber*, *Dillwynia cinerascens*, *Dianella longifolia*, *Bulbine bulbosa*, *Leptorhynchos tenuifolius* and *Plantago varia*. The characteristic species *Themeda triandra*, *Lepidosperma laterale* and *Platylobium formosum* are present but not abundant.

### Plant Species

In 2007-8, 80 indigenous species of flowering plant, one fern and two mosses were found – a large number for such a small patch of native vegetation. In the plant list below, the column headed ‘Risk’ indicates the indigenous species’ risk of extinction in Knox with ‘E’=Endangered and ‘V’=Vulnerable. In addition, *Acacia leprosa* (Dandenong Range variant) is listed by Walsh and Stajsic (2007) as Rare nationally.

Risk	Indigenous Species (alphabetical)	Risk	Indigenous Species (alphabetical)
V	<i>Acacia leprosa</i> (Dandenong Range variant)	V	<i>Hardenbergia violacea</i>
V	<i>Acacia mearnsii</i>	E	<i>Hypericum gramineum</i>
V	<i>Acacia melanoxylon</i>		<i>Hypnum cupressiforme</i>
E	<i>Acacia stricta</i>		<i>Juncus amabilis</i>
V	<i>Acrotriche prostrata</i>		<i>Juncus pallidus</i>
	<i>Acrotriche serrulata</i>	E	<i>Juncus subsecundus</i>
V	<i>Adiantum aethiopicum</i>	V	<i>Lepidosperma laterale</i>
	<i>Arthropodium strictum</i>	V	<i>Leptorhynchos tenuifolius</i>
	<i>Austrostipa pubinodis</i>	E	<i>Leptospermum scoparium</i>
	<i>Austrostipa rudis</i> subsp. <i>rudis</i>		<i>Lomandra filiformis</i> subsp. <i>coriacea</i>
	<i>Billardiera mutabilis</i>		<i>Lomandra filiformis</i> subsp. <i>filiformis</i>
V	<i>Brunonia australis</i>		<i>Lomandra longifolia</i>
E	<i>Bulbine bulbosa</i> (120 plants, most of Knox’s entire population of the species)		<i>Microlaena stipoides</i>
	<i>Bursaria spinosa</i>		<i>Myoporum parvifolium</i>
	<i>Campylopus clavatus</i>	V	<i>Opercularia varia</i>
	<i>Carex breviculmis</i>		<i>Oxalis exilis/perennans</i>
	<i>Cassinia aculeata</i>	E	<i>Ozothamnus ferrugineus</i>
	<i>Cassinia arcuata</i>		<i>Pandorea pandorana</i>
V	<i>Cassinia longifolia</i>	E	<i>Pimelea curviflora</i> (one only)
E	<i>Cassytha melantha</i>	V	<i>Pimelea humilis</i>
V	<i>Clematis aristata</i>	V	<i>Plantago varia</i>
V	<i>Comesperma volubile</i>	V	<i>Platylobium formosum</i>
V	<i>Coprosma quadrifida</i>		<i>Poa morrisii</i>
E	<i>Cynoglossum suaveolens</i> (two plants)		<i>Poranthera microphylla</i>
E	<i>Daviesia leptophylla</i>		<i>Pteridium esculentum</i>
	<i>Deyeuxia quadriseta</i>	E	<i>Rytidosperma ?caespitosum</i> (one only)
	<i>Dianella admixta</i>		<i>Rytidosperma laeve</i>
V	<i>Dianella longifolia</i> s.l.		<i>Rytidosperma pallidum</i>
V	<i>Dianella tasmanica</i>		<i>Rytidosperma penicillatum</i>
	<i>Dichelachne rara</i>		<i>Rytidosperma racemosum</i>
	<i>Dichondra repens</i>		<i>Rytidosperma setaceum</i>
V	<i>Dillwynia cinerascens</i>		<i>Rytidosperma tenuius</i>
	<i>Elymus scaber</i>		<i>Schoenus apogon</i>
	<i>Eucalyptus goniocalyx</i>		<i>Senecio hispidulus</i>
E	<i>Eucalyptus macrorhyncha</i>	E	<i>Senecio prenanthoides</i>
V	<i>Eucalyptus melliodora</i>		<i>Senecio quadridentatus</i>
V	<i>Eucalyptus obliqua</i>	E	<i>Stackhousia monogyna</i>
E	<i>Eucalyptus radiata</i>	E	<i>Stylidium armeria/graminifolium</i>
V	<i>Exocarpos cupressiformis</i>		<i>Themeda triandra</i>
	<i>Gahnia radula</i>		<i>Thuidiopsis furfurosa</i>
V	<i>Geranium ?sp. 2</i>	E	<i>Wahlenbergia gracilis</i>
V	<i>Glycine clandestina</i>	V	<i>Xanthorrhoea minor</i>
	<i>Gonocarpus tetragynus</i>		

### Introduced Species

<i>Agapanthus praecox</i>	<i>Crassula multicava</i>	<i>Malus pumila</i>
<i>Agrostis capillaris</i>	<i>Crataegus monogyna</i>	<i>Oxalis incarnata</i>
<i>Aira ?elegantissima</i>	<i>Cynosurus echinatus</i>	<i>Pinus radiata</i>
<i>Allium triquetrum</i>	<i>Dactylis glomerata</i>	<i>Pittosporum undulatum</i>
<i>Anthoxanthum odoratum</i>	<i>Ehrharta erecta</i>	<i>Plantago lanceolata</i>
<i>Arbutus unedo</i>	<i>Ehrharta longiflora</i>	<i>Prunus cerasifera</i>
<i>Asparagus scandens</i>	<i>Erica lusitanica</i>	<i>Romulea rosea</i>
<i>Briza maxima</i>	<i>Eriobotrya japonica</i>	<i>Rubus anglocandicans</i>
<i>Bromus catharticus</i>	<i>Hakea salicifolia</i>	<i>Solanum nigrum</i>
<i>Bromus diandrus</i>	<i>Hedera helix</i>	<i>Sonchus oleraceus</i>
<i>Centaurium erythraea</i>	<i>Holcus lanatus</i>	<i>Trifolium repens</i>
<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>	<i>Hypochoeris radicata</i>	<i>Vicia disperma</i>
<i>Cirsium vulgare</i>	<i>Ixia polystachya</i>	<i>Vicia hirsuta</i>
<i>Cotoneaster glaucophyllus</i>	<i>Ligustrum lucidum</i>	<i>Vicia sativa</i>
<i>Cotoneaster pannosus</i>	<i>Lolium perenne</i>	<i>Watsonia meriana</i> var. <i>bulbillifera</i>
<i>Cotoneaster simonsii</i>	<i>Lonicera japonica</i>	

### Fauna habitat features

There are patches of dense shrubs, which are good habitat for small birds, but the isolation of the reserve from other understorey minimises the benefit of this. There are large, mature trees with hollows that may be used by birds, possums and bats.

### Significance ratings

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

#### *Regionally Threatened Ecological Vegetation Class*

This site contains a 'remnant patch' of an endangered EVC. According to 'Victoria's Native Vegetation Management – A Framework for Action' (NRE 2002a), vegetation belonging to an endangered EVC has a conservation significance rating of either High or Very High, depending on its ecological condition. In either case, any site containing a remnant patch of such vegetation is of **State** significance under criterion 3.2.3.

#### *Rare plants*

The Dandenong Range variant of *Acacia leprosa* is listed as 'rare' nationally and in Victoria. The population in this site is so small that its long-term viability is in question and it does not make a significant contribution to the total population of the taxon. This represents **Local** significance under criterion 3.1.2 of the standard criteria.

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

### Threats

The following are the main pressures threatening to lessen the reserve's conservation significance, in approximately decreasing order of severity:

- Invasion by grass weeds (particularly Sweet Vernal Grass);
- Invasion by Blackberry and woody weeds such as Sweet Pittosporum;
- Potential invasion by Asparagus Fern, which is present just southeast of the site;
- 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 cubby house construction or digging by dogs;
- Reduced visitation of the site by small insect-eating birds due to its isolation from other areas with indigenous understorey, possibly leading to a worsening of plant pests and diseases;
- Potential site development. (The severity of this risk in relation to the others is not a biological matter and so its correct position in this list is indeterminate in this study.)

### Management issues

- There has been excellent control of Blackberry and woody weeds in January 2003. Follow-up will be needed for this to have lasting effect, particularly where the ground has been laid bare;
- Grass weeds might be controlled by spot spraying with grass-specific herbicide.

**Administration matters**

- This site is worthy of inclusion within the proposed Environmental Significance Overlay, ESO2, because of its biological significance (discussed above) and the possibility of future subdivision;
- The site is included within Vegetation Protection Overlay VPO3 of the Knox Planning Scheme.

**Information sources used in this assessment**

- Detailed vegetation data and mapping in accord with this study's standard approach described in Section 2.4 of Vol.1, including a list of indigenous and introduced plant species, compiled by Dr Lorimer over one hour in January 2003;
- Detailed botanical assessment of the site by Dr Lorimer for a bushland management plan in 2008;
- 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.