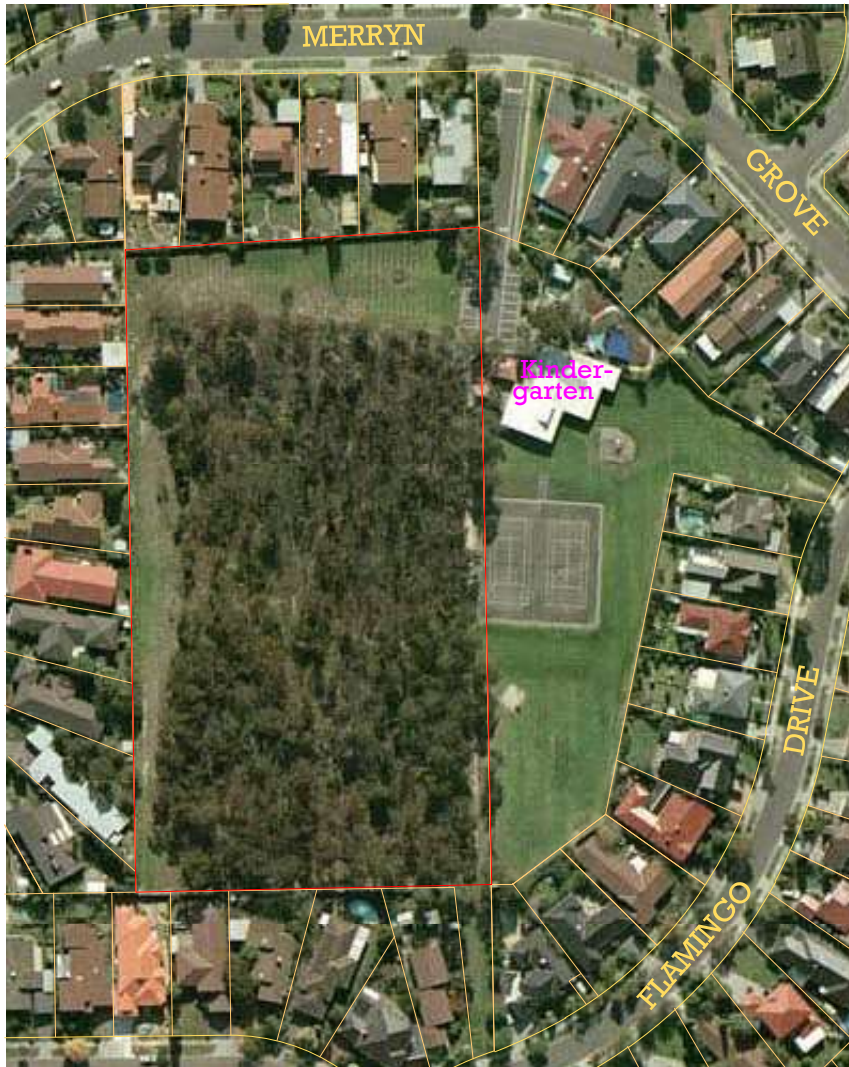


Site 56. Flamingo Reserve, Wantirna

Bushland section of a Council park. Melway ref. 63 F11.

Site Significance Level: *State*

- The native vegetation is regrowth of the endangered Valley Heathy Forest, partly in quite good condition;
- There are 108 indigenous plant species (a large number for an area this small);
- There are ten plant species that are locally threatened and at least one (*Acacia acinacea*) that is found nowhere else in Knox.



Scale 1:2,000
0 20 40 60 80 100m

Aerial photograph taken April 2003

Boundaries

This 1.827 ha site is outlined in red above, comprising the whole of a single lot.

Land use & tenure: Part of a Council reserve, managed for conservation of bushland and for public enjoyment.

Site description

This site lies halfway up the eastern flank of the low ridge between Dandenong Creek and Blind Creek. Elevations are 77-87 m and the shallow slope (6-7% gradient) has a variable aspect between west and south-southwest. The soil is shallow, poorly draining, light grey loam over clay subsoil, derived from decomposition of the underlying Lower Devonian sedimentary rocks of the Humevale formation.

The site's geology has been explored with bores, as evidenced by small mounds of extracted rock in the reserve and by a 1969 Geological Survey map showing a north-south line of bores through the reserve.

The geological exploration and associated use of heavy machinery may have involved clearing the site's vegetation, which would explain why there are no large trees left today. The regrowth is reaching maturity and much of it has a rich understorey in fairly good ecological condition. It belongs to the Ecological Vegetation Class, Valley Heathy Forest, which is endangered and characteristically rich in species. The prevalence of weeds has been declining in recent years (Lorimer 2007a).

The reserve is particularly notable for the number of plant species that are known at only one or two other sites in Knox.

Relationship to other land

Flamingo Reserve is fairly isolated from other bushland.

Birds and insects would generally be able to fly between Flamingo Reserve and the Timmothy Drive Bushland (0, 300 m south). Flamingo Reserve's small size probably detracts substantially from its attractiveness to most birds, as indicated by the poor range of species observed during the fieldwork, but the great diversity of eucalypts may attract certain nectar-loving birds during flowering times.

Bioregion: Gippsland Plain

Habitat types

Valley Heathy Forest (EVC 127, Endangered): 1.33 ha, estimated to comprise 0.02 ha in excellent ecological condition (rating A), 0.46 ha in good ecological condition (rating B), 0.64 ha in fair ecological condition (rating C) and 0.21 ha in poor ecological condition (rating D).

Canopy trees: Dominated by *Eucalyptus goniocalyx* and *E. macrorhyncha*, mixed with plenty of *E. melliodora*, moderate numbers of *E. radiata* and fewer *E. obliqua*. *E. cephalocarpa* is scarce.

Lower trees: Dominated by *Exocarpos cupressiformis*, *Acacia mearnsii*.

Shrubs: The shrub layer is prickly and is dense in patches. The most abundant species are *Bursaria spinosa* and *Kunzea ericoides*. *Leptospermum continentale* and *Leptospermum scoparium* are also present and may have been more abundant once.

Vines: *Billardiera mutabilis* is abundant. There is one individual of each of *Clematis microphylla* and *Pandorea pandorana*. The climbing parasite, *Cassytha pubescens*, is also present.

Ferns: Only represented by a solitary *Lindsaea linearis*. *Pteridium esculentum* is unexpectedly absent.

Ground flora: Densely grassy or sedgy and dominated by *Rytidosperma pallidum* in some areas and *Gahnia radula* in others (the latter particularly where there has been fire or obvious soil disturbance). Characteristically rich in species, including characteristic species such as *Hibbertia riparia* and *Platylobium obtusangulum*. Other species present that are typical of Valley Heathy Forest include *Poa morrisii*, *Microlaena stipoides*, *Austrostipa rudis*, *Themeda triandra*, *Rytidosperma* species *Acacia aculeatissima*, *Bossiaea prostrata*, *Dillwynia cinerascens*, *Drosera whittakeri*, *Epacris impressa*, *Hardenbergia violacea*, *Lomandra filiformis*, *Lomandra longifolia*, *Viola hederacea*, *Xanthorrhoea minor* and many lily species.

Plant species

In the following plant list, 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
C	<i>Acacia acinacea</i> s.l.		<i>Austrostipa pubinodis</i>
E	<i>Acacia aculeatissima</i>		<i>Austrostipa rudis</i> subsp. <i>rudis</i>
V	<i>Acacia mearnsii</i>		<i>Billardiera mutabilis</i>
V	<i>Acacia melanoxydon</i>		<i>Bossiaea prostrata</i>
E	<i>Acacia myrtifolia</i>	V	<i>Brunonia australis</i>
	<i>Acacia paradoxa</i>		<i>Burchardia umbellata</i>
V	<i>Acaena echinata</i>		<i>Bursaria spinosa</i>
	<i>Acaena novae-zelandiae</i>	V	<i>Caesia parviflora</i>
	<i>Acrotriche serrulata</i>		<i>Campylopus</i> sp.
V	<i>Allocasuarina littoralis</i>		<i>Carex breviculmis</i>
C	<i>Amyema pendula</i>		<i>Cassinia aculeata</i>
C	<i>Arthropodium milleflorum</i> s.l.		<i>Cassinia arcuata</i>
	<i>Arthropodium strictum</i>	V	<i>Cassinia longifolia</i>

Risk	Indigenous Species	Risk	Indigenous Species
E	<i>Cassytha pubescens</i>		<i>Lomandra filiformis</i> subsp. <i>coriacea</i>
E	<i>Centella cordifolia</i>		<i>Lomandra filiformis</i> subsp. <i>filiformis</i>
C	<i>Chrysocephalum semipapposum</i>		<i>Lomandra longifolia</i> (wild & planted)
NA	<i>Clematis decipiens</i>	V	<i>Luzula meridionalis</i>
V	<i>Coprosma quadrifida</i>	V	<i>Lythrum hyssopifolia</i>
E	<i>Correa reflexa</i>		<i>Microlaena stipoides</i>
V	<i>Crassula decumbens</i>		<i>Microtis parviflora</i>
E	<i>Daviesia leptophylla</i>	V	<i>Opercularia varia</i>
	<i>Deyeuxia quadriseta</i>		<i>Oxalis exilis/perennans</i>
V	<i>Dianella longifolia</i> s.l. (planted)	E	<i>Ozothamnus ferrugineus</i>
	<i>Dianella admixta</i>		<i>Pandorea pandorana</i>
	<i>Dichelachne rara</i>	V	<i>Pimelea humilis</i>
V	<i>Dillwynia cinerascens</i>	V	<i>Plantago varia</i>
V	<i>Drosera peltata</i> subsp. <i>auriculata</i>	V	<i>Platylobium formosum</i>
V	<i>Drosera whittakeri</i>	V	<i>Platylobium obtusangulum</i>
	<i>Elymus scaber</i>	C	<i>Poa clelandii</i>
V	<i>Epacris impressa</i>		<i>Poa ensiformis</i>
	<i>Eragrostis brownii</i>		<i>Poa morrisii</i>
V	<i>Eucalyptus cephalocarpa</i>	E	<i>Poa tenera</i>
	<i>Eucalyptus goniocalyx</i>		<i>Poranthera microphylla</i>
E	<i>Eucalyptus macrorhyncha</i>		<i>Ptychomnion aciculare</i>
V	<i>Eucalyptus melliodora</i>	E	<i>Ranunculus lappaceus</i>
V	<i>Eucalyptus obliqua</i>		<i>Rytidosperma laeve</i>
E	<i>Eucalyptus radiata</i>		<i>Rytidosperma pallidum</i>
V	<i>Euchiton collinus</i>		<i>Rytidosperma penicillatum</i>
V	<i>Exocarpos cupressiformis</i>	V	<i>Rytidosperma pilosum</i>
	<i>Gahnia radula</i>		<i>Rytidosperma racemosum</i>
V	<i>Geranium</i> sp. 2		<i>Rytidosperma setaceum</i>
	<i>Gonocarpus tetragynus</i>		<i>Rytidosperma tenuius</i>
	<i>Goodenia lanata</i>		<i>Schoenus apogon</i>
	<i>Goodenia ovata</i>		<i>Senecio glomeratus</i>
V	<i>Hardenbergia violacea</i>		<i>Senecio hispidulus</i>
V	<i>Helichrysum scorpioides</i>	E	<i>Senecio minimus</i>
E	<i>Hibbertia riparia</i>	E	<i>Senecio ?prenanthoides</i>
V	<i>Hovea heterophylla</i>		<i>Senecio quadridentatus</i>
E	<i>Hydrocotyle foveolata</i>	V	<i>Solanum laciniatum</i>
E	<i>Hypericum gramineum</i>	E	<i>Spyridium parvifolium</i>
E	<i>Indigofera australis</i>	E	<i>Stackhousia monogyna</i>
E	<i>Isolepis marginata</i>	V	<i>Thelymitra</i> sp.
	<i>Kunzea ericoides</i> spp. agg.		<i>Themeda triandra</i>
	<i>Lachnagrostis filiformis</i>		<i>Thuidiopsis furfurosa</i>
V	<i>Lagenophora gracilis</i>	V	<i>Veronica gracilis</i>
V	<i>Lepidosperma laterale</i>	E	<i>Viola hederacea</i>
V	<i>Leptorhynchos tenuifolius</i>	E	<i>Wahlenbergia gracilis</i>
	<i>Leptospermum continentale</i>	E	<i>Wurmbea dioica</i>
E	<i>Leptospermum scoparium</i>	V	<i>Xanthorrhoea minor</i>
V	<i>Lindsaea linearis</i>	E	<i>Xanthosia dissecta</i>

Introduced Species

<i>Acacia baileyana</i>	<i>Asparagus scandens</i>	<i>Crassula multicava</i>	<i>Holcus lanatus</i>
<i>Acacia floribunda</i>	<i>Billardiera heterophylla</i>	<i>Crataegus monogyna</i>	<i>Hypochoeris radicata</i>
<i>Acacia iteaphylla</i>	<i>Briza maxima</i>	<i>Crepis capillaris</i>	<i>Lobelia erinus</i>
<i>Acacia longifolia</i> subsp. <i>longifolia</i>	<i>Briza minor</i>	<i>Dactylis glomerata</i>	<i>Lonicera japonica</i>
<i>Agrostis capillaris</i>	<i>Centaurium erythraea</i>	<i>Ehrharta erecta</i>	<i>Medicago polymorpha</i>
<i>Aira caryophyllea</i>	<i>Chrysanthemoides monilifera</i>	<i>Ehrharta longiflora</i>	<i>Melaleuca armillaris</i>
<i>Aira elegantissima</i>	<i>Cirsium vulgare</i>	<i>Fumaria bastardii</i>	<i>Oxalis incarnata</i>
<i>Allium triquetrum</i>	<i>Conyza bonariensis</i>	<i>Galium aparine</i>	<i>Oxalis pes-caprae</i>
<i>Anagallis arvensis</i>	<i>Conyza ?sumatrensis</i>	<i>Genista monspessulana</i>	<i>Phytolacca octandra</i>
<i>Anthoxanthum odoratum</i>	<i>Coprosma repens</i>	<i>Grevillea lavandulacea</i>	<i>Pinus radiata</i>
	<i>Cotoneaster glaucophyllus</i>	<i>Hedera helix</i>	<i>Pittosporum undulatum</i>

<i>Plantago lanceolata</i>	<i>Romulea rosea</i>	<i>Sonchus oleraceus</i>	<i>Trifolium dubium</i>
<i>Poa annua</i>	<i>Rubus anglocandicans</i>	<i>Stellaria media</i>	<i>Ulex europaeus</i>
<i>Ranunculus muricatus</i>	<i>Solanum nigrum</i>	<i>Taraxacum officinale</i>	<i>Vulpia bromoides</i>

Notes concerning some of the locally threatened plant species

Acacia acinacea (Gold-dust Wattle). Unique in Knox. 20 plants were found, a viable population.

Acacia aculeatissima (Thin-leaf Wattle). Approximately eight plants were found.

Arthropodium milleflorum (Pale Vanilla-lily). Three plants were found in an area that is periodically mown.

Clematis microphylla (Small-leafed Clematis). A solitary plant was found.

Correa reflexa (Common Correa). Five plants were found.

Crassula decumbens var. *decumbens* (Spreading Crassula). Many were found in an area that is periodically mown.

Hydrocotyle foveolata (Yellow Pennywort). Several plants were found in an area that is periodically mown.

Isolepis marginata (Little Club-rush). A solitary plant was found in an area that is periodically mown.

Luzula meridionalis (Common Woodrush). Numbers were not recorded.

Microtis parviflora (Slender Onion-orchid). Numbers were not recorded.

Poa clelandii (Matted Tussock-grass). One small patch was found in 1999 (from which a herbarium specimen was taken), but this species could not be found again in 2001.

Ranunculus lappaceus (Australian Buttercup). A solitary plant was found.

Spyridium parvifolium (Australian Dusty Miller). A solitary plant was found.

Wurmbea dioica (Common Early Nancy). Four flowering plants were found in an area that is periodically mown (probably preventing this species from producing seed).

Fauna of special significance

No significant species were found, but some lizards, numerous skippers and a good diversity of native ants was noticed incidentally. (Skippers are insects intermediate between butterflies and moths.) Each of these groups of fauna deserve further investigation.

Fauna habitat features

- A substantial number of logs and branches on the ground which, combined with dense ground flora, provides good habitat for reptiles;
- The high density and diversity of shrubs significantly improves the habitat for native insects and birds. The prickliness of many of the shrubs helps protect birds from cats;
- The trees are quite young and provide few hollows usable for nests or roosting;
- The abundant saw-sedge and native grasses are supporting abundant skippers and probably butterflies.

Significance ratings

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

Endangered Vegetation Types

Valley Heathy Forest is endangered. It follows from Appendix 3 of *Victoria's Native Vegetation Management - a Framework for Action* (NRE 2002a) that Flamingo Reserve's native vegetation is necessarily of at least High conservation significance. This, in turn, gives the site **State** significance under criterion 3.2.3 of Amos (2004).

Rare or Threatened Plants

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 Veldt-grasses (*Ehrharta erecta* and *E. longiflora*) beneath Cherry Ballarts – medium-level threat;
- Invasion by Large Quaking-grass (*Briza maxima*) – medium-level threat;
- Dumping of soil and garden waste;
- Trampling by dogs and people – medium-level threat;
- Critically small population sizes of several plant species, including the rare *Arthropodium milleflorum*;
- Fragmentation of habitat, leading to reduced visitation by small insect-eating birds and hence a risk of worsening plant pests and diseases.

Management issues

- Note that five of the rare or threatened plant species were found only in periodically mown locations on the edge of the bushland. The only change that should occur to the mowing regimen is to avoid cutting the *Arthropodium milleflorum* during the period when it flowers and sets seed (typically November to December).
- The southern quarter of the reserve was burned on 14/12/99 for ecological reasons. More burns are planned;
- Weed control at the time of the most recent site inspection (February 2002) was found to be achieving a steady, slow reduction in the influence of weeds;
- The plight of species that are present in critically small populations should be improved by planting more individuals after propagating them from seeds collected from nearby (e.g. W.G. Morris Reserve). This includes *Acacia aculeatissima*, *Clematis microphylla*, *Hibbertia riparia*, *Indigofera australis*, *Lindsaea linearis*, *Spyridium parvifolium*, *Xanthosia dissecta* and *Xanthorrhoea minor*;
- Seeds of the *Acacia acinacea* (which is unique in Knox) should be collected and securely stored in case the living population dwindles or is destroyed;
- All propagations and plantings should be documented in Council's files about the reserve.
- Knox City Council's current management is subject to a regular monitoring program; see '*Monitoring of Bushland Reserves in Knox*' and '*Monitoring of Bushland Reserves in Knox – 2002 Review*', both by Dr Lorimer for Knox City Council.

Administration matters

- It would be desirable to have an expert on ants and skippers (insects that are intermediate between butterflies and moths) survey the site in spring and summer, due to the abundance of these insects and the possibility that rare species are present;
- A reptile survey would also be desirable, but probably less important than in the case of insects;
- This site is worthy of inclusion within the proposed Environmental Significance Overlay, ESO2, because of its State significance, the locally rare and threatened plants and the endangered EVC;
- The site and the adjoining tennis courts, lawn and kindergarten are included under the existing Vegetation Protection Overlay Schedule 1 of the Knox Planning Scheme, based on the description of Site 4 of the report by Water Ecoscience (1998). The site described here is limited to the lot with native vegetation;
- The Planning Scheme zoning is Public Park and Recreation Zone (PPRZ).

Information sources used in this assessment

- Vegetation monitoring data, as described in the reports, '*Monitoring of Bushland Reserves in Knox*' (Lorimer 1999), '*Monitoring of Bushland Reserves in Knox – 2002 Review*' (Lorimer 2002) and '*Monitoring of Bushland Reserves in Knox – 2007 Review*' (Lorimer 2007a) for Knox City Council, comprising:
 - Lists of plant species (indigenous and introduced) observed in the reserve by Dr Lorimer on 16/10/98, 17/2/99, 27/2/02 and June 2007;
 - Maps and assessments of the population sizes and distributions of ten scarce plant species on the above dates;
 - Data from two quadrats, both surveyed by the author on 17/2/99, 27/2/99 and 1/6/07;
 - A list of fauna observed during the above botanical surveys; and
 - Photographs of six scenes that highlight aspects of the reserve's vegetation, taken in 1999 and repeated in 2002;
- Site surveys by Dr Lorimer on 1/10/01 and 29/11/01 for the report, '*Fire in Knox Bushland Reserves 2001*' by Lorimer (2001). This included:
 - An update to the reserve's list of plant species;
 - Detailed mapping of rare species populations and the ecological condition of the vegetation;
 - A description of the vegetation's structural and floristic composition;
 - Incidental fauna observations;
 - Checks for fauna habitat, ecological threats and management issues; and
 - Development of a strategy for ecological burning of the reserve, in consultation with Council and the Scoresby Fire Brigade;
- Data from four quadrats (DSE numbers N13176-N13179) compiled by Mr Andrew Paget in July 1985;
- Aerial photography from February 2001 and April 2003;
- 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.