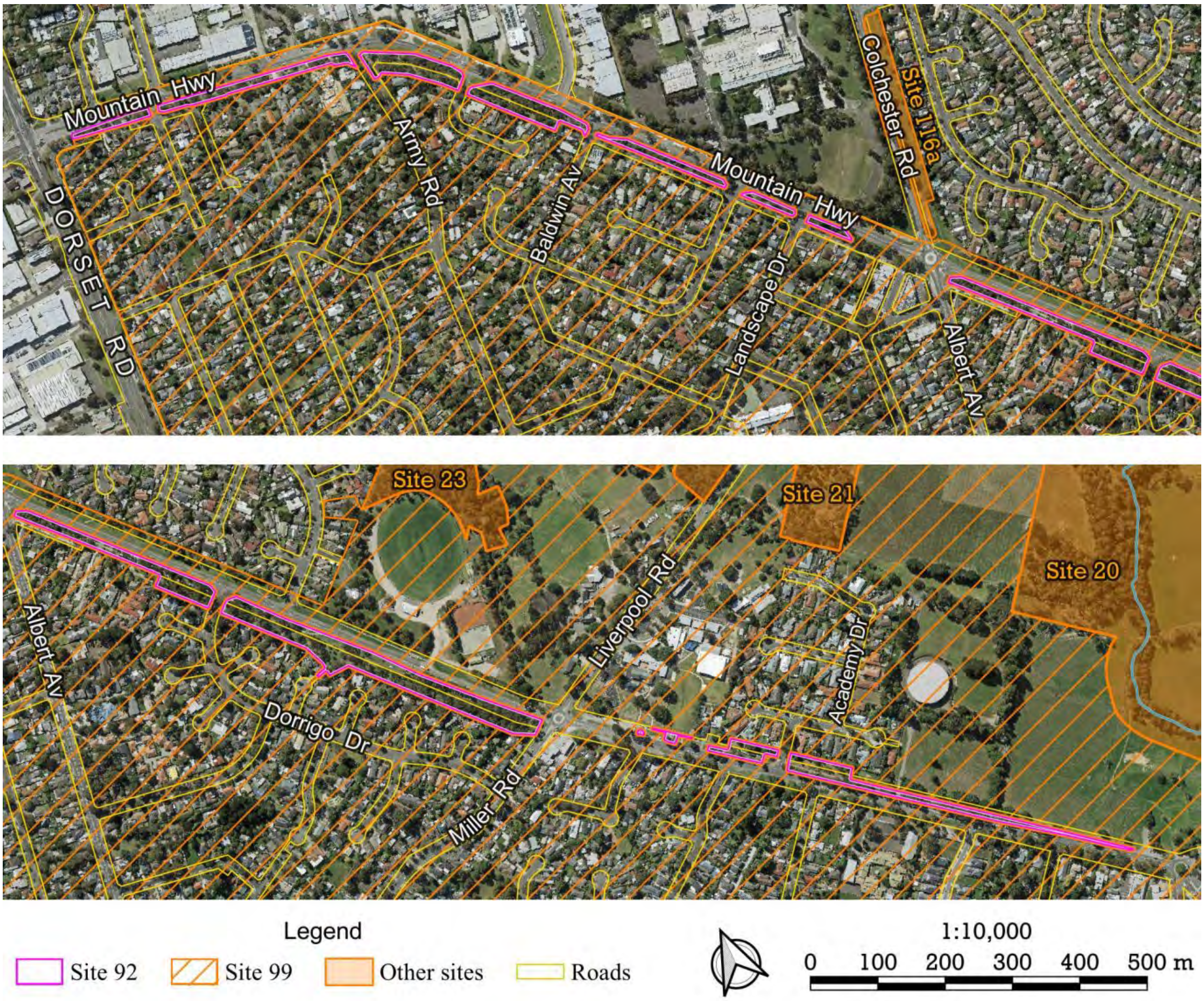
Site 92. Mountain Hwy Roadside, Boronia to The Basin

Road verge extending over 3.1 km of Mountain Hwy, in thirteen segments.

Summary of significant features:

- Nationally significant: a substantial population of the flat-pea, *Platylobium infecundum*, which is Critically Endangered globally;
- State significance: a population of the spear-grass, *Austrostipa rudis* subspecies *australis*, which is listed as Endangered under Victorian law;
- State significance: a patch of the regionally-endangered vegetation type, Valley Heathy Forest;
- Locally significant: viable populations of plant species threatened with dying out in Knox;
- Over ninety indigenous plant species, which is a lot by Knox standards.



The upper panel above overlaps the lower panel.

Boundaries

This site is outlined in magenta above, with thirteen sections totalling 5.4 ha. The edges closest to the road surface of Mountain Hwy are in the road gutter but are not intended to enclose any part of a gutter that is subject to periodic grading. The boundaries have changed to the southeast of Liverpool Rd compared with the previous (2010) edition of this report: the southernmost segment has been enlarged due to improvement in the habitat; and three small segments have been added just to the northwest of there due to the presence of a flat-pea species that has been listed as Critically Endangered since 2021.

Land use & tenure: Verges of a main road, used for pedestrian traffic and nature conservation.

Site description

This site skirts the southern edge of the Dandenong Creek valley, rising into the foothills of the Dandenong Ranges at its southeastern end. Elevations vary from 118 m at the edge of the Dandenong Ck floodplain near Cobbitty Ct to 171 m at the site's southeastern end.

The site traverses three Devonian geological formations, comprising hornfels in the west, rhyolite in the middle and rhyodacite in the east. Despite the variable geological origins, the subsoil is clay throughout and the topsoil is poorly draining clay loam except for some shallow alluvium near Cobbitty Ct.

Almost all the native vegetation belongs to the endangered Ecological Vegetation Class, Valley Heathy Forest, with tendencies toward Swampy Woodland near Cobbitty Ct, Lowland Forest just west of Miller Rd and Grassy Forest at the southeastern end. Swamp Gums (*Eucalyptus ovata*) just northwest of Colchester Rd are vestiges of Swampy Woodland.

Knox City Council has designated a section of the site at Academy Drive in The Basin as Significant Roadside KN1, and a section between Army Rd and Cobbitty Ct in Boronia as Significant Roadside KN2. The former was partly destroyed in c.1999 by construction of Academy Drive and associated housing. Both these sections contain small patches in good ecological condition (rating B). The ecological condition in the parts of the site outside the designated significant roadsides is predominantly fair (rating C) – a significant improvement since the first (2004) edition of this report due to revegetation and removal of environmental weeds. The revegetation has included a range of locally-threatened species.

Relationship to other land

The site's segments are embedded within the Dandenong Ranges buffer (Site 99), through which there is extensive movement of native birds, flying insects and (to a lesser degree) ground-dwelling fauna such as lizards. Some of these fauna transport pollen and seeds, helping plants to avoid inbreeding or failed reproduction.

Other, more localised sites from elsewhere in this report are shown on the aerial photographs above. The ecological links between them are likely to be weak.

It seems unlikely that this Mountain Highway site functions as a habitat corridor.

Bioregion: Gippsland Plain

Habitat types

Valley Heathy Forest (EVC 127, **Endangered**): Estimated to occupy 4.0 ha.

- Canopy trees: Dominated by a mixture of four or more eucalypt species, the staple ones being *Eucalyptus cephalocarpa*, *E. radiata* and *E. obliqua*. The additional species, *E. goniocalyx* and *E. macrorhyncha*, are present in drier areas.
- Sub-canopy trees: Dominated by various combinations of *Acacia mearnsii*, *A. melanoxylon*, *A. pycnantha* and *Exocarpos cupressiformis*.
- Shrubs: Dense where not thinned by humans. Seventeen shrub species were found, the most abundant and widespread being *Bursaria spinosa*. Other species that are present and typically found in Valley Heathy Forest include *Acacia paradoxa, Cassinia aculeata, Daviesia latifolia, Goodenia ovata, Kunzea* sp. and *Leptospermum continentale*.
- Vines: The light twiner, *Billardiera mutabilis*, is abundant in much of the site.
- Ferns: *Pteridium esculentum* is common in the site and dense in patches.
- Groundcover: Densely grassy and with small shrubs where not destroyed by past mowing. Mown areas are dominated by various *Rytidosperma* species (particularly *R. racemosum*). Less modified areas are dominated variously by *Themeda triandra, Rytidosperma pallidum, Microlaena stipoides, Austrostipa rudis, Lomandra longifolia* or *Gahnia radula*. There are also substantial patches dominated by *Dianella revoluta*. Other species that are abundant in numbers but not dominant in foliage cover include *Arthropodium strictum, Lomandra filiformis, Platylobium infecundum, Tricoryne elatior* and

Xanthorrhoea minor. The characteristic species, *Hibbertia australis* and *Platylobium obtusangulum*, are present but not abundant.

Plant species

The following plant species have been credibly recorded as growing wild (not just planted) within Site 92. Indigenous species not seen in this study (2023–2024) are indicated by superscripts showing the year of the most recent record. The column headed ‘Risk’ indicates the indigenous species’ risk of dying out in Knox as follows: ‘C’=Critically Endangered; ‘E’=Endangered; and ‘V’=Vulnerable. In addition, *Platylobium infecundum* and *Austrostipa rudis* subsp. *australis* are listed as threatened in Victoria. *Lachnagrostis aemula*, *Thelymitra media* and the *Caladenia* are rare throughout the Melbourne area, though they were not at the time of those records.

Indigenous mosses and liverworts
Breutelia affinis, Common Breutelia [2011]
Campylopus clavatus, Broody Swan-neck Moss [2011]
Campylopus introflexus, Heath Star Moss
Hypnum cupressiforme, Common Hypnum [2011]

Risk	Wild indigenous vascular species
V	*Acacia mearnsii*, Black Wattle
V	*Acacia melanoxylon*, Blackwood
E	*Acacia myrtifolia*, Myrtle Wattle [2003]
	Acacia paradoxa, Hedge Wattle
V	*Acacia pycnantha*, Golden Wattle
E	*Acacia stricta*, Hop Wattle [2003]
V	*Acaena echinata*, Sheep’s Burr [2003]
	Acaena novae-zelandiae, Bidgee-widgee [1997]
V	*Acrotriche prostrata*, Trailing Ground-berry [2003]
E	*Acrotriche serrulata*, Honey-pots [2003]
C	*Amyema pendula*, Drooping Mistletoe [2003]
	Anthosachne scabra, Common Wheat-grass [2003]
	Arthropodium strictum, Chocolate Lily
	Austrostipa pubinodis, Tall Spear-grass
V	*Austrostipa rudis* subsp. *australis*, Veined Spear-grass
	Austrostipa rudis subsp. *rudis*, Veined Spear-grass
C	*Banksia marginata*, Silver Banksia [2003]
	Billardiera mutabilis, Common Apple-berry
V	*Brunonia australis*, Blue Pincushion [2022]
	Bursaria spinosa, Sweet Bursaria
V	*Caesia parviflora*, Pale Grass-lily [1992]
	Caesia parviflora, Pale Grass-lily [1992]
C	*Caladenia* sp., a Caladenia [1992]
	Carex breviculmis, Short-stem Sedge
	Carex inversa, Knob Sedge [1992]
	Cassinia aculeata, Common Cassinia [2003]
C	*Chamaescilla corymbosa*, Blue Stars [1992]
V	*Clematis aristata*, Mountain Clematis [2003]
	Clematis decipiens, a small-leafed clematis
E	*Comesperma volubile*, Love Creeper
C	*Coronidium scorpioides*, Button Everlasting [2003]
C	*Correa reflexa*, Common Correa [2011]
C	*Daviesia latifolia*, Hop Bitter-pea
C	*Daviesia leptophylla*, Narrow-leaf Bitter-pea [1997]
	Deyeuxia quadriseta, Reed Bent-grass [2003]
	Dianella revoluta, Black-anther Flax-lily
	Dianella tasmanica, Tasman Flax-lily [2003]
	Dichondra repens, Kidney-weed
V	*Dillwynia cinerascens*, Grey Parrot-pea
V	*Drosera auriculata*, Tall Sundew [1992]
C	*Epacris impressa*, Common Heath
	Eragrostis brownii, Common Love-grass [1997]
E	*Eucalyptus cephalocarpa*, Mealy Stringybark
V	*Eucalyptus goniocalyx*, Bundy
C	*Eucalyptus macrorhyncha*, Red Stringybark [2003]
E	*Eucalyptus obliqua*, Messmate Stringybark
V	*Eucalyptus ovata*, Swamp Gum
E	*Eucalyptus radiata*, Narrow-leaved Peppermint
	Euchiton japonicus, Creeping Cudweed [1992]
V	*Exocarpos cupressiformis*, Cherry Ballart
E	*Exocarpos strictus*, Pale-fruit Ballart [2003]
C	*Gahnia radula*, Thatch Saw-sedge
E	*Glycine clandestina*, Twining Glycine [2003]
	Gonocarpus tetragynus, Common Raspwort
N	*Goodenia lanata*, Trailing Goodenia [2003]
	Goodenia ovata, Hop Goodenia [1997]
C	*Hackelia suaveolens*, Sweet Hound’s-tongue [2003]
C	*Hakea ulicina*, Furze Hakea
E	*Hardenbergia violacea*, Purple Coral-pea
V	*Hemarthria uncinata*, Mat Grass [1992]
C	*Hibbertia australis*, Upright Guinea-flower[2003]
C	*Hovea heterophylla*, Common Hovea [2011]
E	*Hypericum gramineum*, Small St John’s Wort [2003]
	Juncus sarophorus, Broom Rush [1997]
E	*Juncus subsecundus*, Finger Rush
C	*Kennedia prostrata*, Running Postman [1992]
	Kunzea ericoides group, Burgan [2011]
C	*Lachnagrostis ?aemula*, Purplish Blown-grass [1992]
	Lachnagrostis filiformis, Common Blown-grass [2003]

Risk	Wild indigenous vascular species
V	*Lepidosperma laterale*, Variable Sword-sedge [2011]
C	*Leptospermum continentale*, Prickly Tea-tree
E	*Linum marginale*, Native Flax [1992]
	Lomandra filiformis subsp. *coriacea*, Wattle Mat-rush
	Lomandra filiformis subsp. *filiformis*, Wattle Mat-rush
	Lomandra longifolia subsp. *exilis*, Cluster-headed Mat-rush
V	*Luzula meridionalis*, Common Woodrush [1992]
	Lythrum hyssopifolia, Lesser Loosestrife [1992]
E	*Melaleuca ericifolia*, Swamp Paperbark [2003]
	Microlaena stipoides, Weeping Grass
V	*Microtis parviflora*, Slender Onion-orchid
C	*Muellerina eucalyptoides*, Creeping Mistletoe [2003]
C	*Olearia myrsinoides*, Silky Daisy-bush [1992]
V	*Opercularia varia*, Variable Stinkweed [1992]
	Oxalis exilis/perennans, Wood-sorrel
V	*Ozothamnus ferrugineus*, Tree Everlasting [2003]
	Pandorea pandorana, Wonga Vine
C	*Pentapogon quadrifidus*, Five-awned Spear-grass [1992]
E	*Pimelea humilis*, Common Rice-flower [2003]
E	*Plantago varia*, Variable Plantain [2003]
E	*Platylobium infecundum*, a flat-pea
E	*Platylobium obtusangulum*, Common Flat-pea [2003]
	Poa ensiformis, Sword Tussock-grass [2003]
	Poa morrisii, Soft Tussock-grass
	Poa morrisii, Soft Tussock-grass [1997]
	Poranthera microphylla, Small Poranthera [1992]
	Pteridium esculentum, Austral Bracken
	Pterostylis nutans, Nodding Greenhood
V	*Pultenaea gunnii*, Golden Bush-pea [2003]
	Rytidosperma fulvum, Leafy Wallaby-grass [2011]
	Rytidosperma laeve, Smooth Wallaby-grass [1992]
E	*Rytidosperma pallidum*, Red-anther (or Silvertop) Wallaby-grass
	Rytidosperma penicillatum, Slender Wallaby-grass [2003]
	Rytidosperma racemosum, Clustered Wallaby-grass
	Rytidosperma setaceum, Bristly Wallaby-grass [2011]
	Rytidosperma tenuius, Purplish Wallaby-grass
	Schoenus apogon, Common Bog-rush
	Senecio hispidulus, Rough Fireweed [2003]
	Senecio quadridentatus, Cotton Fireweed [2021]
V	*Solenogyne dominii*, Smooth Solenogyne [2003]
V	*Spyridium parvifolium*, Australian Dusty Miller (planted?) [2021]
E	*Stackhousia monogyna/subterranea*, Candles [2003]
	Stylidium armeria, Grass Trigger-plant [1992]
	Tetrarrhena juncea, Forest Wire-grass [2003]
	Thelymitra media, Tall Sun-orchid [1992]
E	*Thelymitra peniculata*, Trim Sun-orchid
	Themeda triandra, Kangaroo Grass
	Themeda triandra, Kangaroo Grass [1997]
E	*Thysanotus patersonii*, Twining Fringe-lily [1992]
	Tricoryne elatior, Yellow Rush-lily
E	*Viola hederacea*, Ivy-leaf Violet [1992]
E	*Xanthorrhoea minor*, Small Grass-tree [2003]
V	*Xanthosia dissecta*, Cut-leaf Xanthosia [1992]

Introduced species

Acacia longifolia subsp. *longifolia*, Sallow Wattle
Agapanthus praecox, Agapanthus
Agrostis capillaris, Brown-top Bent
Aira caryophyllea, Silvery Hair-grass
Allium triquetrum, Angled Onion
Anthoxanthum odoratum, Sweet Vernal-grass
Arctotheca calendula, Cape Weed
Asparagus asparagoides, Bridal Creeper
Asparagus scandens, Asparagus Fern
Billardiera fusiformis, Bluebell Creeper
Briza maxima, Large Quaking-grass
Cassinia sifton, Sifton Bush
Cenchrus clandestinus, Kikuyu Grass
Centaurium erythraea, Common Centaury
Cerastium glomeratum s.l., Common Mouse-ear Chickweed
Cotoneaster glaucophyllus, Cotoneaster
Cotoneaster pannosus, Cotoneaster
Crataegus monogyna, Hawthorn
Crocosmia × crocosmiiflora, Montbretia
Cynodon dactylon, Couch
Dactylis glomerata, Cocksfoot
Delairea odorata, Cape Ivy
Ehrharta erecta, Panic Veldt-grass
Ehrharta longiflora, Annual Veldt-grass
Galium aparine, Cleavers
Gamochaeta purpurea, Spiked Cudweed
Genista monspessulana, Montpellier Broom
Grevillea hybrids and cultivars
Hedera helix/hibernica, Ivy
Holcus lanatus, Yorkshire Fog
Hypochaeris radicata, Cat's Ear
Isolepis levynsiana, Tiny Flat-sedge
Juncus pallescens, a rush
Leontodon saxatilis, Lesser Hawkbit
Lolium perenne, Perennial Rye-grass
Lolium sp., Rye Grass
Lonicera japonica, Japanese Honeysuckle
Lotus subbiflorus, Hairy Bird's-foot Trefoil
Lysimachia arvensis, Pimpernel
Malus pumila, Domestic Apple

Introduced species

Medicago polymorpha, Burr Medic
Melaleuca armillaris, Bracelet Honey-myrtle
Oxalis ?*incarnata*, Pale Wood-sorrel
Oxalis pes-caprae, Soursob
Oxalis purpurea, Large-flower Wood-sorrel
Paspalum dilatatum, Paspalum
Pinus radiata, Monterey Pine
Pittosporum undulatum, Sweet Pittosporum
Plantago lanceolata, Ribwort
Prunella vulgaris, Self-heal
Prunus sp., an unidentified prunus
Quercus robur, English Oak

Introduced species

Romulea rosea, Common Onion-grass
Rubus anglocandicans, Blackberry
Sisyrinchium micranthum, Blue Pigroot
Sonchus oleraceus, Sow-thistle
Sporobolus africanus, Rat-tail Grass
Taraxacum sect. *Taraxacum*, Garden Dandelion
Tradescantia fluminensis, Wandering Trad
Trifolium dubium, Suckling Clover
Trifolium repens, White Clover
Vicia sp., a Vetch
Vinca major, Blue Periwinkle
Viola odorata, Common Violet

Notes concerning some of the significant plant species

<u>Listed as Critically Endangered under Victorian law</u>

Platylobium infecundum (a flat-pea): Fairly abundant in several sections of the site.

A spider-orchid (in the genus *Caladenia*) was recorded by Damien Cook on 24/11/92 just southeast of Army Rd. Subsequent searches have failed to find it. Reliable local naturalist, Darren Wallace, doubts the accuracy of the record, based on his intimate contemporaneous knowledge of the reported location. If the record is accurate, the species is likely to be referable to *Caladenia oenochila*, being the most common spider-orchid in the district (though now presumed extinct in Knox).

<u>Listed as Endangered under Victorian law</u>

Austrostipa rudis subsp. *australis* (a spear-grass): Of the site's countless plants of *Austrostipa rudis*, only a minute fraction were identifiable to the level of subspecies at the time of year of this study's survey (winter and early spring). It was therefore not possible to determine what fraction belonged to subspecies *australis* rather than subspecies *rudis*, but some of the former were positively identified near Army Rd. A summer survey would be required to determine population size and distribution.

<u>Locally threatened</u>

Banksia marginata (Silver Banksia). One individual grew opposite Kalman Dr, Boronia until it died during the Millennium Drought. None have been seen since, as in most of Knox's former stands of the species.

Correa reflexa (Common Correa). Only two plants have been recorded: one northwest of Army Rd and another between Army Rd and Cobbitty Ct. None have been recorded since 2011.

Hackelia suaveolens (Sweet Hound's-tongue). Three individuals were found just northwest of Dorrigo Dr in 2003.

Daviesia leptophylla (Narrow-leaf Bitter-pea). Found in 1997 just southeast of Academy Dr, The Basin; none since.

Hakea ulicina (Furze Hakea). There is a small wild cluster at the edge of the road outside 992 Mountain Hwy, Boronia (380 m east of Dorset Rd). Many others have been planted around it to improve the stand's security. There is a similar situation just northwest of Academy Drive, where the number of wild plants appears to be approximately six (after the recent deaths of eight).

Kennedia prostrata (Running Postman). Recorded in 1992 as being scarce; none since.

Pentapogon quadrifidus (Five-awned Spear-grass). Recorded in 1992 as fairly plentiful just southeast of Army Rd. Lack of subsequent records could be due to the times of year when surveys were conducted.

Thelymitra media (Tall Sun-orchid). Recorded in 1992 as being scarce, the last record of that formerly common species in Knox.

Thysanotus patersonii (Twining Fringe-lily). Recorded in 1992 as being scarce.

Fauna of special significance

None detected.

Fauna habitat features

- Some large trees have hollows that would suit habitation by native birds, bats, possums or invertebrates;
- The prickly shrub layer in parts of the site, particularly just northwest of Dorrigo Drive, could provide protection for small native birds. Even the serious environmental weed, Hawthorn, may have some habitat value in this respect. Removal of Hawthorn should therefore be done progressively, accompanied by planting of prickly indigenous species as replacements.

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).

Endangered Ecological Vegetation Class

Site 92's EVC – Valley Heathy Forest – is regionally endangered but the standard criteria only regard such a status as significant if the vegetation meets the definition of a 'remnant patch' adopted for the criteria, i.e. a continuous area of at least 0.25 ha in which the cover of native understorey is at least 10% throughout. Much of the native understorey in Site 92 is fragmented by driveways and roads into areas smaller than 0.25 ha. As a consequence, the standard criteria do not recognise any significance of the presence of Valley Heathy Forest in most of the site. The only exception is the area between Army Rd and Cobbitty Ct, which qualifies as a 'remnant patch'. Any 'remnant patch' of a regionally-endangered EVC has a conservation significance rating of at least 'High' under Appendix 3 of *Victoria's Native Vegetation Management – a Framework for Action* (NRE 2002a). That translates to **State** significance under criterion 3.2.3 of Amos (2004).

Threatened plant species

The flat-pea, *Platylobium infecundum*, has a quite viable population in Site 92, particularly just southeast of Army Rd. That species 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* is of **National** significance under criterion 3.1.2.

Platylobium infecundum had not 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.

The spear-grass, *Austrostipa rudis* subsp. *australis*, is listed under the *Flora and Fauna Guarantee Act* as Endangered in Victoria. It also occurs interstate. Any known habitat for such a species (as in this site) meets criterion 3.1.2 for **State** significance.

The site's locally-threatened tree species and some of the locally-threatened understorey species have viable populations, thereby meeting criterion 3.1.5 for **Local** significance.

Richness of Species

Approximately ninety wild indigenous plant species are present, which is rich by Knox standards and represents a good cross-section of the species that inhabit Valley Heathy Forest. However, this level of richness is not recognised as significant under the standard criteria.

Threats

- Human-induced climate change, which is predicted to cause more severe droughts, heatwaves and storms, as well as substantially lower rainfall (particularly in winter);
- Decline of tree health, partly due to the abovementioned droughts and storms;
- Loss or decline of plant species whose populations are so small and isolated that they are vulnerable to inbreeding, poor reproductive success or elimination by incidents such as digging by dogs or being struck by a falling tree limb;
- Repetition of recent informal construction of a BMX track southeast of Army Rd;
- Displacement of indigenous flora and fauna by environmental weeds, but that problem is being kept well under control at present.

Strategic planning

The previous (2010) edition of this report led to its larger version of this site being covered by Schedule 2 of the Environmental Significance Overlay (ESO2), based on the presence of the endangered EVC and locally-threatened plant species. Since 2010, the main changes affecting the original basis for applying ESO2 have been that: (a) the site's significance rating has risen to National as a result of *Platylobium infecundum* being scientifically described and then listed as Critically Endangered under Victorian law; (b) *Austrostipa rudis* subsp. *australis* has been discovered in the site and listed as Endangered under Victorian law; and (c) three small segments have been added to the site, just southeast of Liverpool Rd, due to habitat improvement and the listing of *Platylobium infecundum* as Critically Endangered. The only recommendation regarding ESO2 in response to these changes is to amend its boundaries to match those delineated here.

Information sources used in this assessment

- Botanical data from two quadrats surveyed by Damien Cook on 19/11/92, as described by Mark Allaway and Associates in *'Indigenous Vegetation survey to Major Road Reserves – Phase 2 – A Management Strategy for Remnant Roadside Vegetation'* for City of Knox (1993). One quadrat – reference number N0190100 – was just southeast of Army Rd and measured 300 m²; the other, N0190700 southeast of Academy Dr, 150 m². Some of the records are treated here as of questionable accuracy, and the duplication of some species in the species list suggests that the preparation of the list was imperfect;
- Plant records presented by Water Ecoscience (1998);
- Site surveys by Dr Lorimer totalling just over 4½ hours on 16/4/03 and 23/4/03 for the first edition of this report. The fieldwork included:
  - Compilation of lists of indigenous and introduced plants for each of six parts of the site;
  - A description of the vegetation's structural and floristic composition within each of the parts;
  - Documentation of the vegetation's ecological condition;
  - Documentation of rare species populations; and
  - Checks for fauna habitat, ecological threats and management issues.
- A similar site survey of Mountain Hwy southeast of Liverpool Rd by Dr Lorimer on 10/9/97 for the report, *'A Survey and Management Plan for Significant Vegetation of Roadsides in Knox'* by G.S. Lorimer for Knox City Council (May 1998, 137 pp.);
- A list of plant species and their abundances compiled by Dr Lorimer for the roadside of 992 Mountain Hwy on 15th August 2011 in association with collection of *Hakea ulicina* seed for a program to conserve locally-threatened plant species;
- Inspections of the site by Dr Lorimer between 28th June and 10th October 2024, compiling lists of wild, indigenous plant species and checking for changes in features relevant to this report since his 2008 survey;
- Records of flora and fauna observations stored in Knox City Council's biodiversity database;
- Records of flora and fauna observations stored in the Atlas of Living Australia;
- Aerial and satellite imagery from between 1946 and 2025;
- The Victorian Government's 'NatureKit' website;
- Maps of geology, topography and strategic planning information produced by agencies of the Victorian Government.