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 and an abundance of globally-threatened plants.

Summary of significant features:

- Nationally significant: an abundance of the flat-pea, *Platylobium infecundum*, which is Critically Endangered globally;
- Nationally significant: an abundance of the Dandenong Range Cinnamon Wattle (*Acacia stictophylla*), which is Endangered globally;
- State significance: patches of vegetation representing four Ecological Vegetation Classes listed as regionally Endangered and one listed as regionally Vulnerable;
- Locally significant: viable populations of scores of plant species threatened with dying out in Knox;
- Locally significant: a creek with riparian vegetation.

Boundaries

The site comprises the areas outlined with blue dashes on the aerial photograph on the next page, comprising 4.48 ha of private land (tinted magenta) and 5.45 ha of public land (not tinted). The whitewashed surroundings are in Site 99, the Dandenong Ranges buffer site. The boundary follows cadastral boundaries except for: (a) the edge of the retarding basin; (b) across the southern extension of Army Rd, between corners of units 2 and 3 of 41 Stewart St; (c) a split between two halves of the Debson Close common property at its narrowest point; and (d) the northern half-width of part of Lucas Close. Parts of the private residential lots are not biologically significant but the whole of each lot is included within the site boundary because the welfare of the significant habitat is strongly linked to what occurs elsewhere on the property.

The site delineated here is approximately 2 ha smaller than in the 2nd edition in 2010, due to clearing in the interim. Most of the clearing was done by Melbourne Water, who undertook major works to make the retarding basin levee meet the same strength standards as a large dam. There has also been some vegetation loss on 350 Dorset Rd to the west. Both of these areas have been transferred in this edition into the surrounding Site 99.

Conversely, the small section of the road reservation for Lucas Close has been transferred from Site 99 to Site 29 because it contains dense cover of the flat-pea, *Platylobium infecundum*, which is Critically Endangered globally. That species had not even been scientifically described in 2010, much less assessed for its risk of extinction.

Land use & tenure: Melbourne Water drainage reserve, Council bushland reserve, small sections of Council road reservations, private residential lots and common property of Debson Close and 39-41 Stewart St.

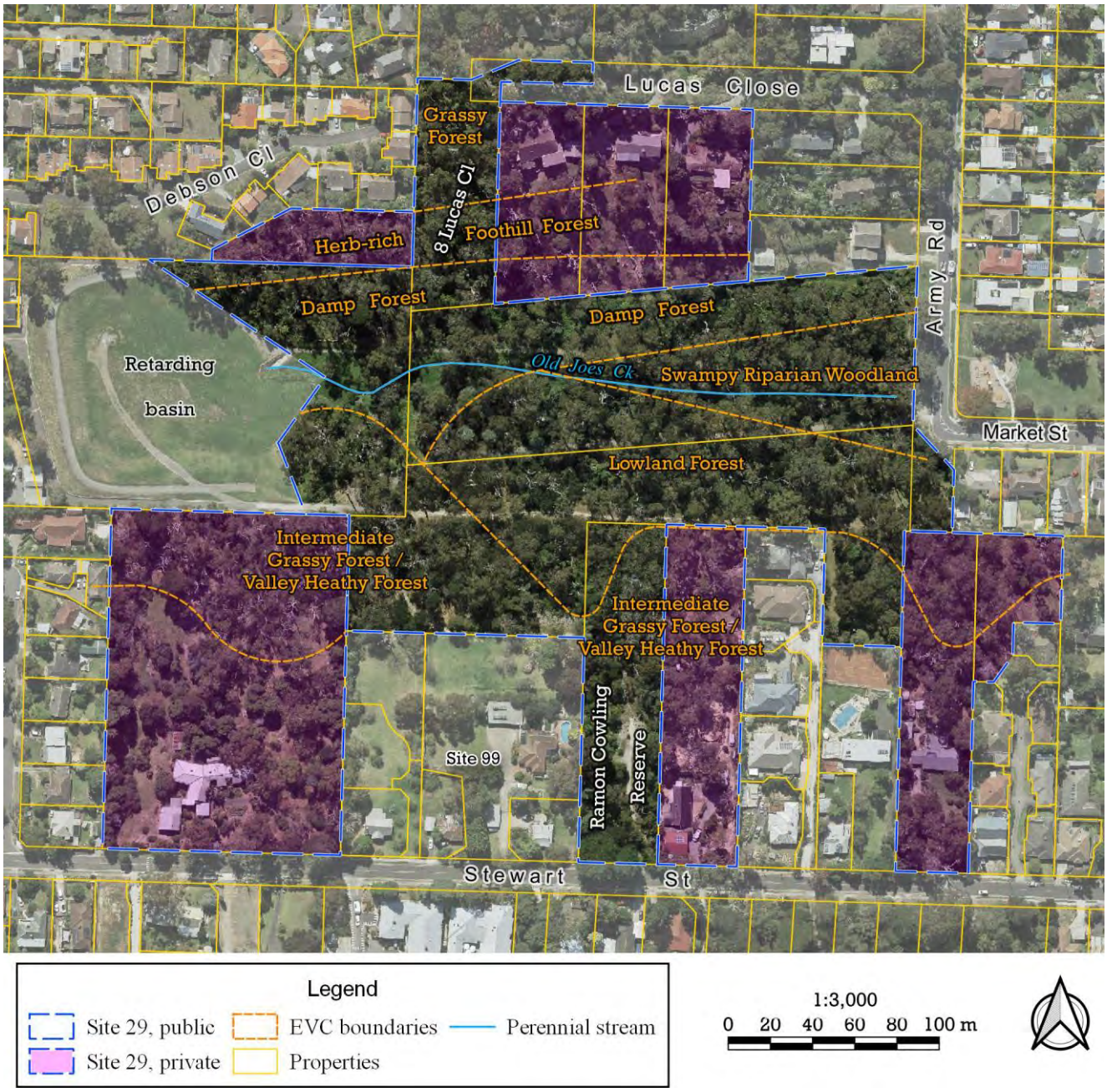
Site description

The site is where a stream (Old Joes Creek) has eroded a gap through the north-south ridge that runs just parallel to (and 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 site's 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 less 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 to Lucas Close. 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 Damp Forest, which is significant due to its occurrence as a naturally isolated outlier.

The site hosts surprisingly rich plant life and birdlife. That is partly due to the mixture of different types of vegetation and the treed environment of the ridge between Dorset Rd and Army Rd.



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 and creek bank to the quite intact vegetation of 8 Lucas Close (which is a Council reserve). Drainage works and sewerage have greatly degraded the riparian vegetation. Some of the residential properties have had active, sensitive management that has maintained high biodiversity, low incidence of environmental weeds and low fire hazard. Other properties are affected by woody environmental weeds such as Boneseed, Brooms and Sweet Pittosporums.

One of the residents who looked after nature well on his property (23 Stewart St) was the late Ramon Cowling. He generously bequeathed the property to the people of Knox on his death, forming what is now named Ramon Cowling Reserve (marked on the aerial photograph above).

That part of the site and most of the rest of the site have been heavily planted with many species that are native locally or to the wider region. Even most botanists are unable to tell that many superficially natural, wild plants are actually planted. A good example is the Silver Banksia, *Banksia marginata*. Wild plants of that species grew on two properties in the site's southeast until this century but when I searched for them in 2024, all I could find were plants of the quite different 'tree form' of that species, which is not locally indigenous. The two forms may well be eventually described as different species or subspecies.

This site is unusual in Knox in its amalgam of public land and private land with very similar attributes of biological significance. The two types of land tenure are distinguished on the aerial photograph above but the whole area functions as an ecological unit.

Eucalypt dieback is a significant problem in the area and has been investigated by Smith and Loyn*. Drainage works, pipelaying and consequent colonisation by woody environmental weeds appear likely to have contributed to the dieback.

Relationship to other land

There is a fragmentary 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 birdlife to the Old Joes Creek area, as evidenced by the many bird species recorded by citizen scientists (available through the Atlas of Living Australia). 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. The paucity of indigenous understorey also reduces the available gene pool for the understorey plants and small fauna.

However, many butterfly species are able to fly over large distances – including suburbia – and so the Knox Environment Society 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 15a).

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

Habitat types

The numbers of hectares quoted below are taken from the 2nd edition of this report. Small changes have occurred since then, largely related to Melbourne Water's clearing around the retarding basin.

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 m² is in good ecological condition (rating B), 7,600 m² in fair ecological condition (rating C) and 3,000 m² in poor ecological condition (rating D).

Canopy trees: Dominated by *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).

Sub-canopy 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 stictophylla, Olearia lirata* and (formerly) *Banksia marginata*. *Kunzea leptospermoides* has formed thickets in response to clearing or soil disturbance. The proportions of these species vary greatly with the recent history of clearing and cutting.

Ferns: Patches of dense bracken are scattered liberally.

Groundcover: 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 walking 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).

* 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.

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.

Sub-canopy trees: *Acacia melanoxylon* and *Exocarpos cupressiformis* in moderate density.

Shrubs: Moderate density. Key indicator species are *Coprosma quadrifida, Ozothamnus ferrugineus, Acacia stictophylla, 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.

Groundcover: 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 m², 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 m² is in poor ecological condition (rating D).

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

Sub-canopy trees: *Acacia melanoxylon* is present but quite sparse.

Shrubs: Sparse, the most abundant being *Acacia stictophylla, 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.

Groundcover: 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 m², of which approximately 800 m² is in fair ecological condition (rating C) and 4,000 m² is in poor ecological condition (rating D).

Canopy trees: Dominated by *Eucalyptus ovata* typically 18 m tall, with fewer *E. cephalocarpa*.

Sub-canopy 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.

Groundcover: 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**. There is a tendency toward Grassy Forest north of the creek and Valley Heathy Forest south of the creek. The total area is approximately 2.8 ha, 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 m² in poor ecological condition (rating D).

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

Sub-canopy 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 leptospermoides* 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.

Groundcover: 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 groundcover species, the most frequent being *Platylobium infecundum, Acrotriche* species, *Gonocarpus tetragynus, Goodenia lanata, Coronidium scorpioides, Arthropodium strictum, Lepidosperma gunnii*, *L. laterale* and *Pimelea humilis*.

Plant species

8 Lucas Close

The following plant species recorded by the author during botanical surveys of 8 Lucas Close in 1998 and 2003. The earlier survey was shortly before the land was purchased by Knox City Council for a reserve. No planting had occurred by 2003, so this list provides the best indication of the site's natural flora (excluding mosses and liverworts). Entries in the 'Risk' column indicate species whose risk of dying out in Knox is rated as Critically endangered (C), Endangered (E), Vulnerable (V) or Near threatened (N). In addition, the species with names in bold are rare throughout the Melbourne region.

Risk	Wild indigenous species
V	*Acacia melanoxylon*, Blackwood
E	*Acacia myrtifolia*, Myrtle Wattle
V	*Acacia pycnantha*, Golden Wattle
V	***Acacia stictophylla*, Dandenong Range Cinnamon Wattle**
E	*Acacia stricta*, Hop Wattle
V	*Acaena echinata*, Sheep's Burr
	Acaena novae-zelandiae, Bidgee-widgee
V	*Acrotriche prostrata*, Trailing Ground-berry
E	*Acrotriche serrulata*, Honey-pots
V	*Adiantum aethiopicum*, Common Maidenhair
	Arthropodium strictum, Chocolate Lily
	Austrostipa pubinodis, Tall Spear-grass
	Austrostipa rudis subsp. *rudis*, Veined Spear-grass
	Billardiera mutabilis, Common Apple-berry
V	*Brunonia australis*, Blue Pincushion
	Burchardia umbellata, Milkmaids
	Bursaria spinosa, Sweet Bursaria
V	*Caesia parviflora*, Pale Grass-lily
V	*Calochlaena dubia*, Common Ground-fern
	Carex breviculmis, Short-stem Sedge
	Cassinia aculeata, Common Cassinia
V	*Chiloglottis valida*, Common Bird-orchid
V	*Clematis aristata*, Mountain Clematis
E	*Comesperma volubile*, Love Creeper
V	*Coprosma quadrifida*, Prickly Currant-bush
C	*Correa reflexa* var. *reflexa*, Common Correa

Risk	Wild indigenous species
C	*Daviesia latifolia*, Hop Bitter-pea
	Deyeuxia quadriseta, Reed Bent-grass
	Dianella longifolia var. *longifolia*, Pale Flax-lily
	Dianella revoluta, Black-anther Flax-lily
	Dianella tasmanica, Tasman Flax-lily
	Dichelachne rara, Common Plume-grass
V	*Dillwynia cinerascens*, Grey Parrot-pea
V	*Drosera auriculata*, Tall Sundew
C	*Epacris impressa*, Common Heath
V	*Eucalyptus goniocalyx*, Bundy
E	*Eucalyptus obliqua*, Messmate Stringybark
E	*Eucalyptus radiata*, Narrow-leaved Peppermint
V	*Exocarpos cupressiformis*, Cherry Ballart
C	*Gahnia radula*, Thatch Saw-sedge
E	*Gahnia sieberiana*, Red-fruit Saw-sedge
E	*Glycine clandestina*, Twining Glycine
	Gonocarpus tetragynus, Common Raspwort
N	*Goodenia lanata*, Trailing Goodenia
	Goodenia ovata, Hop Goodenia
C	*Hackelia suaveolens*, Sweet Hound's-tongue
E	*Hardenbergia violacea*, Purple Coral-pea
C	*Hovea heterophylla*, Common Hovea
E	*Hypericum gramineum*, Small St John's Wort
C	*Indigofera australis*, Austral Indigo
	Kunzea leptospermoides, Yarra Burgan
C	***Lachnagrostis aemula*, Purplish Blown-grass**
	Lachnagrostis filiformis, Common Blown-grass

Risk	Wild indigenous species
E	*Lagenophora adenosa/stipitata*, Blue (or Common) Bottle-daisy
V	*Lagenophora sublyrata*, Slender Bottle-daisy
	Lepidosperma elatius, Tall Sword-sedge
	Lepidosperma gunnii, Slender Sword-sedge
V	*Lepidosperma laterale*, Variable Sword-sedge
C	*Leptospermum continentale*, Prickly Tea-tree
	Leptospermum scoparium, Manuka
V	*Lindsaea linearis*, Screw Fern
	Lomandra filiformis subsp. *coriacea*, Wattle Mat-rush
	Lomandra filiformis subsp. *filiformis*, Wattle Mat-rush
	Lomandra longifolia, Spiny-headed Mat-rush
	Microlaena stipoides, Weeping Grass
E	*Olearia lirata*, Snowy Daisy-bush
C	*Olearia myrsinoides*, Silky Daisy-bush
V	*Opercularia ovata*, Broad-leaf Stinkweed
V	*Opercularia varia*, Variable Stinkweed
	Oxalis exilis/perennans, Wood-sorrel
V	*Ozothamnus ferrugineus*, Tree Everlasting
	Pandorea pandorana, Wonga Vine
E	*Pimelea humilis*, Common Rice-flower
E	*Plantago varia*, Variable Plantain
E	***Platylobium infecundum*, a flat-pea**
	Poa ensiformis, Sword Tussock-grass
	Poa morrisii, Soft Tussock-grass
V	*Polyscias sambucifolia*, Elderberry Panax
	Poranthera microphylla, Small Poranthera
	Pteridium esculentum, Austral Bracken
V	*Pultenaea gunnii*, Golden Bush-pea
	Rytidosperma fulvum, Leafy Wallaby-grass
	Rytidosperma laeve, Smooth Wallaby-grass
E	*Rytidosperma pallidum*, Red-anther (or Silvertop) Wallaby-grass
	Rytidosperma penicillatum, Slender Wallaby-grass
	Rytidosperma pilosum, Velvet Wallaby-grass
	Rytidosperma racemosum, Clustered Wallaby-grass
	Rytidosperma setaceum, Bristly Wallaby-grass
	Rytidosperma tenuius, Purplish Wallaby-grass
V	*Senecio* ?*prenanthoides*, Common Fireweed
	Senecio quadridentatus, Cotton Fireweed
	Stylidium armeria, Common Triggerplant
	Tetrarrhena juncea, Forest Wire-grass
C	*Tetratheca ciliata*, Pink-bells
E	*Thelymitra peniculata*, Trim Sun-orchid
	Themeda triandra, Kangaroo Grass
C	*Thysanotus tuberosus*, Common Fringe-lily
E	*Viola hederacea*, Ivy-leaf Violet
E	*Xanthorrhoea minor*, Small Grass-tree

Introduced species
Acacia longifolia subsp. *longifolia*, Sallow Wattle
Agapanthus praecox, Agapanthus
Aira sp., a hair-grass
Anthoxanthum odoratum, Sweet Vernal-grass
Arbutus unedo, Irish Strawberry Tree
Briza maxima, Large Quaking-grass
Cenchrus clandestinus, Kikuyu
Centaurium erythraea, Common Centaury
Chrysanthemoides monilifera subsp. *monilifera*, Boneseed
Cotoneaster glaucophyllus, Cotoneaster
Cynodon dactylon, Couch
Dactylis glomerata, Cocksfoot
Ehrharta erecta, Panic Veldt-grass
Erigeron karvinskianus, Seaside Daisy
Erigeron sumatrensis, Fleabane
Eriobotrya japonica, Loquat
Fraxinus angustifolia, Desert Ash
Galium aparine, Cleavers
Genista monspessulana, Montpellier Broom
Grevillea hybrids and cultivars
Hakea salicifolia, Willow-leaf Hakea
Hedera helix/hibernica, Ivy
Holcus lanatus, Yorkshire Fog
Hypochaeris radicata, Cat's Ear
Ilex aquifolium, Holly
Ligustrum lucidum, Large-leafed Privet
Lonicera japonica, Japanese Honeysuckle
Paspalum dilatatum, Paspalum
Pinus radiata, Monterey Pine
Pittosporum undulatum, Sweet Pittosporum
Plantago lanceolata, Ribwort
Prunella vulgaris, Self-heal
Prunus cerasifera, Cherry-plum
Rubus anglocandicans, Blackberry
Sonchus oleraceus, Sow-thistle
Taraxacum sect. *Taraxacum*, Garden Dandelion
Vicia hirsuta, Tiny Vetch
Vicia sativa, Common Vetch

Ramon Cowling Reserve

The following wild, indigenous plant species were recorded in 2003 by the author in the bushland that was, at that time, Ramon Cowling's backyard. Mr Cowling indicated which plants he had planted and the author left them off the list. This list provides the best indication of the site's natural flora (excluding mosses and liverworts) this century. Large numbers of plants have been planted in the reserve by Mr Cowling and (more recently) Knox City Council. Entries in the 'Risk' column below indicate species whose risk of dying out in Knox is rated as Critically endangered (C), Endangered (E), Vulnerable (V) or Near threatened (N).

Risk	Wild indigenous species
V	*Acacia melanoxylon*, Blackwood
E	*Acrotriche serrulata*, Honey-pots
V	*Adiantum aethiopicum*, Common Maidenhair
V	*Allocasuarina littoralis*, Black Sheoak
	Austrostipa pubinodis, Tall Spear-grass
	Billardiera mutabilis, Common Apple-berry
	Burchardia umbellata, Milkmaids
	Bursaria spinosa, Sweet Bursaria
V	*Caesia parviflora*, Pale Grass-lily
	Cassinia aculeata, Common Cassinia
	Cassinia longifolia, Shiny Cassinia
C	*Daviesia latifolia*, Hop Bitter-pea
	Deyeuxia quadriseta, Reed Bent-grass
	Dianella revoluta, Black-anther Flax-lily
	Dianella tasmanica, Tasman Flax-lily
V	*Dillwynia cinerascens*, Grey Parrot-pea
C	*Epacris impressa*, Common Heath
V	*Eucalyptus goniocalyx*, Bundy
E	*Eucalyptus obliqua*, Messmate Stringybark
E	*Eucalyptus radiata*, Narrow-leaved Peppermint
V	*Exocarpos cupressiformis*, Cherry Ballart
E	*Gahnia sieberiana*, Red-fruit Saw-sedge
N	*Goodenia lanata*, Trailing Goodenia
	Goodenia ovata, Hop Goodenia
C	*Hibbertia australis*, Upright Guinea-flower
	Kunzea leptospermoides, Yarra Burgan
V	*Lagenophora sublyrata*, Slender Bottle-daisy
	Lepidosperma gunnii, Slender Sword-sedge
V	*Lepidosperma laterale*, Variable Sword-sedge
	Lomandra filiformis subsp. *coriacea*, Wattle Mat-rush
	Microlaena stipoides, Weeping Grass
	Oxalis exilis/perennans, Wood-sorrel
E	*Pimelea humilis*, Common Rice-flower
V	*Pultenaea gunnii*, Golden Bush-pea
E	*Rytidosperma pallidum*, Red-anther (or Silvertop) Wallaby-grass
	Stylidium armeria, Common Triggerplant
	Tetrarrhena juncea, Forest Wire-grass
	Themeda triandra, Kangaroo Grass

Overall Site

The following wild, indigenous plant species have been seen in the site by the author except for entries with a date of 1985, which were by Andrew Paget. Those species not recorded during the 2020s are indicated by the most recent year in parentheses. Species that have been planted or recorded dubiously by people other than the author are omitted to avoid creating a false impression of the site's natural flora. Entries in the 'Risk' column indicate species whose risk of dying out in Knox is rated as Critically endangered (C), Endangered (E), Vulnerable (V) or Near threatened (N). In addition, the species with names in bold are rare throughout the Melbourne region.

Risk	Wild indigenous species
	Acacia dealbata, Silver Wattle
V	*Acacia melanoxylon*, Blackwood
E	*Acacia myrtifolia*, Myrtle Wattle
V	*Acacia pycnantha*, Golden Wattle
V	***Acacia stictophylla*, Dandenong Range Cinnamon Wattle**
E	*Acacia stricta*, Hop Wattle (2003)
V	*Acacia verticillata*, Prickly Moses
V	*Acaena echinata*, Sheep's Burr (2003)
	Acaena novae-zelandiae, Bidgee-widgee
V	*Acrotriche prostrata*, Trailing Ground-berry (2003)
E	*Acrotriche serrulata*, Honey-pots
V	*Adiantum aethiopicum*, Common Maidenhair
N	*Alisma plantago-aquatica*, Water Plantain
V	*Allocasuarina littoralis*, Black Sheoak (2003)
C	*Amyema pendula*, Drooping Mistletoe (2004)
	Anthosachne scabra, Common Wheat-grass (2003)
	Arthropodium strictum, Chocolate Lily
	Austrostipa pubinodis, Tall Spear-grass (2004)
	Austrostipa rudis subsp. *rudis*, Veined Spear-grass (2004)
C	*Banksia marginata*, Silver Banksia (2004)
	Billardiera mutabilis, Common Apple-berry
V	*Brunonia australis*, Blue Pincushion (2003)
	Burchardia umbellata, Milkmaids
	Bursaria spinosa, Sweet Bursaria
V	*Caesia parviflora*, Pale Grass-lily (2003)
V	*Calochlaena dubia*, Common Ground-fern
	Carex appressa, Tall Sedge
	Carex breviculmis, Short-stem Sedge (2004)
	Cassinia aculeata, Common Cassinia
	Cassinia longifolia, Shiny Cassinia
E	*Cassytha pubescens*, Downy Dodder-laurel
E	*Centella cordifolia*, Centella (2003)
V	*Chiloglottis valida*, Common Bird-orchid (1998)
V	*Clematis aristata*, Mountain Clematis
E	*Comesperma volubile*, Love Creeper
V	*Coprosma quadrifida*, Prickly Currant-bush
C	*Correa reflexa* var. *reflexa*, Common Correa
C	*Cyathea australis*, Rough Tree-fern
C	*Daviesia latifolia*, Hop Bitter-pea
C	*Daviesia leptophylla*, Narrow-leaf Bitter-pea (1985)
	Deyeuxia quadriseta, Reed Bent-grass (2004)
	Dianella longifolia var. *longifolia*, Pale Flax-lily (2003)
	Dianella revoluta, Black-anther Flax-lily
	Dianella tasmanica, Tasman Flax-lily
	Dichelachne rara, Common Plume-grass (2003)
	Dichondra repens, Kidney-weed

Risk	Wild indigenous species
V	*Dillwynia cinerascens*, Grey Parrot-pea (2003)
E	*Dipodium roseum*, Rosy Hyacinth-orchid
V	*Drosera auriculata*, Tall Sundew
C	*Epacris impressa*, Common Heath
	Eragrostis brownii, Common Love-grass (2003)
E	*Eucalyptus cephalocarpa*, Mealy Stringybark
V	*Eucalyptus goniocalyx*, Bundy (2018)
C	*Eucalyptus macrorhyncha*, Red Stringybark (2002)
E	*Eucalyptus obliqua*, Messmate Stringybark
V	*Eucalyptus ovata*, Swamp Gum
E	*Eucalyptus radiata*, Narrow-leaved Peppermint (2018)
E	*Euchiton involucratus*, Common Cudweed (2003)
V	*Exocarpos cupressiformis*, Cherry Ballart
C	*Gahnia radula*, Thatch Saw-sedge
E	*Gahnia sieberiana*, Red-fruit Saw-sedge
C	*Gastrodia sesamoides*, Cinnamon Bells
	Geranium homeanum, Rainforest Crane's-bill
E	*Glycine clandestina*, Twining Glycine
V	*Gonocarpus humilis*, Shade Raspwort
	Gonocarpus tetragynus, Common Raspwort
N	*Goodenia lanata*, Trailing Goodenia (2013)
	Goodenia ovata, Hop Goodenia
C	*Hackelia suaveolens*, Sweet Hound's-tongue (2003)
E	*Hardenbergia violacea*, Purple Coral-pea
V	*Hemarthria uncinata*, Mat Grass (2004)
C	*Hibbertia australis*, Upright Guinea-flower (2004)
C	***Hookerochloa hookeriana*, Hooker's Fescue**
C	*Hovea heterophylla*, Common Hovea (2004)
V	*Hydrocotyle hirta*, Hairy Pennywort
E	*Hypericum gramineum*, Small St John's Wort
C	*Imperata cylindrica*, Blady Grass
C	*Indigofera australis*, Austral Indigo
E	*Juncus procerus*, Tall Rush (2003)
C	*Kennedia prostrata*, Running Postman
	Kunzea leptospermoides, Yarra Burgan
C	***Lachnagrostis aemula*, Purplish Blown-grass (1998)**
	Lachnagrostis filiformis, Common Blown-grass
E	*Lagenophora adenosa/stipitata*, Blue (or Common) Bottle-daisy (2003)
V	*Lagenophora sublyrata*, Slender Bottle-daisy (2004)
	Lepidosperma elatius, Tall Sword-sedge
	Lepidosperma gunnii, Slender Sword-sedge (2004)
V	*Lepidosperma laterale*, Variable Sword-sedge
C	*Leptospermum continentale*, Prickly Tea-tree
	Leptospermum scoparium, Manuka (2018)
V	*Lindsaea linearis*, Screw Fern (2002)
	Lomandra filiformis subsp. *coriacea*, Wattle Mat-rush
	Lomandra filiformis subsp. *filiformis*, Wattle Mat-rush (1998)
	Lomandra longifolia subsp. *exilis*, Cluster-headed Mat-rush
	Lomandra longifolia subsp. *longifolia*, Spiny-headed Mat-rush
	Lythrum hyssopifolia, Lesser Loosestrife
E	*Melaleuca ericifolia*, Swamp Paperbark
	Microlaena stipoides, Weeping Grass
V	*Microtis parviflora*, Slender Onion-orchid (2013)
E	*Olearia lirata*, Snowy Daisy-bush
C	*Olearia myrsinoides*, Silky Daisy-bush
V	*Opercularia ovata*, Broad-leaf Stinkweed (2003)
V	*Opercularia varia*, Variable Stinkweed
	Oxalis exilis/perennans, Wood-sorrel
V	*Ozothamnus ferrugineus*, Tree Everlasting
C	*Ozothamnus obcordatus*, Grey Everlasting (2002)
	Pandorea pandorana, Wonga Vine
C	*Patersonia occidentalis*, Long Purple-flag
	Persicaria decipiens, Slender Knotweed
E	*Pimelea humilis*, Common Rice-flower
E	*Plantago varia*, Variable Plantain (2002)
E	***Platylobium infecundum*, a flat-pea**
E	*Platylobium obtusangulum*, Common Flat-pea
	Poa ensiformis, Sword Tussock-grass (2003)
E	*Poa labillardierei*, Common Tussock-grass
	Poa morrisii, Soft Tussock-grass
E	*Poa tenera*, Slender Tussock-grass (2002)
V	*Polyscias sambucifolia*, Elderberry Panax
E	*Polystichum proliferum*, Mother Shield-fern (2003)
	Poranthera microphylla, Small Poranthera
V	*Prostanthera lasianthos*, Victorian Christmas-bush
	Pteridium esculentum, Austral Bracken
	Pteris tremula, Tender Brake
E	*Pterostylis melagramma*, Tall Greenhood (1985)
	Pterostylis nutans, Nodding Greenhood (2013)
C	*Ranunculus lappaceus*, Australian Buttercup (1985)
V	*Pultenaea gunnii*, Golden Bush-pea
	Rytidosperma fulvum, Leafy Wallaby-grass (2003)
	Rytidosperma laeve, Smooth Wallaby-grass (2004)
E	*Rytidosperma pallidum*, Red-anther (or Silvertop) Wallaby-grass (2004)
	Rytidosperma penicillatum, Slender Wallaby-grass (2004)
	Rytidosperma pilosum, Velvet Wallaby-grass (2004)
	Rytidosperma racemosum, Clustered Wallaby-grass
	Rytidosperma setaceum, Bristly Wallaby-grass (2004)
	Rytidosperma tenuius, Purplish Wallaby-grass (2004)
	Schoenus apogon, Common Bog-rush (2003)
	Senecio hispidulus, Rough Fireweed (2003)
	Senecio minimus, Shrubby Fireweed
V	*Senecio ?prenanthoides*, Common Fireweed (2003)
	Senecio quadridentatus, Cotton Fireweed

Risk	Wild indigenous species
V	*Solanum* ?*laciniatum*, Large Kangaroo Apple (2003)
	Stackhousia monogyna, Creamy Candles (2002)
	Stylidium armeria, Common Triggerplant
	Tetrarrhena juncea, Forest Wire-grass
C	*Tetratheca ciliata*, Pink-bells
E	*Thelymitra peniculata*, Trim Sun-orchid (1998)
	Themeda triandra, Kangaroo Grass
C	*Thysanotus tuberosus*, Common Fringe-lily (2019)
	Tricoryne elatior, Yellow Rush-lily (2004)
E	*Veronica plebeia*, Trailing Speedwell (1985)
E	*Viola hederacea*, Ivy-leaf Violet
E	*Xanthorrhoea minor*, Small Grass-tree
V	*Xanthosia dissecta*, Cut-leaf Xanthosia (1985)

Note the large proportion of species that have not be recorded in recent years. In most cases, grass species in that category are probably still present but have not been recorded due to the absence of a summer botanical survey in recent years. Most of the other species not recorded in recent years have died out.

Notes concerning some of the plant species

Listed as Critically Endangered under Victorian law

Platylobium infecundum (a flat-pea) – occurs across the whole site, sometimes as a dominant groundcover.

Listed as Endangered under Victorian law

Acacia stictophylla (Dandenong Range Cinnamon Wattle) – dozens scattered across the site.

Regionally threatened

Lachnagrostis aemula (Purplish Blown Grass) – recorded only at 8 Lucas Close in 1998.

Locally-threatened

Banksia marginata (Silver Banksia) – In 2004, the biggest population of the species in Knox, confined to two Stewart St properties. In 2024, none appear to have survived but the non-indigenous 'tree form' of the species has been planted in substantial numbers.

Chiloglottis valida (Common Bird-orchid) – Found only at 8 Lucas Close.

Correa reflexa (Common Correa) – Formerly widespread across the site but now largely or wholly replaced by hybrids and ornamental varieties.

Hackelia suaveolens (Sweet Hound's-tongue) – Modest numbers were present in 2010 at 8 Lucas Close and a Stewart St property; current numbers unknown.

Hookerochloa hookeriana (Hooker's Fescue) – The first time this grass species was recorded in this site was during the inspection for this report, in 2024. It is in Lowland Forest, south of the creek. Its location right at the base of a mature eucalypt does not look consistent with it having been planted.

Gahnia sieberiana (Red-fruit Saw-sedge) – Moderately 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 germinated on 25 Stewart St after soil disturbance.

Lagenophora adenosa/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) – In 2010, a single wild plant – the only one left in Knox – grew at Debson Close. It has since died. The only other record of the species in Boronia is on a field trip of the Field Naturalists Club of Victoria in 1928 (*The Victorian Naturalist* **45**:181).

Patersonia occidentalis (Long Purple-flag) – Small numbers at a Stewart St property.

Polystichum proliferum (Mother Shield-fern) – Only one plant has been recorded, in the Damp Forest in 2003.

Tetratheca ciliata (Pink-bells) – At 8 Lucas Close and a nearby private property.

Thysanotus tuberosus (Common Fringe-lily) – Small numbers have been recorded at 8 Lucas Close.

Fauna of special significance

Smith and Loyn (*ibid.*) reported Red-capped Robin (regionally rare), Pink Robin (regionally uncommon) and Scarlet Robin (locally rare).

There have been seven records of the locally-rare Yellow-faced Honeyeater, the most recent in 2021 – only one bird at a time.

The locally-rare Swordgrass Brown butterfly has historically been present in substantial numbers but the most recent record was in 2015.

Fauna habitat features

The site's small, sedentary species such as Superb Fairy-wrens and White-browed Scrubwrens rely heavily on the presence of areas of dense shrubs or groundcover, particularly close to the creek. The tree cover is also important for nearly all the site's wildlife.

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

The groundcover, 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) have provided food for 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 biological significance against the Department of Energy, Environment & Climate Action'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).

Vegetation Type and Condition

The site has remnant patches of the EVCs, Damp Forest, Valley Heathy Forest, Grassy Forest and Swampy Riparian Woodland. All of these are listed by the Department of Energy, Environment & Climate Action as Endangered in the Gippsland Plain bioregion. According to *'Victoria's Native Vegetation Management – A Framework for Action'* (NRE 2002a), any remnant patch of native vegetation belonging to an endangered EVC has a conservation significance rating of either High or Very High, depending on the vegetation's habitat score. Criterion 3.2.3 of Amos (2004) classifies such patches as being of **State** significance.

The site also has a remnant patch of Lowland Forest, which is listed as Vulnerable in the Gippsland Plain bioregion. The core of that patch is in sufficient ecological condition to have a conservation significance of at least High, under to the 'Framework' procedure. This translates to **State** significance under criterion 3.2.3.

Threatened Plants

The flat-pea, *Platylobium infecundum*, occurs across the whole site, sometimes as a dominant groundcover. It is listed under the *Flora and Fauna Guarantee Act* as Critically Endangered and it does not occur outside Victoria. As a result, the habitat provided for *Platylobium infecundum* in this site qualifies as **National** significance under criterion 3.1.2.

The Dandenong Range Cinnamon Wattle (*Acacia stictophylla*) is listed as 'Endangered' in Victoria and it does not occur outside Victoria. The population in this site is substantial and viable. As a result, the habitat provided for the species in this site qualifies as **National** significance under criterion 3.1.2.

Neither *Platylobium infecundum* or *Acacia stictophylla* had been scientifically described in 2010 when the previous edition of this report was written. As a result, the site's significance level has risen from State to National.

There are viable populations of some of the locally-threatened plant species that are listed above. Such populations meet criterion 3.1.5 for **Local** significance.

Representativeness

The occurrences of Lowland Forest and Damp Forest around Old Joes Creek are westerly outliers 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 lower 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.

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:

- Recurring earthworks along the creek;
- Human-induced climate change, which is predicted to cause more severe droughts, heatwaves, floods, fires and storms, as well as substantially lower rainfall (particularly in winter). Along with earthworks, the Millennium Drought was probably a major factor in the eucalypt dieback and great loss of indigenous plant species that occurred during the first fifteen years of this century;
- Displacement of indigenous flora and fauna by environmental weeds, exacerbated by debilitation of the native vegetation by climate change and drainage works;
- Residential development of private lots, including that which may result from possible subdivision;
- Loss or decline of plant species that are present in such precariously small numbers that they are vulnerable to inbreeding, poor reproductive success or elimination by incidents such as cubby house construction or digging by dogs;
- Potential demands for increased fire prevention measures from residents due to climate change and consequent increases in climatic fire risk;

Strategic planning

- Schedule 2 of the Environmental Significance Overlay (ESO2) covers the version of this site that was delineated in the 2nd edition of this report. That edition cited many of the attributes discussed under the heading 'Significance ratings' above, as well as the high potential for ongoing ecological harm from earthworks and land development. The site's significance has now increased in significance to the National level (see above) and the boundaries have been amended in this edition. While not urgent, it is recommended to similarly amend the boundaries of ESO2 and ESO3 (which cover Site 99) to those adopted here.
- The importance of ESO2 on the land has further heightened since 2010 due to policy changes by the Victorian Government to reduce the state-wide baseline planning protection given to native vegetation;
- Around half the private properties in the site are smaller than 0.4 ha and are therefore exempt from the abovementioned baseline planning protection; the rest of the site is not;
- Some of the site has a slope exceeding 20% and some lies within a riparian zone. Both of these attributes represent a Very High land protection hazard, which should be considered in regard to planning permit applications.

Information sources used in this assessment

- A 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;
- Detailed vegetation data and mapping for the first edition of this report, including a list of indigenous and introduced plant species, compiled by Dr Lorimer over approximately 10 hours (mostly in April and May 2003);
- Eight similar lists compiled by Rik Brown, five of them in April 2002 and three in April-August 2000;
- A 2004 botanical survey by Dr Lorimer of the rear of 41 Stewart St, which then became public land;
- 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;
- An inspection of the whole site by Dr Lorimer in 2024 for this report, concentrating on the extent and condition of native vegetation and the distribution and abundance of rare plant species;

- Records of flora and fauna observations stored in the Atlas of Living Australia;
- The Victorian Government's 'NatureKit' website;
- Aerial and satellite imagery from between 1946 and 2024;
- Maps of geology, topography and strategic planning information produced by agencies of the Victorian Government.