Site 29. Old Joes Creek Bushland, Boronia

Fragmented forest in a mixture of private land, Council reserve and Melbourne Water drainage reserve, supporting several threatened forest types. There is an ecologically degraded creek and a retarding basin with no natural vegetation. Knox City Council has been purchasing some of the privately owned bushland for annexation to the existing reserves.

Melway ref. 65A6.

Site Significance Level: *State*

- 138 indigenous plant species were found overall in this study, a large number by Knox standards;
- Seventeen of these species are rare or threatened in Knox, one of which is rare throughout the Melbourne area;
- There are four regionally threatened vegetation communities and a fifth community that is significant as an outlier occurrence beyond its normal rainfall limits;
- Even in the absence of a fauna survey, it is clear that the site is a local hotspot for bird life and the locally rare Swordgrass Brown Butterfly.

Aerial photograph taken February 2007

Boundaries

The site comprises the area outlined in red above, measuring 11·9 ha. The boundary follows cadastral boundaries except across the southern extension of Army Rd, between corners of units 2 and 3 of 41 Stewart St, and beside the street at Debson Close (where the exact location is unimportant). Each private residential lot contains a section that is not biologically significant in itself, but the whole lot is included within the site boundary because the welfare of the significant habitat is strongly linked to what occurs elsewhere on the property.

Land use & tenure: Several private residential lots, Council bushland reserves and a Melbourne Water drainage reserve with retarding basin.

Site description

The site is where a stream (Old Joes Creek) has eroded a gap through the north-south ridge that runs just east of Dorset Rd from Kilsyth South to Ferntree Gully. The gap forms a drainage constriction, giving rise to alluvial deposits almost as far southeast as Forest Rd. The slopes have shallow, sometimes stony loam over clay subsoil derived from hornfels at the interface between the sedimentary geology to the west and the Dandenong Ranges volcanics to the east.

Elevations vary from 110 m to 140 m. The south-facing slope has a maximum gradient of 25% and the north-facing slope has a maximum gradient of approximately 18%.

Within the site, Swampy Riparian Woodland occurs on the alluvium, flanked by Damp Forest on the sheltered, northern side and Lowland Forest on the less steep and sheltered southern side. There is a typical progression from Damp Forest to Herb-rich Foothill Forest to Grassy Forest as one climbs the northern slope. The Lowland Forest changes gradually and patchily to forest that is intermediate between Grassy Forest and Valley Heathy Forest up the southern slope. All these communities are threatened except for the Damp Forest (which is significant due to its occurrence as a naturally isolated outlier).

The site hosts surprisingly rich plant- and bird-life, partly owing to the treed environment of the ridge between Dorset Rd and Army Rd, and the mixture of different types of vegetation.

The wide range of land use and ownership have made the ecological condition of the vegetation very variable, from the weedy grass floor of the retarding basin to the highly intact vegetation of 8 Lucas Close. Some of the residential properties, such as 23 Stewart St, have had active, sensitive management that has maintained high biodiversity, low weed invasion and low fire hazard. Other properties are becoming overrun with woody environmental weeds such as Boneseed, Brooms and Sweet Pittosporums, with no sign of attempted control.

Eucalypt dieback is a significant problem in the area and has been investigated by Smith and Loyn[*]. It appears to be worst where the woody weeds have been allowed to thrive, and it is likely that the weeds are partly to blame. For this reason, and because of the spread of weed seeds, landowners who fail to control their weeds are causing ecological harm to the area in general.

Relationship to other land

There is a canopy of scattered remnant eucalypts to the north of the site as far as Mountain Hwy and to the south for a few hundred metres. This canopy, combined with mature non-indigenous trees scattered across the residential area to the east, facilitates movement of bird life to the Old Joes Creek area, as evidenced by the many rosellas and cockatoos that are regularly present. These birds no doubt move between this site, the Dandenong Ranges National Park and other forested land in The Basin. There is very little indigenous understorey within one kilometre, which must limit the movement of smaller fauna. This, in turn, reduces the available gene pool for the small fauna and understorey plants.

However, many butterfly species are able to fly over large distances – including suburbia – and so the Knox Environment Society has initiated a project to use the Old Joes Creek bushland as a staging post for the attractive and locally rare Sword-grass Brown Butterfly. This butterfly relies on certain species of saw-sedge, of which *Gahnia sieberiana* occurs at the Old Joes Creek bushland and in the nearby Dandenong Ranges. For this reason, the saw-sedge is being planted in reserves between the Old Joes Creek bushland and the nearest natural occurrence, at Wicks Reserve (Site 15).

Bioregion: Gippsland Plain, although the Damp Forest and Herb-rich Foothill Forest have affinities with the Highlands Southern Fall bioregion.

Habitat types

Lowland Forest (EVC 16, **regionally Vulnerable**): 13,700 m^2 as mapped, in part blending gradually with forest that is intermediate between Grassy Forest and Valley Heathy Forest (see below) on the southern edge. Approximately 3,100 m^2 is in good ecological condition (rating B), 7,600 m^2 in fair ecological condition (rating C) and 3,000 m^2 in poor ecological condition (rating D). 72 indigenous plant species were found.

Dominant canopy trees: *Eucalyptus obliqua* typically 20-22 m tall, with lesser numbers of *E. radiata* and some *E. cephalocarpa* where the vegetation tends toward Valley Heathy Forest (EVC 127).

Dominant lower trees: *Acacia melanoxylon* and *Exocarpos cupressiformis* are present in varying density.

Shrubs: Moderately to very dense when allowed to accumulate, dominated by various combinations of *Leptospermum scoparium*, *Cassinia aculeata*, *Acacia verticillata, Acacia leprosa, Olearia lirata* and *Banksia marginata*. *Kunzea ericoides* has formed thickets in response to clearing or soil disturbance. The proportions of these species varies greatly with the recent history of clearing and cutting.

[*] Smith I.W. and Loyn R.H. (2000). *'Dieback of Eucalypts in Old Joes Creek Retarding Basin and William Morris Reserve, City of Knox'*. Report prepared for Knox City Council, report no. 2000/35 of the Centre for Forest Tree Technology, Dept of Natural Resources & Environment.

Ferns: Patches of dense bracken are scattered liberally.

Ground flora: At maturity, dense, tangled and knee-deep. Rather heathy and with an abundance of the wiry grass *Tetrarrhena juncea*. Other abundant species are *Gahnia radula, Lepidosperma elatius, Lomandra* species and *Xanthorrhoea minor*. The density of the wiry, tangled ground flora can make movement through the vegetation awkward. Tufted grasses, particularly *Rytidosperma pallidum* and *Themeda triandra,* are present but in lower density than Grassy Forest.

Herb-rich Foothill Forest (EVC 23, **regionally Vulnerable**): Effectively the transition zone between Grassy Forest uphill and Damp Forest downhill. Total area 6,000 m^2, of which approximately 1,000 m² is in excellent ecological condition (rating A), 1,700 m² is in good ecological condition (rating B), 2,300 m² is in fair ecological condition (rating C) and 1,000 m^2 is in poor ecological condition (rating D). 58 indigenous plant species were found.

Dominant canopy trees: Crowns touching, approximately 25 m tall. *Eucalyptus obliqua* and *E. radiata* dominate, with a few *E. goniocalyx* that may be interpreted as outliers from the Grassy Forest uphill.

Dominant lower trees: *Acacia melanoxylon* and *Exocarpos cupressiformis* in moderate density.

Shrubs: Moderate density. Key indicator species are *Coprosma quadrifida*, *Ozothamnus ferrugineus*, *Acacia leprosa, A. verticillata*, *Olearia lirata, Cassinia aculeata* and *Pultenaea gunnii*.

Vines: A high proportion of the shrubs (excluding thickets) support vines, particularly *Clematis aristata*, *Pandorea pandorana* or *Glycine clandestina*.

Ferns: *Pteridium esculentum* and *Adiantum aethiopicum* occur in patches, with *Calochlaena dubia* near the border with Damp Forest.

Ground flora: Densely grassy (except where shrub thickets suppress grasses) and with many species of forbs between the tussocks. The dominant species vary in a patchwork fashion, with patches dominated by any of *Themeda triandra*, *Poa* species (mixtures of *P. ensiformis, P. morrisii* and *P. tenera*) and *Microlaena stipoides*. *Rytidosperma pallidum* only occurs as outliers from the Grassy Forest above. *Tetrarrhena juncea* is rather abundant, as is typical in proximity to Lowland Forest or Damp Forest. There are many species of forbs, scarcely distinguishable from the adjoining Grassy Forest.

Damp Forest (EVC 29, **regionally Endangered**): Total area 11,000 m^2, of which approximately 300 m² is in excellent ecological condition (rating A), 1,200 m² is in good ecological condition (rating B), 9,000 m² in fair ecological condition (rating C) and 500 m^2 is in poor ecological condition (rating D). 54 indigenous plant species were found.

Dominant canopy trees: Tall (typically 25 m), dominated by *Eucalyptus obliqua* with much smaller numbers of similarly tall *E. radiata*.

Dominant lower trees: *Acacia melanoxylon* is present but quite sparse.

Shrubs: Sparse, the most abundant being *Acacia leprosa, Coprosma quadrifida* and *Goodenia ovata* (the last of which is part of the deep layer of ground flora).

Vines: Rather abundant, mainly *Clematis aristata* and *Pandorea pandorana*.

Ferns: Dense and more than waist-high, dominating the ground flora. *Pteridium esculentum* and *Calochlaena dubia* are the main ferns.

Ground flora: Dense and typically waist- or chest-deep, dominated by ferns interspersed with large sedges (*Lepidosperma elatius*), and with abundant grass below (particularly *Poa ensiformis*, *Poa tenera* and *Tetrarrhena juncea*). *Lomandra longifolia* and *Acaena novae-zelandiae* are abundant.

Swampy Riparian Woodland (EVC 83, **regionally Endangered**): Total area 4,800 m^2, of which approximately 800 m² is in fair ecological condition (rating C) and 4,000 m^2 is in poor ecological condition (rating D). 27 indigenous plant species were found.

Dominant canopy trees: *Eucalyptus ovata* typically 18 m tall, with fewer *E. cephalocarpa*.

Dominant lower trees: *Acacia melanoxylon* and *A. dealbata* are sparse, and would have been more numerous prior to clearing.

Tall Shrubs: 4-5 m tall, dominated in patchwise fashion by *Melaleuca ericifolia*, *Leptospermum scoparium* or *Ozothamnus ferrugineus*. Density variable, becoming very dense where several years old.

Lower Shrubs: Similarly variable density. Dominants are *Coprosma quadrifida* and *Goodenia ovata*.

Vines: No native vines seen.

Ferns: *Pteridium esculentum* dense in patches.

Ground flora: All but destroyed by heavy machinery and excavation. *Pteridium esculentum* dominates some patches and the hardy grass, *Microlaena stipoides*, is thick in patches.

Intermediate between Valley Heathy Forest (EVC 127) and Grassy Forest (EVC 128) – both **regionally Endangered**. The bias is toward Grassy Forest north of the creek and Valley Heathy Forest south of the creek. The total area is 27,800 m^2 as mapped, in part blending gradually with Lowland Forest. Approximately 1,600 m² is in excellent ecological condition (rating A), 4,600 m² in good ecological condition (rating B), 13,000 m² in fair

ecological condition (rating C) and 8,600 m^2 in poor ecological condition (rating D). 90 indigenous plant species were found.

Dominant canopy trees: *Eucalyptus obliqua, E. radiata* and *E. goniocalyx*, approximately 20 m tall with the tree crowns overlapping slightly.

Dominant lower trees: *Exocarpos cupressiformis* is moderately dense and *Acacia melanoxylon* is sparser. *Allocasuarina littoralis* is fairly abundant on some southern properties, which is suggestive of Valley Heathy Forest.

Shrubs: Mostly up to 2-3 m tall and of variable density, depending on the recent history of clearing and other disturbance. A sparse cover is the most common natural state. The most common species are *Cassinia aculeata, Leptospermum scoparium, L. continentale*, *Bursaria spinosa, Acacia* species*, Correa reflexa, Pultenaea gunnii, Olearia lirata* and *Epacris impressa*. Thickets of *Kunzea ericoides* have appeared in response to vegetation clearance in some areas. Visibility is typically 30 m except for the thickets or woody weeds.

Vines: Moderately common but representing a very low percentage of foliage from all plants collectively. Frequent species are *Billardiera mutabilis*, *Comesperma volubile*, *Clematis aristata*, *Pandorea pandorana* and *Glycine clandestina*.

Ferns: *Pteridium esculentum* is dense in patches, but not with high percentage foliage cover overall.

Ground flora: Mostly less than knee deep and with a foliage cover of typically 80% in mature vegetation. Dominated in patchwise fashion by *Themeda triandra, Poa morrisii, Rytidosperma pallidum* and *Gahnia radula*. *Lomandra filiformis* subsp. *coriacea*, *Microlaena stipoides, Austrostipa rudis* and *Austrostipa pubinodis* are each conspicuous in some areas but not dominant. There are numerous ground flora species, the most frequent being *Platylobium formosum* (creeping form), *Acrotriche* species*, Gonocarpus tetragynus, Goodenia lanata, Helichrysum scorpioides, Arthropodium strictum, Lepidosperma gunnii*, *L. laterale* and *Pimelea humilis*.

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, *Acacia leprosa* (Dandenong Range variant) is rare nationally and species with names in bold are rare throughout the Melbourne region.

Risk	Indigenous Species
	Acacia dealbata
V	*Acacia leprosa* (Dandenong Range variant)
V	*Acacia melanoxylon*
E	*Acacia myrtifolia*
E	*Acacia pycnantha*
E	*Acacia stricta*
V	*Acacia verticillata*
V	*Acaena agnipila/echinata*
	Acaena novae-zelandiae
V	*Acrotriche prostrata*
	Acrotriche serrulata
V	*Adiantum aethiopicum*
V	*Allocasuarina littoralis*
C	*Amyema pendula*
	Arthropodium strictum
	Austrostipa pubinodis
	Austrostipa rudis subsp. *rudis*
E	*Banksia marginata*
	Billardiera mutabilis
V	*Brunonia australis*
	Burchardia umbellata
	Bursaria spinosa
V	*Caesia parviflora*
V	*Calochlaena dubia*
	Carex appressa
	Carex breviculmis
	Cassinia aculeata
V	*Cassinia longifolia*
E	*Cassytha pubescens*
E	*Centella cordifolia*
V	*Chiloglottis valida*
V	*Clematis aristata*

Risk	Indigenous Species
V	*Comesperma volubile*
V	*Coprosma quadrifida*
E	*Correa reflexa*
E	*Cyathea australis*
E	*Cynoglossum suaveolens*
E	*Daviesia latifolia*
E	*Daviesia leptophylla*
	Deyeuxia quadriseta
	Dianella admixta
V	*Dianella longifolia* s.l.
V	*Dianella tasmanica*
	Dichelachne rara
	Dichondra repens
V	*Dillwynia cinerascens*
E	*Dipodium roseum*
V	*Drosera peltata* subsp. *auriculata*
	Elymus scaber
V	*Epacris impressa*
	Eragrostis brownii
V	*Eucalyptus cephalocarpa*
	Eucalyptus goniocalyx
E	*Eucalyptus macrorhyncha*
V	*Eucalyptus melliodora*
V	*Eucalyptus obliqua*
V	*Eucalyptus ovata*
E	*Eucalyptus radiata*
E	*Euchiton involucratus*
V	*Exocarpos cupressiformis*
	Gahnia radula
E	*Gahnia sieberiana*
	Geranium sp.
V	*Glycine clandestina*

Risk	Indigenous Species
	Gonocarpus tetragynus
	Goodenia lanata
	Goodenia ovata
V	*Hardenbergia violacea*
V	*Helichrysum scorpioides*
V	*Hemarthria uncinata*
E	*Hibbertia riparia*
V	*Hovea heterophylla*
V	*Hydrocotyle hirta*
E	*Hypericum gramineum*
E	*Imperata cylindrica*
E	*Indigofera australis*
E	*Juncus procerus*
C	*Kennedia prostrata*
	Kunzea ericoides spp. agg.
C	*Lachnagrostis aemula* s.l.
	Lachnagrostis filiformis
V	*Lagenophora gracilis*
E	*Lagenophora stipitata*
	Lepidosperma elatius
	Lepidosperma gunnii
V	*Lepidosperma laterale*
	Leptospermum continentale
E	*Leptospermum scoparium*
V	*Lindsaea linearis*
	Lomandra filiformis subsp. *coriacea*
	Lomandra filiformis subsp. *filiformis*
	Lomandra longifolia
E	*Melaleuca ericifolia*
	Microlaena stipoides
	Microtis parviflora
V	*Olearia lirata*
E	*Olearia myrsinoides*
V	*Opercularia ovata*
V	*Opercularia varia*
	Oxalis exilis/perennans
E	*Ozothamnus ferrugineus*
C	***Ozothamnus obcordatus***
	Pandorea pandorana
C	*Patersonia occidentalis*
	Persicaria decipiens

Risk	Indigenous Species
V	*Pimelea humilis*
V	*Plantago varia*
V	*Platylobium formosum*
V	*Platylobium obtusangulum*
	Poa ensiformis
E	*Poa labillardierei* var. *labillardierei*
	Poa morrisii
E	*Poa tenera*
E	*Polyscias sambucifolia*
E	***Polystichum proliferum***
C	***Pomaderris ?racemosa*** (perhaps planted)
	Poranthera microphylla
E	*Prostanthera lasianthos*
	Pteridium esculentum
E	*Pterostylis melagramma*
V	*Pultenaea gunnii*
	Rytidosperma laeve
	Rytidosperma linkii var. *fulvum*
	Rytidosperma pallidum
	Rytidosperma penicillatum
V	*Rytidosperma pilosum*
	Rytidosperma racemosum
	Rytidosperma setaceum
	Rytidosperma tenuius
	Schoenus apogon
	Senecio hispidulus
E	*Senecio ?prenanthoides*
	Senecio quadridentatus
V	*Solanum ?laciniatum*
E	*Stackhousia monogyna*
E	*Stylidium armeria/graminifolium*
	Tetrarrhena juncea
E	*Tetratheca ciliata*
V	*Thelymitra peniculata*
	Themeda triandra
E	*Thysanotus tuberosus*
	Tricoryne elatior
E	*Veronica plebeia*
E	*Viola hederacea*
V	*Xanthorrhoea minor*
E	*Xanthosia dissecta*

Introduced Species

Acacia baileyana	*Chrysanthemoides monilifera*	*Genista linifolia*	*Plantago lanceolata*
Acacia decurrens	*Conyza sumatrensis*	*Genista monspessulana*	*Prunella vulgaris*
Acacia elata	*Coprosma repens*	*Grevillea* cultivar	*Prunus cerasifera*
Acacia longifolia subsp. *longifolia*	*Coprosma robusta*	*Hakea salicifolia*	*Pyracantha* sp.
	Cortaderia selloana	*Hedera helix*	*Ranunculus repens*
Agapanthus praecox	*Cotoneaster glaucophyllus*	*Holcus lanatus*	*Rubus anglocandicans*
Agrostis capillaris	*Cotoneaster pannosus*	*Hypochoeris radicata*	*Salpichroa origanifolia*
Aira cupaniana	*Cotoneaster simonsii*	*Ilex aquifolium*	*Solanum americanum*
Allium triquetrum	*Crocosmia × crocosmiiflora*	*Ligustrum lucidum*	*Solanum nigrum*
Anthoxanthum odoratum	*Cynodon dactylon*	*Ligustrum vulgare*	*Sonchus oleraceus*
Arbutus unedo	*Cytisus scoparius*	*Lonicera japonica*	*Sporobolus africanus*
Asparagus scandens	*Dactylis glomerata*	*Nasturtium officinale*	*Taraxacum officinale*
Billardiera heterophylla	*Ehrharta erecta*	*Oxalis incarnata*	*Tradescantia fluminensis*
Briza maxima	*Erigeron karvinskianus*	*Paspalum dilatatum*	*Tropaeolum majus*
Bromus catharticus	*Eriobotrya japonica*	*Pennisetum clandestinum*	*Ulex europaeus*
Callitriche stagnalis	*Fraxinus angustifolia*	*Pinus radiata*	*Vicia hirsuta*
Centaurium erythraea	*Galium aparine*	*Pittosporum undulatum*	*Vicia sativa*

Vinca major *Watsonia borbonica* *Watsonia meriana*

Notes concerning some of the locally threatened plant species

Acacia leprosa (Cinnamon Wattle), Dandenong Range variant. Dozens scattered across the site, most dense in the northwest.
Agrostis aemula (Purplish Blown Grass). Found only at 8 Lucas Close, but likely to appear sporadically.
Banksia marginata (Silver Banksia). The biggest population in Knox, confined to two Stewart St properties.
Chiloglottis valida (Common Bird-orchid). Found only at 8 Lucas Close.
Correa reflexa (Common Correa). Widely spread across the site, and apparently secure.
Cynoglossum suaveolens (Sweet Hound's-tongue). Modest numbers at 8 Lucas Close and a Stewart St property.
Gahnia sieberiana (Red-fruit Saw-sedge). Abundant in the less disturbed, moister areas.
Gonocarpus ?*humilis* (Shade Raspwort). Abundant in the less disturbed, moister areas.
Imperata cylindrica (Blady Grass). A small amount in Lowland Forest within the drainage reserve.
Kennedia prostrata (Running Postman). Small numbers on 25 Stewart St, where germinated after soil disturbance.
Lagenophora stipitata (Common Lagenophora). Small numbers at 8 Lucas Close.
Microtis parviflora (Slender Onion-orchid). Details not recorded, but likely to occur in infrequently mown areas.
Ozothamnus obcordatus (Grey Everlasting). A single plant, the only one left in Knox. The only other record of the species in Boronia is on a field trip of the Field Naturalists Club of Victoria in 1928 (*Victorian Naturalist* **45**:181).
Patersonia occidentalis (Long Purple-flag). Small numbers at a Stewart St property.
Polystichum proliferum (Mother Shield-fern). Only one plant found, in the Damp Forest.
Tetratheca ciliata (Pink-bells). At 8 Lucas Close and a nearby private property.
Thysanotus tuberosus (Common Fringe-lily). Small numbers at 8 Lucas Close.
Veronica plebeia (Trailing Speedwell). Last recorded in 1985 by Mr Andrew Paget.

Fauna of special significance

Smith and Loyn (*ibid.*) reported Red-capped Robin (regionally rare), Pink Robin (regionally uncommon) and Scarlet Robin (locally rare). Other locally rare species include Chestnut Teal, White-browed Scrubwren (resident), Superb Fairy-wren (resident), Tawny Frogmouth (roosting), Red-browed Finch, Eastern Yellow Robin, Australian Raven and Australian King-parrot.

Fauna habitat features

The site clearly has rich bird life, even though no formal survey has been done. The bird species include large, mobile species such as cockatoos down to small, sedentary species such as Superb Fairy-wrens and White-browed Scrubwrens. The latter category relies heavily on the presence of areas of dense shrubs or ground flora (particularly close to the creek). The tree cover is also important for nearly all the wildlife.

There are many mature trees with hollows, some of which show scratch marks at their openings. Bats, possums and birds such as rosellas are likely to be roosting or nesting in these hollows, including in the many dead trees.

The ground flora, logs and forest litter provide extensive habitat for skinks, particularly on the southern side of the creek.

The many plants of *Gahnia sieberiana* (Red-fruit Saw-sedge) are eaten by larvae of the locally rare Sword-grass Brown Butterfly, as confirmed during frequent checks by members of the Knox Environment Society over many years up to 2003.

Significance ratings

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

Criterion 1.1.1 attributes **Local** significance to 'All parts of riparian systems with riparian vegetation present', which might be taken to apply to this site (although the amount of riparian vegetation is small).

The Old Joes Creek bushland is the breeding site for at least 25% of the local population of Swordgrass Brown Butterflies, and it is a site from which expansion of the population is occurring. Criterion 1.2.1.1 takes this to represent **Local** significance.

Richness and Diversity

138 indigenous plant species is high for a site in Knox. Despite the absence of a fauna survey, the abundance of bird life also stands out in Knox. Such attributes are not recognised by Amos (2004), but a vegetation ecologist would usually take them to represent Local significance

'Rare or Threatened' Status

a. *Regionally Threatened Ecological Vegetation Classes*

The EVCs Damp Forest, Valley Heathy Forest, Grassy Forest and Swampy Riparian Woodland are all listed by the Department of Sustainability & Environment as Endangered in the Gippsland Plain bioregion. According to *'Victoria's Native Vegetation Management – A Framework for Action'* (NRE 2002a), remnant patches of native vegetation belonging to an endangered EVC (as in the case of this site) have a conservation significance rating of either High or Very High, depending on the vegetation's habitat score. It follows from criterion 3.2.3 of Amos (2004) that the Old Joes Creek Bushland is of **State** significance.

Lowland Forest is listed as Vulnerable in the Gippsland Plain bioregion, which leads to a conservation significance of at least High in the most natural areas, according to the 'Framework' procedure. This would translate to **State** significance under criterion 3.2.3.

b. *Plant Species*

The Dandenong Range variant of *Acacia leprosa* is listed as 'rare' in Victoria and it does not occur outside Victoria. The population in this site is substantial and viable and it makes a modest contribution to the total population of the taxon. This represents **State** 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.

Representativeness

The occurrences of Lowland Forest and Damp Forest around Old Joes Creek are the most westerly in the region, naturally isolated from all other occurrences. The Lowland Forest is at the limit of its tolerance of soil type, whereas Damp Forest is at the limit of its tolerance of rainfall. It seems likely that there are few (if any) better sites in the Port Phillip and Westernport Region to demonstrate the limits of Damp Forest. These features are regionally significant to a vegetation ecologist, which is classified by *Victoria's Native Vegetation Management - a Framework for Action* as representing Medium conservation significance. The standard criteria provide no recognition of such features.

Waterway Protection

The Swampy Riparian Woodland is in very poor ecological condition and is being degraded by further excavation while this report is being written. Nevertheless, all riparian vegetation has a Very High hazard rating for waterway protection according to Appendix 1 of *Victoria's Native Vegetation Management - a Framework for Action.* This is separate from conservation significance, and indicates the level of importance that should be placed on protecting, restoring and revegetating riparian vegetation such as that at Old Joes Creek.

The Lowland Forest also extends to the creek margins upstream from the retarding basin, and it is of similar importance to the Swampy Riparian Woodland.

Victoria's Native Vegetation Management - a Framework for Action also assigns a High hazard rating to 'vegetation immediately adjacent to the riparian zone', which encompasses both the Lowland Forest and the Damp Forest around Old Joes Creek.

Threats

The following are the main pressures currently threatening to lessen the area's conservation significance (as well as its ecological wellbeing and amenity). They are presented in approximately decreasing order of severity:

- Invasion by environmental weeds, particularly woody weeds such as Sweet Pittosporum;
- Eucalypt dieback disease, evidently associated in part with removal of understorey and overabundance of Bell Miners;
- Residential development of private lots, including that which may result from possible subdivision;
- Loss or decline of plant species that are present in dangerously small numbers, due to inbreeding, poor reproductive success or elimination by incidents such as cubby house construction or digging by dogs;
- Vegetation damage or removal beside or in the creek by Melbourne Water, to access pipes, stabilise creek banks or for related purposes;
- Mowing;
- Trampling of vegetation by walkers, bicycles and dogs;
- Predation of fauna (particularly birds) by cats and foxes.

Management issues

- Eucalypts should be planted to replace the many dead and dying trees;
- There is little if any control of serious environmental weeds on most of the private properties in and around the site, even though many of them are listed as 'Regionally Controlled' under the *Catchment and Land Management Act 1994*;

- Revegetation with indigenous plants is succeeding in enhancing vegetation cover and habitat connectivity, but more needs to occur (if only to redress loss of vegetation due to stream engineering that is occurring in 2003);
- There are signs of illegal clearing of native vegetation on some residential properties;
- Mowing of indigenous ground flora is not intrinsically bad, but the timing and frequency on this site is generally adverse;
- Some ecological burning of remnant vegetation on the southern side of the creek might regenerate some presently absent plant species, increase the size of species with dangerously small populations, and make the vegetation more robust against degrading influences.

Administration matters

- This site is worthy of inclusion within the proposed Environmental Significance Overlay, ESO2, because of its State biological significance (discussed above), the possibility of future subdivision and the presence of riparian habitat;
- The site is enveloped by Site 99 (the Dandenong Ranges Buffer), which is recommended to be covered by the proposed Environmental Significance Overlay, ESO3;
- The site is included within Vegetation Protection Overlay VPO3 of the Knox Planning Scheme but its significance is as great as other sites in VPO1;
- The granting of planning permits for land development within the site would be tightly restricted because of the predominance of threatened EVCs, which are given high protection under the Victorian government's policy for native vegetation management (NRE 2002a; Victoria Planning Provisions);
- Some of the site has a slope exceeding 20% and some lies within a riparian zone. Both of these attributes are given a Very High land protection hazard rating by the Native Vegetation Management Framework (NRE 2002a) and they trigger certain planning controls;
- The commitments that Council makes to conservation and amenity in this precinct in the future would be best done within the framework of a strategy that looks at the options for land purchase, landowner assistance, conservation agreements with landowners and so on. The report *'Assessment of Habitat Values of Bushland around Old Joes Creek, Boronia'* by Lorimer (2003) provides an ecological basis for such a strategy;
- It is recommended that consideration of any development proposal within the site (other than 350 Dorset Rd) should take into account a survey of birds 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 the 'sanctuary' and another for the rest of the grounds, compiled by Dr Lorimer over approximately 10 hours during this study (mostly April and May 2003);
- Eight similar lists compiled by Mr Rik Brown, five of them in April 2002 and three in April-August 2000;
- An earlier list of plant species on 8 Lucas Close compiled by Dr Lorimer on 10th November 1988, as reported to Council in *'Biological Survey of 8 Lucas Close, Boronia'*, dated 11th November 1998;
- Incidental observations of birds and mammals while the above data was being gathered;
- Two quadrat records in the drainage reserve (N13163 & N13164) and nine quadrat records from what are now properties on the south side of Lucas Close prior to the site's development, all recorded by Andrew Paget in his 1985 unpublished RMIT thesis for B.App.Sci. (but note that the record of *Poa labillardierei* is erroneous);
- Bird observations reported by Smith and Loyn (*ibid.*);
- Monitoring of Swordgrass Brown Butterflies by the Knox Environment Society;
- 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.

Acknowledgment

Thanks to the manager of the common property at Debson Close and to the owner of 39-41 Stewart St for granting permission to inspect those properties.