Site 23. Sugarloaf Hill, Boronia

A prominent, treed hill near the foot of the Dandenong Ranges, with the floodplain of Dandenong Creek at its base. The site includes parts of Miller Park Reserve and the Salvation Army's 'Mountain Valley Camp and Conference Centre', and some private residential properties. Melway ref. 65 F5.

Site Significance Level: *State*

- The site is part of a major stepping-stone on the Dandenong Creek habitat corridor;
- There are five (or arguably six) regionally threatened vegetation communities, partly in good ecological condition;
- 129 indigenous plant species were found on the site in this study, or 170 if one takes this site and the adjoining Liverpool Road Retarding Basin together - large numbers by Knox standards;
- Twenty-one of these species are rare or threatened in Knox, two of which are rare throughout the Melbourne area;
- Even in the absence of a fauna survey, it is clear that the site has rich bird life, some excellent fauna habitat features (such as diverse vegetation and many large trees with hollows) and the likelihood of many reptile species.

Aerial photograph and plan: See page 114, which covers this site, Liverpool Road Retarding Basin and Dobson's treed paddock.

Boundaries

The site comprises the area outlined in red and labelled in red as 'Sugarloaf Hill' on the aerial photograph of p. 114, measuring 17.8 ha. The boundary follows cadastral boundaries or fences wherever feasible, but this is not reasonable along the site's southern edge, where a boundary is drawn to circumscribe all the crowns of trees within the contiguous area of native vegetation. Each lot contains a section that is not biologically significant in itself, but whole lots are included within the site boundary wherever reasonable because the welfare of the significant habitat is strongly linked to what occurs elsewhere on the properties.

Land use & tenure: Several private residential lots, the adjoining edge of a Council sports reserve and part of a Salvation Army property used as a youth camp and conference centre.

Site description

Sugarloaf Hill is a small but prominent foothill to the Dandenong Ranges, a remnant of a Devonian volcanic flow ('Coldstream rhyolite'). At an elevation of 179 m (Australian Height Datum), its summit rises 50 m above the surrounding floodplain of Dandenong Creek. The areas marked on the aerial photograph as 'Swampy Woodland' correspond to places where the floodplain extends into the site around its perimeter.

The soil of the floodplain has been washed down Dandenong Creek and deposited there, and supports quite different vegetation from the stonier, less friable and more freely drained loam and clay of the hill slopes. Tree stature and vegetation composition on the hill also varies from the sunnier northern slopes to the southern slopes.

Most of the site has been subject to past grazing and clearing of vegetation which has since regenerated. The most sensitive plant species that would once have occurred there (particularly orchids) have been lost through clearing, grazing, slashing and reduced fire frequency, but there is still a fairly high number of species and some uncommon ones.

It is quite possible that the vegetation marked on the aerial photograph as 'Bundy Woodland' was substantially different prior to European settlement. It may once have been partly Box-Stringybark Woodland (part of EVC 22) and lost most of the characteristic *Eucalyptus macrorhyncha* because that species is much less capable of regenerating after clearing and grazing than the Bundy which dominate today. It is shown on the Department of Sustainability & Environment's BioMaps as 'Grassy Forest' (EVC 128) even though it does not conform to the published descriptions of Grassy Forest. As explained in Appendix A of Volume 1, the name 'EVC 128a – Bundy Woodland' has been coined in this report for such vegetation to distinguish it from typical Grassy Forest.

The area marked on the aerial photograph (and the Department of Sustainability & Environment's BioMaps) as Valley Heathy Forest may once have been very similar to the hilltop vegetation, but it differs now in the presence of a dense layer of the prickly shrub, *Bursaria spinosa*. This layer may not have been present 200 years ago, but its presence is typical of previously grazed Valley Heathy Forest.

The Mountain Valley Camp and Conference Centre contains the most significant vegetation of the whole site, including the most intact forest and viable populations of seven plant species that are vulnerable to local extinction in Knox. It also has localised areas of ecological degradation. Some areas of bushland are used for campfires, tree climbing and other outdoor activities, which has caused slight to moderate damage to the vegetation. There has been extensive dumping of soil and rubbish to the east of the main north-south track where it enters the forest, which has initiated a problem of environmental

weeds invading the surrounding significant vegetation. An abandoned garden at the northern end of the property is being reclaimed mostly by blackberry in the west and native vegetation in the east (particularly by *Ozothamnus ferrugineus*, *Pteridium esculentum* and *Melaleuca ericifolia*).

The properties that front Tolhurst Avenue and Torresdale Drive have been subjected to widely varying levels of recent grazing, clearing, slashing and planting. The degree of ecological degradation increases down the slope, so that the Swampy Woodland is represented by little more than trees and some rushes. These properties were only inspected from their boundaries, but the author still found fifty indigenous plant species at a poor time of year. Two of these species are endangered in Knox and another two are vulnerable.

The northern end of Miller Park Reserve is periodically slashed, but with a degree of sensitivity so that indigenous ground flora can survive (and flourish in some patches). It contains substantial populations of sun-orchids, greenhood orchids, bird-orchids and onion-orchids, as well as small populations of many local wildflowers. Fifty indigenous plant species were found there, and about ten more would no doubt be found in a summer inspection. There has also been recent revegetation work on the embankment of the oval (not evident on the aerial photograph), which is beginning to complement the adjacent remnant habitat.

Notwithstanding past clearing, the site supports a good number of large old trees. This is significant because of the importance of such trees for nesting and roosting of wildlife (bats, birds, possums) and their severe depletion in Knox and the metropolitan area as a whole.

Relationship to other land

The site is treated in this report as separate from Liverpool Road Retarding Basin (Site 21) only because of the difference between the two sites' land uses and ownership. Ecologically, the two sites function as one and the conservation values of one cannot be considered in isolation from the other.

There are few ecological barriers for birds, bats, insects and pollen to travel between these sites and the large area of contiguous native vegetation in the Dandenong Ranges. The trees along Dandenong Creek and Pavitt Lane provide an almost continuous corridor. Dobson's treed paddock (Site 21) is nearby on the other side of Liverpool Rd, and it is close to vegetated corridors along Dobson's Creek (Site 20) and Mountain Hwy (Site 92). There are also patches of remnant vegetation downstream along the Dandenong Creek drain and other patches every few hundred metres to the north of the site, in Maroondah municipality (see Lorimer *et al.* 1997).

There are some mature remnant trees (but no understorey) adjacent to the site in the backyards of several houses on Beresford Dr and Paloma Ct. These are included within Site 99, which is recommended to be protected under Environmental Significance Overlay ESO3.

Bioregion: Gippsland Plain (although in some respects, the Lowland Forest might be regarded as having greater affinity with the nearby Highlands Southern Fall).

Habitat types

Lowland Forest (EVC 16, **regionally Vulnerable**): 4 hectares in total, comprising approximately 8,600 m² in good ecological condition (rating B), 16,400 m² in fair ecological condition (rating C) and 15,000 m² in poor ecological condition (rating D). At least 98 indigenous plant species found, including 2 subspecies of one species.

Dominant canopy trees: *Eucalyptus obliqua* typically 22-25 m tall, with far fewer *E. radiata*. In places, there are also some *E. cephalocarpa, E. ovata* or *E. goniocalyx* that might be construed as outliers of adjacent EVCs.

Dominant lower trees: *Acacia melanoxylon* and *Exocarpos cupressiformis* are present in varying density, mostly less than 10 m tall.

Shrubs: Moderately dense where allowed to accumulate, but thin where suppressed by grazing or manual removal. Dominated by various combinations of *Cassinia aculeata*, *Bursaria spinosa* and *Leptospermum scoparium*, and with substantial numbers of *Acacia verticillata* and *Pultenaea gunnii*. *Melaleuca ericifolia* intrudes from adjoining Swampy Woodland. Members of the Proteaceæ family are uncharacteristically absent, perhaps due to past clearing.

Ferns: Bracken is abundant almost throughout, except where it is suppressed by slashing.

Ground flora: At maturity, dense, ferny, knee-deep and with an abundance of the wiry grass *Tetrarrhena juncea*, often sharing dominance with *Gahnia radula* or *Pteridium esculentum*. Other abundant species are *Lomandra* species, *Acrotriche prostrata* and *Goodenia lanata*. Tufted grasses, particularly *Austrostipa rudis* and *Themeda triandra,* are present but in low density except where slashing or mowing suppresses the bracken and *Tetrarrhena juncea* (as in Miller Park Reserve).

Swamp Scrub (EVC 53, **regionally Endangered**): A small amount extends into the southeast of the site from Liverpool Rd Retarding Basin. Total area 640 m^2, equally divided between ecological conditions C (fair) and D (poor). 18 indigenous plant species found.

Dominant canopy trees: 8 m-tall *Melaleuca ericifolia* dominates, reaching up to 70% cover but with gaps. There are also emergent *Eucalyptus ovata* and *Acacia melanoxylon*.

Dominant lower trees: *Pittosporum undulatum* is conspicuous beneath the canopy.

Shrubs: Sparse, comprising *Coprosma quadrifida* and *Senecio minimus*.

Vines: None.

Ferns: *Cyathea australis* and *Blechnum minus* occur in clusters and are the most prominent features of the ground flora.

Ground flora: Apart from the ferns, there are sparse patches of *Triglochin striatum, Juncus, Isolepis inundata,* grasses and *Lobelia anceps*.

Wetland (EVC 74, listed as regionally Endangered, but artificially created in this case): A small dam within Lowland Forest on the Mountain Valley property, apparently not holding much water in recent years. Dimensions not recorded, but estimated at roughly 100 m^2. In fair ecological condition (rating C). Four indigenous species found: *Isolepis inundatus, Juncus gregiflorus, J. holoschoenus, J. procerus.*

Valley Heathy Forest (EVC 127, **regionally Endangered**): 8,000 m^2 in total, comprising approximately 7,000 m^2 in good ecological condition (rating B) and 1,000 m^2 in poor ecological condition (rating D). 90 indigenous plant species found. Two other species (*Cassinia trinerva* and *Ranunculus lappaceus*) were recorded by AN Paget in 1985.

Dominant canopy trees: *Eucalyptus goniocalyx*, 10-15 m tall, 30-40% foliage cover.

Dominant lower trees: Scattered *Exocarpos cupressiformis*, 12 m tall and fewer *Acacia melanoxylon*.

Shrubs: Mostly up to 2-3 m tall and dense with *Bursaria spinosa* (typically 60% foliage cover). *Acacia stricta* is abundant.

Vines: *Pandorea pandorana* is quite common, as are the light twiners *Billardiera mutabilis* and *Glycine clandestina*. Creepers are also fairly abundant, including *Dichondra repens, Goodenia lanata, Oxalis perennans* and *Platylobium formosum*.

Ferns: *Adiantum aethiopicum* is abundant. *Pteridium esculentum* is very scarce.

Ground flora: A layer typically 20-30 cm deep with a foliage cover of approximately 80% in mature vegetation. Dominated by *Themeda triandra*, with *Austrostipa rudis* also abundant. The grasses *Poa morrisii* and *Microlaena stipoides* are not abundant, as they are in the adjoining Bundy Woodland, and *Gahnia radula* is very scarce. The most abundant other species are *Adiantum aethiopicum, Dichondra repens, Opercularia varia* and *Pimelea humilis*. The ground flora species are a subset of those in the Bundy Woodland, perhaps lower in diversity due to the density of *Bursaria*.

EVC 128a – Bundy Woodland (treated by the Department of Sustainability & Environment as part of EVC 128, which is **regionally Endangered**): Total area 8.0 hectares, of which approximately 5.0 ha is in good ecological condition (rating B), 1.5 ha is in fair ecological condition (rating C) and 1.5 ha is in poor ecological condition (rating D). 71 indigenous plant species were found, including 6 that are rare or threatened in Knox. One other (*Ranunculus lappaceus*) was found by AN Paget in 1985.

Dominant canopy trees: *Eucalyptus goniocalyx* and very few *E. macrorhyncha*, to 15 m tall, 25% foliage cover, with plenty of open sky between the tree crowns.

Dominant lower trees: *Exocarpos cupressiformis* 12 m tall are liberally scattered.

Shrubs: Mostly up to 2-3 m tall and sparse, allowing visibility up to 100 m. In most of the area, *Acacia stricta* dominates with fewer *Cassinia aculeata. Bursaria spinosa* is not dense, as it is in the Valley Heathy Forest.

Vines: *Pandorea pandorana* is quite common in localised patches. Light twiners are common: *Billardiera mutabilis*, *Comesperma volubile, Glycine clandestina* and *Hardenbergia violacea*. Creepers are also abundant, particularly *Dichondra repens, Goodenia lanata* and (after fire) *Kennedia prostrata*.

Ferns: Scarce. *Adiantum aethiopicum* occurs around some rocks. *Pteridium esculentum* is notably absent.

Ground flora: A layer typically less than 30 cm deep with a foliage cover of nearly 100% in mature vegetation. Dominated in patchwise fashion by different species, *Themeda triandra* being most common, then *Austrostipa rudis* and *Lomandra filiformis* subsp. *coriacea,* and locally *Goodenia lanata*. The grasses *Poa morrisii* and *Microlaena stipoides* are abundant but not dominant, as is *Carex breviculmis*. There are numerous small wildflowers, the most frequent being *Arthropodium strictum*, *Brunonia australis, Gonocarpus tetragynus, Goodenia lanata, Hovea linearis, Hypericum gramineum, Pimelea humilis* and *Poranthera microphylla*. Notably, *Gahnia radula* is completely absent.

Swampy Woodland (EVC 937, **regionally Endangered**): Total area 16,000 m^2, of which approximately 50 m^2 is in fair ecological condition (rating C, in the southeastern patch) and the remainder is in poor ecological condition (rating D). 35 indigenous plant species found.

Dominant canopy trees: Almost pure *Eucalyptus ovata*, 20-25 m tall, fairly sparse.

Dominant lower trees: *Acacia melanoxylon* 10-12 m tall and fewer *Melaleuca ericifolia* 10 m tall.

Tall Shrubs: Dominated by *Ozothamnus ferrugineus* up to 6 m tall in the north, and by *Leptospermum scoparium* and *Bursaria spinosa* 3-4 m tall in the southeast. *Cassinia aculeata* is common but not dominant. The density of tall shrubs is variable, becoming high in regrowth several years old. *Coprosma quadrifida* is uncharacteristically scarce.

Lower Shrubs: *Senecio minimus* is abundant in the northern patch. *Goodenia ovata* is uncharacteristically scarce.

Vines: Sparse *Pandorea pandorana*; bad outbreaks of *Rubus discolor* and *Lonicera japonica*.

Ferns: *Pteridium esculentum* is very dense in one patch of the abandoned garden but ferns are otherwise absent.

Ground flora: Variable due to human modification, and almost totally destroyed on the residential properties. On the Mountain Valley property, *Phragmites australis* dominates one patch and other conspicuous species are *Gonocarpus tetragynus, Lepidosperma elatius, Microlaena stipoides* and *Austrostipa rudis*.

Plant species

The following plant species were observed mostly in 2002-3. 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, species with names in bold are rare throughout the Melbourne region.

Risk	Indigenous Species
V	*Acacia mearnsii*
V	*Acacia melanoxylon*
	Acacia paradoxa
E	*Acacia pycnantha*
E	*Acacia stricta*
V	*Acacia verticillata*
DD	*Acaena agnipila*
V	*Acaena echinata*
	Acaena novae-zelandiae
V	*Acrotriche prostrata*
	Acrotriche serrulata
V	*Adiantum aethiopicum*
C	*Amyema pendula*
V	*Amyema quandang*
	Arthropodium strictum
C	*Astroloma humifusum*
	Austrostipa rudis subsp. *rudis*
	Billardiera mutabilis
C	***Blechnum minus***
	Bossiæa prostrata
V	*Brunonia australis*
	Burchardia umbellata
	Bursaria spinosa
V	*Caesia parviflora*
	Carex breviculmis
	Cassinia aculeata
	Cassinia arcuata
V	*Cassinia longifolia*
C	***Cassinia trinerva***
E	*Centella cordifolia*
V	*Chiloglottis valida*
V	*Clematis aristata*
V	*Comesperma volubile*
C	***Coprosma hirtella***
V	*Coprosma quadrifida*
E	*Correa reflexa*
E	*Cyathea australis*
E	*Cynoglossum suaveolens*
	Deyeuxia quadriseta
	Dianella admixta
V	*Dianella longifolia* s.l.
	Dichelachne rara
C	***Dichelachne sieberiana***
	Dichondra repens

Risk	Indigenous Species
V	*Dillwynia cinerascens*
E	*Dipodium roseum*
V	*Drosera peltata*
V	*Drosera peltata* subsp. *auriculata*
V	*Epacris impressa*
	Eragrostis brownii
V	*Eucalyptus cephalocarpa*
	Eucalyptus goniocalyx
E	*Eucalyptus macrorhyncha*
V	*Eucalyptus obliqua*
V	*Eucalyptus ovata*
E	*Eucalyptus radiata*
V	*Euchiton collinus*
E	*Euchiton involucratus*
V	*Exocarpos cupressiformis*
E	*Exocarpos strictus*
	Gahnia radula
E	*Gahnia sieberiana*
	Geranium sp.
V	*Glycine clandestina*
E	*Gonocarpus humilis*
	Gonocarpus tetragynus
	Goodenia lanata
	Goodenia ovata
V	*Hardenbergia violacea*
V	*Helichrysum luteoalbum*
V	*Helichrysum scorpioides*
V	*Hemarthria uncinata*
C	***Histiopteris incisa***
V	*Hovea heterophylla*
E	*Hydrocotyle foveolata*
V	*Hydrocotyle hirta*
E	*Hypericum gramineum*
E	*Indigofera australis*
V	*Isolepis inundata*
	Juncus amabilis
	Juncus bufonius
	Juncus gregiflorus
C	*Juncus holoschoenus*
	Juncus pallidus
E	*Juncus planifolius*
E	*Juncus procerus*
E	*Juncus subsecundus*
C	*Kennedia prostrata*

Risk	Indigenous Species
	Kunzea ericoides spp. agg.
	Lachnagrostis filiformis
V	*Lagenophora gracilis*
E	*Lagenophora stipitata*
	Lepidosperma elatius
V	*Lepidosperma laterale*
	Leptospermum continentale
E	*Leptospermum scoparium*
V	*Lindsaea linearis*
E	*Linum marginale*
E	*Lobelia anceps*
	Lomandra filiformis subsp. *coriacea*
	Lomandra filiformis subsp. *filiformis*
	Lomandra longifolia
V	*Luzula meridionalis*
V	*Lythrum hyssopifolia*
E	*Melaleuca ericifolia*
	Microlaena stipoides
	Microtis parviflora
C	*Muellerina eucalyptoides*
V	*Olearia lirata*
V	*Opercularia ovata*
V	*Opercularia varia*
	Oxalis exilis/perennans
E	*Ozothamnus ferrugineus*
	Pandorea pandorana
E	*Phragmites australis*
V	*Pimelea humilis*
V	*Platylobium formosum*
E	*Poa labillardierei* var. *labillardierei*
	Poa morrisii
E	*Poa tenera*
E	*Polyscias sambucifolia*
	Poranthera microphylla
	Pteridium esculentum
	Pterostylis nutans
V	*Pultenaea gunnii*
C	***Pultenaea hispidula***
E	*Ranunculus lappaceus*
E	*Rubus parvifolius*
E	*Rytidosperma caespitosum*
	Rytidosperma pallidum
	Rytidosperma penicillatum
	Rytidosperma racemosum
	Rytidosperma setaceum
	Rytidosperma tenuius
	Schoenus apogon
	Senecio glomeratus
	Senecio hispidulus
E	*Senecio minimus*
E	*Senecio prenanthoides*
	Senecio quadridentatus
V	*Solanum laciniatum*
E	*Stackhousia monogyna*
E	*Stylidium armeria/graminifolium*
	Tetrarrhena juncea
E	*Tetratheca ciliata*
V	*Thelymitra* sp.
	Themeda triandra
E	*Triglochin striata* (flat leaf variant)
E	*Typha* sp.
E	*Veronica calycina*
E	*Veronica plebeia*
E	*Viola hederacea*
V	*Xanthorrhoea minor*
E	*Xanthosia dissecta*

Introduced Species

Acacia baileyana	*Cotoneaster glaucophyllus*	*Leontodon taraxacoides*	*Raphanus raphanistrum*
Acacia longifolia subsp. *longifolia*	*Cotoneaster pannosus*	*Lepidium africanum*	*Romulea rosea*
	Cotoneaster simonsii	*Ligustrum vulgare*	*Rubus anglocandicans*
Acetosella vulgaris	*Crataegus monogyna*	*Linum trigynum*	*Rumex crispus*
Agrostis capillaris	*Crepis capillaris*	*Lolium* sp.	*Rumex obtusifolius*
Aira elegantissima	*Cynodon dactylon*	*Lonicera japonica*	*Setaria parviflora*
Anagallis arvensis	*Cyperus eragrostis*	*Lotus corniculatus*	*Sisymbrium orientale*
Anthoxanthum odoratum	*Dactylis glomerata*	*Lotus uliginosus*	*Sisyrinchium iridifolium*
Arbutus unedo	*Delairea odorata*	*Malva parviflora*	*Solanum mauritianum*
Asparagus scandens	*Ehrharta erecta*	*Modiola caroliniana*	*Solanum nigrum*
Aster subulatus	*Eleusine tristachya*	*Oxalis* sp.	*Sonchus oleraceus*
Briza maxima	*Erica lusitanica*	*Paspalum dilatatum*	*Sporobolus africanus*
Bromus catharticus	*Galium aparine*	*Pennisetum clandestinum*	*Taraxacum officinale* spp. agg.
Centaurium erythraea	*Genista linifolia*	*Phalaris aquatica*	
Chenopodium album	*Genista monspessulana*	*Pinus radiata*	*Tradescantia fluminensis*
Cirsium vulgare	*Hedera helix*	*Pittosporum undulatum*	*Trifolium fragiferum*
Conium maculatum	*Helminthotheca echioides*	*Plantago lanceolata*	*Trifolium repens*
Conyza sumatrensis	*Holcus lanatus*	*Plantago major*	*Tropaeolum majus*
Coprosma repens	*Hypochoeris radicata*	*Polygonum aviculare* s.l.	*Vicia* sp.
Cordyline australis	*Ilex aquifolium*	*Prunella vulgaris*	*Vinca major*
Cortaderia selloana	*Isolepis levynsiana*	*Ranunculus repens*	*Watsonia marginata*

Notes concerning some of the locally threatened plant species

Blechnum minus (Soft Water-fern). Twelve plants found in the Swamp Scrub.

Cassinia trinerva (Three-nerved Cassinia). Recorded by AN Paget in 1985 on the Mountain Valley property in Valley Heathy Forest.
Correa reflexa (Common Correa). Very scarce, only found at Miller Park Reserve.
Cynoglossum suaveolens (Sweet Hound's-tongue). Three plants found in Bundy Woodland.
Dichelachne sieberiana (Plume-grass). Found in Bundy Woodland, numbers indeterminate.
Euchiton ?sphaericus (Annual Cudweed). Two plants found in Bundy Woodland.
Gahnia sieberiana (Red-fruit Saw-sedge). Four plants found in the east of the Mountain Valley property.
Gonocarpus humilis (Shade Raspwort). Eight plants confirmed in the east of the Mountain Valley property.
Histiopteris incisa (Bat's Wing Fern). One plant found at the site's northern extremity.
Hydrocotyle foveolata (Yellow Pennywort). One patch found on private land next to Miller Park Reserve.
Juncus holoschoenus (Joint-leaf Rush). Four plants found in the dam.
Kennedia prostrata (Running Postman). Numerous in burnt patches in Bundy Woodland.
Lagenophora stipitata (Common Lagenophora). One large patch found in Miller Park Reserve.
Linum marginale (Native Flax). Found in Lowland Forest slightly south of the Valley Heathy Forest.
Luzula meridionalis (Common Woodrush). Rather abundant in Miller Park Reserve.
Ranunculus lappaceus (Australian Buttercup). Last recorded in 1985.
Tetratheca ciliata (Pink-bells). Two plants found in Bundy Woodland on the Mountain Valley property.
Triglochin striatum (Streaked Arrow-grass). A patch of 1 m² in the Swamp Scrub.
Veronica calycina (Hairy Speedwell). A few plants seen in and north of Miller Park Reserve.
Veronica plebeia (Trailing Speedwell). Thriving patches in the northeast of the Lowland Forest.

Fauna of special significance

Vulnerable in Victoria

Powerful Owl. Bound to visit occasionally (but not actually observed); known to roost in nearby Site 20.

Rare or Threatened in suburban Melbourne

Dusky Woodswallow
Scarlet Robin

In addition, the habitat features suggest the likelihood of rich wildlife that may well include significant species such as Swamp Skinks, which have been seen nearby. Weather and seasonal conditions at the time of the field survey were not conducive to detecting wildlife.

Fauna habitat features

- A substantial sized area of bushland with diverse composition, from swampy ground to tall, moist forest and low, grassy woodland, and much of it in good condition;
- The site is part of a major stepping-stone on the Dandenong Creek habitat corridor;
- Well connected to the large area of contiguous native vegetation in the Dandenong Ranges;
- There are many large, old trees with hollows;
- In parts of the Mountain Valley property, there is good cover for wrens and ground-dwelling fauna such as reptiles, including logs and dense undergrowth;
- The dam is a breeding ground for frogs;
- Fauna on this site never need to travel further than the neighbouring lake in Liverpool Road Retarding Basin to obtain water, even during drought.

Significance ratings

According to the criteria of *'Victoria's Native Vegetation Management – A Framework for Action'* (NRE 2002a), most of the site's native vegetation has a conservation significance rating of at least High, probably reaching Very High in the more intact parts of the Mountain Valley property (and perhaps Miller Park Reserve in future, with a little management effort). This is due to the presence of vegetation in at least five regionally threatened Ecological Vegetation Classes, some of it in good condition.

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

Ecological Integrity and Viability

Together with Liverpool Road Retarding Basin, the site is a major 'stepping stone' on the Dandenong Creek habitat corridor. It follows from criterion 1.2.6 that this attribute of the site is of **Regional** significance.

Richness and Diversity

The presence of six EVCs in the site, and others in Liverpool Road Retarding Basin, stands out in the region as a particularly diverse assemblage of EVCs in a relatively small area, corresponding to steep geomorphological gradients. The standard criteria take this to confer **Regional** significance on the site.

The totals of 129 indigenous plant species in the site and 170 including Liverpool Road Retarding Basin are high for Knox, but this type of attribute is not formally recognised in the standard criteria. Despite the absence of a fauna survey, the abundance of bird life also stands out in Knox.

Regionally Threatened Ecological Vegetation Class

As indicated above, the site's most intact vegetation has a conservation significance rating under *'Victoria's Native Vegetation Management – A Framework for Action'* (NRE 2002a) which is at least High, and probably reaches Very High due to the presence of regionally threatened EVCs in fairly good condition. On this basis, criterion 3.2.3 confers **State** significance to the site.

Rare or Threatened Flora

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

Rare or Threatened Fauna

Criterion 3.1.3 confers **Regional** significance to sites like Sugarloaf Hill that are likely to support Powerful Owl (a vulnerable species in Victoria) and are very close to known habitat of that species.

Representative of a Type

The occurrence of Bundy Woodland is apparently the most northerly one in the Gippsland Plain bioregion, naturally isolated from all other occurrences. It is in better ecological condition than the nearest occurrence (on the Lysterfield Hills). Its transition into Valley Heathy Forest on the Mountain Valley property, and its proximity to typical Grassy Forest on the other side of Sheffield Rd, helps to show the limits of Bundy Woodland's composition relative to related communities. It seems likely that there is no better site in the Port Phillip and Westernport Region to demonstrate the limits of Bundy Woodland. Criterion 4.2 confers State or National significance to a site 'considered to represent a significant variant … or marginal form … of a particular ecological community or class', depending on whether or not the EVC is common outside Victoria (which is unknown in this case). By contrast, NRE (2002a, Appendix 3) allows also for Regional significance for 'edge of range or other non-species values'. In view of the uncertainty, it appears reasonable to opt for **State** significance in this case.

Threats

- Invasion by environmental weeds, including:
  - Very serious: Sweet Pittosporum (*Pittosporum undulatum*), Sallow Wattle (*Acacia longifolia longifolia*), Blackberry (*Rubus discolor*) and (in the wettest areas) Japanese Honeysuckle (*Lonicera japonica*);
  - Serious: Sweet Vernal-grass (*Anthoxanthum odoratum*), Asparagus fern (*Asparagus scandens*), Panic Veldt-grass (*Ehrharta erecta*), Spanish Heath (*Erica lusitanica*), Montpellier Broom (*Genista monspessulana*), Yorkshire Fog (*Holcus lanatus*), Monterey Pine (*Pinus radiata*) and, in grazed and slashed areas like Miller Park Reserve, Cat's Ear (*Hypochoeris radicata*);
- Planting of serious environmental weeds on a Torresdale Drive property;
- Potential site development that could lead to loss of habitat (which may be partly redressed if weed control improves);
- Grazing;
- Damage such as trampling from recreational activities;
- Deliberate cutting down of shrubs and trees;
- Slashing or mowing at the wrong time, frequency or height;
- Eucalypt dieback disease of moderate severity;
- Loss or decline of plant species that are present in dangerously small numbers, due to inbreeding, poor reproductive success or vulnerability to localised chance events;
- Predation of fauna (particularly birds) by cats and foxes.

Management issues

- There is little if any control of serious environmental weeds on most of the private properties, even though many of them are listed as 'Regionally Controlled' under the *Catchment and Land Management Act 1994*;
- Council could expand the area of rich ground flora at Miller Park Reserve by progressively controlling grass weeds, vetch etc around the perimeter, including use of grass-specific herbicide;
- There are signs of illegal clearing of native vegetation on some residential properties;

- Mowing or slashing of indigenous ground flora is not intrinsically bad (as shown by Miller Park Reserve), but the timing and frequency on some of the residential properties is adverse, taking into account the plant species present in each case;
- The abundance of plants species such as *Kennedia prostrata* after fire on the Mountain Valley property shows the value of fire in recovering plant species that have suffered massive decline in Knox. It is ecologically desirable for Council to support periodic use of fire on these properties provided that safety is properly assured and neighbours are properly informed.

Administration matters

- This site is worthy of inclusion within the proposed Environmental Significance Overlay, ESO2, because of its biological significance and the subdivision potential of some private lots;
- It is mostly covered at present by overlay VPO1 on the basis that Water Ecoscience (1998) included it (with some boundary variations) as part of their Site 7;
- The granting of planning permits for subdivision or land development on any native vegetation within the site would be severely restricted by the predominance of regionally threatened vegetation communities and the Victorian government's policy for native vegetation management (NRE 2002a; Victoria Planning Provisions);
- It is recommended that consideration of any development proposal within the site should take into account a survey of birds, reptiles and nocturnal mammals, preferably conducted over at least two days in late spring. The vegetation may well be important as habitat for significant fauna not recorded so far;
- Removal of environmental weed species would help to improve the ecological quality of the vegetation and hence support the state government objective of 'Net Gain'.

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 within each of thirteen separate areas of the site, compiled by Dr Lorimer over approximately 9½ hours during this study (mostly 8th-9th April 2002);
- Incidental observations of birds and frogs while the above data was being gathered;
- Data from eleven quadrats on the Mountain Valley property, compiled by Mr Andrew Paget in May 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.

Acknowledgment

Thanks to the Salvation Army for granting permission to inspect the Mountain Valley Camp and Conference Centre.