Site 42. R.D. Egan-Lee Reserve, Knoxfield

A council reserve of 8·26 ha that includes 2½ ha of remnant forest. Melway ref. 73 A3.

Site Significance Level: *State*

- The native vegetation is the endangered Valley Heathy Forest, some of which is in good ecological condition;
- There are five plant species that are threatened with extinction in Knox and three others that are rare in Knox. Some of these species are present in dangerously small numbers;
- The ecological condition of native vegetation west of the playing fields has been improving steadily over recent years due to good management and the use of fire;
- The native vegetation east of the playing fields comprises not much more than a canopy of large old trees with hardy native grasses beneath, and this could serve as a basis for ecological restoration.

Aerial photograph taken April 2003

Boundaries

This site is in two parts, outlined in red above and totalling 2·68 ha. The boundaries of the western section follow property boundaries except along the eastern side, where a segmented line has been drawn to encompass trees but avoid the playing fields. The boundaries of the eastern section follow property boundaries on the south and east, and the other sides are a simple geometric circumscription of the native vegetation (which includes revegetation that has been planted since the aerial photograph was taken). The hatched areas have negligible native vegetation and are not of biological significance.

Although it is desirable to align site boundaries with lot boundaries wherever practicable, in this case it was deemed important not to impose the controls of an Environmental Significance Overlay on playing fields and associated cleared areas that may well need to be further developed in future.

Trees lining the entrance to the reserve from Wallace Rd are not included in the site. They are nevertheless protected to some degree under the Knox Planning Scheme by Clause 52.17.

Land use & tenure: Council reserve, zoned 'Residential 1 Zone'.

Site description

The site is on a very shallow, north-facing slope, with elevations of approximately 80-85 m. The slope is generally less than 2% for a radius of more than 1 km around the site. The soil is shallow, silty, light grey loam over clay subsoil, derived from decomposition of the underlying Lower Devonian sedimentary rocks of the Humevale formation.

The aerial photograph shows that half of the reserve is occupied by playing fields, pavilions and associated car parks. Neither these areas, nor the open expanse to the east of the playing fields, are of any environmental significance and do not materially affect the remnant native vegetation on the rest of the reserve.

There are also mown, open areas within the native vegetation. These areas are included within the boundaries of the site because their management and administration affects the adjacent native vegetation.

Areas with little or no native vegetation are hatched on the aerial photograph above.

All the native vegetation has a history of slashing or mowing. The shrub layer and some of the trees have been cleared from the site long ago. However, some of the native understorey west of the playing fields has shown a remarkable resilience since Council ceased slashing it in 1996 (or thereabout). Seventy-seven indigenous plant species were recorded west of the playing fields in 2001, which is a very good tally for an area of its size in metropolitan Melbourne. Concerted management effort has suppressed the serious weeds while the native vegetation has regenerated. Part of the area was burned in 2002 to stimulate regeneration, and it is likely that the number of plant species present will continue to grow. The ecological condition of some of the area west of the playing fields is now rated B (good) on the A-D scale explained in Section 2.4.4 of Volume 1. This is particularly pleasing considering that the native vegetation belongs to the endangered Valley Heathy Forest. (The Department of Sustainability & Environment's present edition of the BioMap of extant EVCs shows Grassy Forest, contrary to this study and the BioMap of pre-1750 EVCs, and this seems to be an error.)

There are large pine trees within, and at the edge of, the native vegetation west of the playing fields. These can be recognised on the aerial photograph by their more intense green colour compared with the eucalypts.

Within the more easterly of the site's two polygons, the parts that appear on the 2003 aerial photograph to be open lawn have since been revegetated to provide a fairly rich reconstruction of Valley Heathy Forest. Prior to the revegetation, the native vegetation comprised not much more than a canopy of large old trees with hardy native grasses beneath.

Relationship to other land

The site is less than 300 m from Lakewood Nature Reserve (Site 43), which has a large area of forest habitat as well as a substantial lake. During fieldwork, the author saw Kookaburras, Rosellas, Musk Lorikeets, Rainbow Lorikeets and common urban birds moving between R.D. Egan-Lee Reserve and Lakewood Nature Reserve. It is likely that other fauna, such as insects and bats, also commute between the reserves.

There is almost no other native understorey for a radius of 900 m from these two reserves, and the nearest large areas of native vegetation are more than 3km away, along Dandenong Ck and in the Dandenong Ranges. These distances represent substantial disconnection of the reserves from other forest habitat, other than for mobile fauna such as large birds.

Bioregion: Gippsland Plain

Habitat type

Valley Heathy Forest (EVC 127, **regionally Endangered**)

West of the playing fields

There is approximately 1·6 ha of native vegetation, of which it is estimated that 0·16 ha is in good ecological condition (rating B), 0·42 ha is in fair ecological condition (rating C) and 1·0 ha is in poor ecological condition (rating D). 77 indigenous plant species were found (including one with two subspecies).

Canopy trees: Dominated by *Eucalyptus cephalocarpa* and *E. radiata* at a density that is approximately natural.

Lower trees: *Acacia melanoxylon* and *Exocarpos cupressiformis* dominate and there are some *Acacia mearnsii* and *Allocasuarina littoralis*.

Shrubs: Sparse due to a history of slashing until recent years. *Bursaria spinosa, Cassinia aculeata, Daviesia latifolia, Epacris impressa, Kunzea ericoides, Leptospermum continentale* and *Ozothamnus ferrugineus* are present.

Vines: *Billardiera mutabilis* is fairly abundant, *Hardenbergia violacea* is scattered and *Clematis microphylla* is represented by a single plant.

Ferns: Absent.

Ground flora: Densely grassy but also with scattered ericoid plants such as *Dillwynia cinerascens* and the characteristic species, *Hibbertia riparia*. The layer is dominated by *Poa morrisii*. *Austrostipa rudis* and *Lomandra filiformis* (both subspecies) are abundant, as is typical for Valley Heathy Forest. The grasses *Rytidosperma pallidum, Microlaena stipoides* and several species of *Rytidosperma* are also each abundant in some areas. The sedges *Gahnia radula* and *Lepidosperma gunnii* are present, the former being dense in patches. There are substantial populations of *Acaena echinata*, *Pterostylis nutans* and *Wurmbea dioica*, all of which are indicative of Valley Heathy Forest. The presence of *Austrofestuca hookeriana* and *Allittia cardiocarpa* near Allister Av indicates that the vegetation there is at the wetter end of the spectrum for Valley Heathy Forest.

East of the playing fields

There is approximately 0·55 ha of native vegetation with revegetated understorey, all in ecological condition C (fair). 17 wild indigenous plant species were found on 10th May 2002.

Canopy trees: Dominated by large *Eucalyptus cephalocarpa* and *E. radiata* at a density that is approximately natural. Hollows are present.

Lower trees: *Acacia melanoxylon* and *Exocarpos cupressiformis*.

Shrubs: Very sparse due to mowing, reduced to a few *Leptospermum continentale* and some *Melaleuca ericifolia*.

Vines: Absent.

Ferns: Absent.

Ground flora: Mown, dominated by *Microlaena stipoides* and with abundant *Lomandra filiformis*. There are also three species of *Rytidosperma* and two plants of the characteristic species, *Lepidosperma gunnii*. *Gonocarpus tetragynus* is present, but at low density due to mowing. The only other ground flora species is *Oxalis perennans s.l.*.

Plant species

The following plant species were observed by the author during 2001-2. 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 two species with names in bold are rare throughout the Melbourne region.

Risk	Indigenous Species
V	*Acacia mearnsii*
V	*Acacia melanoxylon* (wild & planted)
	Acacia paradoxa
V	*Acaena echinata*
	Acaena novae-zelandiae
	Acrotriche serrulata
C	***Allittia cardiocarpa***
V	*Allocasuarina littoralis*
	Arthropodium strictum
C	***Austrofestuca hookeriana***
	Austrostipa rudis subsp. *rudis*
	Billardiera mutabilis
	Bossiæa prostrata
	Burchardia umbellata
	Bursaria spinosa
V	*Caesia parviflora*
	Carex breviculmis
	Cassinia aculeata
	Cassinia arcuata
E	*Centella cordifolia*
NA	*Clematis decipiens*
V	*Coprosma quadrifida*
V	*Crassula decumbens*
E	*Daviesia latifolia*
	Deyeuxia quadriseta
	Dianella admixta
V	*Dianella longifolia* s.l.
	Dichondra repens
V	*Dillwynia cinerascens*
V	*Drosera peltata* subsp. *auriculata*
V	*Drosera whittakeri*
V	*Epacris impressa*
V	*Eucalyptus cephalocarpa*
E	*Eucalyptus radiata*
V	*Exocarpos cupressiformis*
	Gahnia radula
	Gonocarpus tetragynus
	Goodenia lanata
V	*Hardenbergia violacea*
V	*Helichrysum scorpioides*

Risk	Indigenous Species
E	*Hibbertia riparia*
E	*Hypericum gramineum*
E	*Hypoxis vaginata*
	Rytidosperma pallidum
	Juncus bufonius
	Kunzea ericoides spp. agg.
V	*Lagenophora gracilis*
	Lepidosperma gunnii
	Leptospermum continentale
	Lomandra filiformis subsp. *coriacea*
	Lomandra filiformis subsp. *filiformis*
	Lomandra longifolia
V	*Luzula meridionalis*
E	*Melaleuca ericifolia*
	Microlaena stipoides
V	*Opercularia ovata*
V	*Opercularia varia*
	Oxalis exilis/perennans
E	*Ozothamnus ferrugineus*
V	*Platylobium obtusangulum*
	Poa morrisii
	Poranthera microphylla
	Pterostylis nutans
E	*Ranunculus lappaceus*
	Rytidosperma linkii var. *fulvum*
	Rytidosperma penicillatum
	Rytidosperma racemosum
	Rytidosperma setaceum
	Rytidosperma tenuius
	Schoenus apogon
	Senecio hispidulus
V	*Solanum ?laciniatum*
V	*Solenogyne dominii*
E	*Stackhousia monogyna*
	Themeda triandra
	Tricoryne elatior
V	*Veronica gracilis*
E	*Viola hederacea*
E	*Wurmbea dioica*
E	*Xanthosia dissecta*

Introduced Species

Acacia floribunda	*Ehrharta erecta*	*Pinus radiata*	*Soliva sessilis*
Agrostis capillaris	*Ehrharta longiflora*	*Pittosporum undulatum*	*Sparaxis* sp.
Allium triquetrum	*Freesia alba × leichtlinii*	*Plantago lanceolata*	*Stellaria media*
Anthoxanthum odoratum	*Genista monspessulana*	*Poa annua*	*Vulpia bromoides*
Cerastium glomeratum s.l.	*Hypochoeris radicata*	*Romulea rosea*	
Dactylis glomerata	*Oxalis pes-caprae*	*Rubus anglocandicans*	

Notes concerning some of the locally threatened plant species

Allittia cardiocarpa (Swamp Daisy). Six plants were seen near Allister Av.
Austrofestuca hookeriana (Hooker's Fescue). Three plants were seen near Allister Av.
Clematis microphylla (Small-leafed Clematis). A single plant, approximately 30 m north of Allister Av.
Crassula decumbens (Spreading Crassula). A viable population in the reserve's northwestern corner.
Hypoxis vaginata (Sheath Star). Six plants were seen west of the playing fields, and others could have been overlooked.
Luzula meridionalis (Common Woodrush). Found west of the playing fields.
Ranunculus lappaceus (Australian Buttercup). A single plant was found near the middle of the western boundary.
Wurmbea dioica (Common Early Nancy). At least dozens are present west of the playing fields, possibly many more.

There is also a large eucalypt east of the playing fields that appears to be a hybrid. This is of mild scientific significance.

Fauna of special significance

None recorded during site inspection. The birdlife observed incidentally during fieldwork was most typical of urban, treed neighbourhoods, except for Kookaburras, more than the usual numbers of Eastern Rosellas and large numbers of Musk Lorikeets.

Fauna habitat features

The cover of remnant trees and the presence of tree hollows suggests that native bats and birds such as parrots should find suitable habitat here, but this could not be confirmed by the incidental observation of fauna during the flora survey. There is also a modest number of logs and branches on the ground and a shrub layer that is dense enough in patches to provide sites for bird nests, several of which were seen.

Significance ratings

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

Regionally Endangered Ecological Vegetation Class

The site contains remnant patches of a regionally endangered EVC. It follows from Appendix 3 of *Victoria's Native Vegetation Management - a Framework for Action* (NRE 2002a) that R.D. Egan-Lee Reserve's native vegetation is 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 Flora

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

Threats

- Dumping of garden waste (particularly from a house in Olney Ct) – medium-level threat;
- Invasion by Panic Veldt-grass (*Ehrharta erecta*) beneath Cherry Ballarts – medium-level threat;
- Invasion by Onion-grass (*Romulea rosea*) in the more open areas – low or medium-level threat;
- Eucalypt dieback disease – medium-level threat;
- Loss or decline of plant species that have such small populations that they are vulnerable to inbreeding, poor reproductive success or random events such as cubby house construction or digging by dogs. Affected species include only one each of *Cassinia aculeata* and *Clematis microphylla*;
- Reduced visitation of the site by small insect-eating birds due to habitat fragmentation, possibly leading to a worsening of plant pests and diseases;
- Trampling – medium-level threat;
- Vandalism (youths observed uprooting and breaking plants) – medium-level threat.

Management issues

- The program of management west of the playing fields has proved very effective and should continue. This includes use of fire in 2002 according to the guidance in *'Fire in Knox Bushland Reserves 2001'* by Lorimer (2001);
- The area west of the playing fields has been in rapid change and its vegetation has not been intensively surveyed for several years. A spring survey would be desirable, with particular focus on the efficacy of the fire in 2002;
- Removal of pines would be desirable on ecological and aesthetic grounds, but the expense may not be justified;
- Mowing around some edges of the open areas within the bushland west of the playing fields could be progressively reduced where there are signs that indigenous flora might establish itself. This would need to be monitored and combined with weed control wherever weeds threaten to overtake regenerating native vegetation;
- Mowing could be reduced beneath the trees east of the playing fields to see how much natural regeneration of understorey occurs. The present frequency of mowing appears unnecessary. Herbicide should not be used around the bases of tree trunks;
- Depending on how seriously Council and the State government take the policy of achieving a Net Gain in the quality and extent of native vegetation, particularly for endangered EVCs, the treed area east of the playing fields could be a good candidate for restoration of Valley Heathy Forest, complete with ground flora.

Administration matters

- This site is suited to inclusion under the proposed ESO2 overlay because it is of State significance and contains a remnant of an endangered EVC, partly in good condition;
- The site is presently covered by Vegetation Protection Overlay 1, which also includes the trees along the driveway from Wallace Rd. This overlay was applied partly because of the study by Water Ecoscience (1998), in which this is Site 14;
- Trees along the driveway receive some protection under clause 52.17 of the Knox Planning Scheme;
- Future development of sports facilities should respect the adjacent native vegetation, including the trees just mentioned. Temporary fencing might be required if construction machinery or car parking are to be allowed anywhere near the native vegetation.

Information sources used in this assessment

- A site survey by Dr Lorimer of vegetation west of the playing fields, taking at least ten hours during September and October 2001. This followed nearly all of this study's standard procedures discussed in Section 2.4 of Volume 1 including descriptions of the vegetation composition, compilation of lists of indigenous and introduced plant species, incidental fauna observations, and checks for fauna habitat, ecological threats, management issues and populations of scarce or threatened plant species. This was conducted principally for the report, *'Fire in Knox Bushland Reserves 2001'* by Lorimer (2001);
- A 55-minute site survey of the area east of the playing fields by Dr Lorimer on 10/5/02, using this study's standard procedures (similar to west of the playing fields);
- Brief re-visits of the area east of the playing fields in May 2004 and March 2008 to update the site description and ensure the information remains relevant;
- 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.