

Fulham Streamside Reserve – flora, fauna, threats and management



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Cover picture

Showy Podolepis (*Podolepis jaceoides*) at Fulham in the spring of 2006

**The Fulham Streamside Reserve is an 860 ha woodland frontage
to the Glenelg River, 10 km north of Balmoral**

Report for Hamilton Field Naturalists Club

- Historical background to the Fulham Streamside Reserve
- Flora list of AC Beaglehole, with new records from HFNC to 2013
- Bird list to 2015
- Recommendations for improved management of the reserve
- Recommendation to change the status of the reserve
- Appendix 1. Initial report on Fulham in 2005
- Appendix 2. Submission to VEAC 2009

Fulham Streamside Reserve on the Glenelg River near Balmoral

Fulham Streamside Reserve occupies 860 ha, fronting the Glenelg River for some 6 km in the north of the Parish of Balmoral, approximately 10 km N of Balmoral.

Traditional uses of the reserve have included forestry (Red Gum and Yellow Gum sleepers, posts and poles), firewood gathering, grazing, shooting (ducks and kangaroos), fishing, picnicking, camping along the river (especially at Easter time and school holiday periods), horse-riding and driving recreational vehicles along the tracks and through the bush, and enjoyment of nature (walking, birdwatching, looking at wildflowers). Most of these activities have been unregulated and unsupervised, but timber cutting and grazing are no longer permitted and Parks Victoria now controls the reserve. In April 1986, HFNC, WVCC and others successfully opposed a move by the former Shire of Wannon to strip gravel from the SE corner of the reserve.

The geology is a complex of Aeoleon sands (a high vegetated dune of Lowan Sand in the east and lower sediments in the west), Ordovician schist/gneiss (with rocky outcrops by the river at the eastern end) and Tertiary shallow marine sandstone/siltstone elsewhere.

Some of the vegetation and landform associations can be summarised as follows:

- The gravelly parts in the southern edge support Brown Stringybark (*Eucalyptus baxteri*).
- The extensive flats adjacent to the river have Yellow Gum (*E. leucoxylon*), River Red Gum (*E. camaldulensis*) and Yellow Box (*E. melliodora*).
- The great sand dune supports a stand of Slender Cypress (*Callitris gracilis*) and what appears to be (Desert Stringybark (*Eucalyptus arenacea*)).
- The sand sheet on the west end 'peninsula' also appears to have Desert Stringybark, as well as Desert Banksia (*Banksia ornata*) and Silver Banksia (*B. marginata*).
- The wet/saline seeps along the River Tk have Mallee Honey-myrtle (*Melaleuca neglecta*) as the only shrub.
- *Melaleuca decussata* occurs on the damp heath south of the Old Railway Bridge Tk and a substantial clump of *Triodia* occurs on near the eastern road closure site on the River Tk.
- Buloke (*Allocasuarina luehmannii*) occurs on the damp heath and there has been a substantial regeneration since grazing was removed from the reserve in about 1987.
- *Calytrix tetragona* is the prominent shrub on much of the drier heathland/woodland.

Collectively, these soils support a grassy-woodland/heathy-woodland of particular botanic significance and beauty. Beaglehole noted (1984) that the early plant surveys had found 8 species that were rare and endangered in Victoria, 72 species with isolated occurrences in the Portland Region, and 53 species typically from northern parts of Victoria. A high proportion of the reserve is covered by EVC classes rated as 'endangered', 'vulnerable' or 'depleted'.

The reserve is, without doubt, one of the best repositories of botanic diversity in the region, although badly compromised by weed invasion along the river (weeds including *Sparaxis bulbifera*) and the impact of broad-scale spraying to control an agricultural weed, Cape Tulip. The greater southern portion of the reserve remains relatively free of other weeds, although African Weed Orchid was seen there in 2005.

Apart from its floristic value, this reserve is a critical "stepping stone" of native vegetation between the Black Range/Rocklands/Grampians reserves and the remnant flora blocks of Little Youngs State Forest and Jilpanger Flora Reserve to the NW, and the Arapiles-Tooan SP further north. Further south is Claude Austin State Forest near the Rocklands Reservoir. It is a vital "corridor" for the movement of birds, particularly given the presence of water in the reserve.

The Land Conservation Council (LCC) engaged Portland botanist Cliff Beaglehole in Oct.-Nov. 1975 to carry out a botanical survey of this area (among many other areas of Crown land), then known as the Kanagulk State Forest. He performed the survey in Oct.-Nov. 1975, listing 257 species, but time did not permit an exploration of the NE corner.

Despite many submissions from conservation groups and Beaglehole for a Flora Reserve, the LCC recommended in the final report of May 1982 (South Western Area District 2) “that it be gazetted as the *Kanagulk Streamside Reserve*, and that grazing be withdrawn (at least temporarily) from the reserve”.

The Government accepted the Streamside Reserve recommendation but despite this change of status it was still being grazed – and degraded – by sheep in 1987. HFNC’s submission to the LCC had supported their proposal in the preliminary report, while stating that “in view of the floristic values we believe that a stronger stance should have been taken on the issue of grazing in the area”. HFNC made the point that “grazing here cannot be said to be a management tool to decrease fire hazard – indeed the area needs a fire to rejuvenate it. There is no evidence of fire occurring there for at least 20 years and probably more – now there is simply no fine fuel to carry a fire”.

Flora

Cliff Beaglehole was greatly impressed with the native flora and in 1984 he strongly recommended that it become a Flora Reserve (see Beaglehole 1984). He re-visited and examined the NE area on 16 June 1984 and added 41 species to the list; the total for the reserve then being 299 species (242 native species and 57 exotics). Further species were noted in visits on 9 & 24 August 1987, then 1 October, 1 November, 7 November 1989, and 21 January 1990 – the tally being 353 sp. (279 native & 74 alien).

HFNC has added further species to the list in 2006, 2007, 2008, 2009, 2011 & 2013 (see Table 1); the total in 2015 is 418, with 87 exotic and 331 native species.

In 1984 Beaglehole noted the following:

- Sheep ranged over the entire area, spreading exotic weeds and preventing regeneration of native species, among which were 8 rare and endangered in Victoria, 72 species with isolated occurrences in the Portland Region of Dept. Cons. Forests & Lands, 53 species typically from northern parts of Victoria, and 15 species present only in saline areas.
- Salting was a significant problem in the central area – the effect of grazing sheep was to prevent regeneration of trees which might help contain the problem, however the main cause had been the ill-advised clearing of the catchment block immediately to the south of the reserve.
- Gully and sheet erosion was also a significant problem and a danger to the conservation value of the reserve. Livestock grazing and unregulated vehicular traffic (day visitors, campers, fishermen, recreational 4WD driving and trail bikes) contributed substantially to the problem.
- There were 12 serious exotic weed species that should be controlled or eradicated before they extensively damaged the native flora status of the reserve.

The *Western Victoria Conservation Committee*, of which Cliff was Chairman and Hilda Beaglehole, Leila Huebner, John Cleary, Hilary Turner, Andrew Pritchard, Carolyn Hodges and Rod Bird were members, agitated for many years to have grazing removed. Following the first visit to the Reserve by the committee on 9 August 1987 several articles in local newspapers and assistance of departmental officers (Trevor Ritchie and others), grazing licenses were finally cancelled in late 1987.

Visits by the committee in 1 October 1989, 21 January 1990 and 11 November 1990 confirmed that “there were now tens of thousands of seedlings of the four eucalypt species present” (before grazing was removed there was no regeneration). There was regeneration of the regionally rare *Callitris gracilis* outside of the fenced enclosure on Pine Ridge and *Melaleuca neglecta* in the saline flats. *Allocasuarina verticillata* and *Allocasuarina luehmannii*, was also regenerating, having been virtually eliminated from the reserve by past management practices.

A fire in January 2005 was started in the NW corner of the reserve, at a camp site by the river. It was not acted upon in time to prevent a great deal of damage to the reserve, with many of the large, old eucalypts in the western half of the reserve being severely damaged, burned down or bulldozed later. That was a very serious loss and could have been averted by earlier action to extinguish fires in burning trees but, as acknowledged later by a DSE Fire Controller from Horsham, that has not been an operational practice of either DSE or the CFA. After criticism by HFNC of preventable damage there and in the Black Range (Bird 2006), DSE changed its approach in at least one case. That example relates to events at Bryans Swamp after the fire of 30 November 2006, where DSE prevented about 100 old trees from being bulldozed (see *Victoria Point Fire – Bryan Swamp Horsham Fire District Fire 44 2006/07 Season. A case study* (DSE and CFA).

One positive from the fire of January 2005 at Fulham was a spectacular fire-induced flowering of grassland and heathland species, with several “new” species apparent. Red-beak Orchids were thick in parts, with up to 200 plants per square metre seen between the river bend and the track at the SW end. Lilies and orchids were abundant across the grassland areas on both sides of the track leading from Edgewood Rd to the river.

Fauna

Mammals

To our knowledge, no systematic survey has been done. Eastern Grey Kangaroo (*Macropus giganteus*), Red-necked Wallaby (*Macropus rufogriseus*) and Black Wallaby (*Wallabia bicolor*) occur in the reserve. Grey Kangaroos are present in quite large numbers but the Red-necked Wallaby appears now to be less common than the Black Wallaby. A Black Wallaby was first seen in October 1987 (Bird 1992). Red-necked Wallabies were seen in April 2006, Sept. 2008, and Oct 2010-2015.

In 2006 a Sugar Glider (*Petaurus breviceps*) tail was found beneath a Yellow Box tree in the SW section of the reserve. Another animal was photographed at the SW river bend in Sept. 2011. Brush-tail Possum (*Trichosurus vulpecula*) are common, while the Ring-tailed Possum (*Pseudocheirus peregrinus*) probably also occurs here.

In May 2007 a Birds Australia group saw a Yellow-footed Antechinus (*Antechinus flavipes*) sunning in a River Red Gum spout near the river. An early report in the HFNC Minutes of Meeting in Feb. 1983 (Kevin Lakeman, 01/01/1983) also noted Common Dunnart (*Sminthopsis murina*).

Introduced mammals include Red Fox (*Vulpes vulpes*) but rabbits do not appear to be present. Echidna (*Tachyglossus aculeatus*) are also present, along with Water Rat (*Hydromys chrysogaster*), seen on 15 Sept. 2007. We saw 3 Platypus (*Ornithorhynchus anatinus*) in the Fulham Pool on 13 Sept. 2008 and one in 2010 and 2011.

Birds

2007 – 50 species were seen in September, including “new” birds in Flame Robin, Rufous Songlark and Powerful Owl.

2008 – 63 species were seen, including “new” birds in White-throated Gerygone, Australasian Shoveler, Black-fronted Dotterel, Black-tailed Native Hen, Brown Goshawk, Little Raven, Tawny Frogmouth and White-winged Triller.

2009 – 43 species were seen (Powerful Owls heard), incl. a ‘new’ bird in Blue-winged Parrot (total then 110 species).

2010 – 60 species were seen or heard (Southern Boobook), including 5 ‘new’ birds: Little Black Cormorant, Crested Pigeon, Spiny-cheeked Honeyeater, Red-tailed Black-cockatoo (4 seen in Brown Stringybarks) and Little Eagle (total then 115 species (see Table 2).

2015 – the number of species recorded rose to 126 with the recording of Straw-necked Ibis in 2011, Australian Pelican, Great Cormorant & Chestnut Teal in 2013, Australian White Ibis, Intermediate Egret, Yellow-billed Spoonbill & Royal Spoonbill in 2014, and Nankeen Night-heron in 2015.

Reptiles

No survey has been done. Shingleback lizards are often seen and, on two occasions, the Common Bearded Dragon has been seen. The only snake observed was a small, unidentified species found among fallen branches.

Present threats to the reserve:

- Cape Tulip – the impact of broad-scale spraying to control this pest plant has done much damage in recent years; careless operators do not employ satisfactory spot-spraying techniques. It is clear that large areas of vegetation have been blitzed of native species by the broad-scale spraying with, ironically, Cape Tulip, Sparaxis and pasture weeds the main beneficiaries of the bare ground created. The herbicide-wiping approach HFNC have used has controlled the weed but not eliminated it and there are still tens of thousands of plants emerging each year.
- African Weed Orchid – this had arrived in about 2003 and had a hold on parts of the Western end. The problem continues, with plants seen each year to 2015..

- Sparaxis (Harlequin flower) – this weed is spreading in the reserve, mainly along the river, the road fringes and track area in the western part of the reserve. Urgent spot-spraying action was needed to prevent it dominating the native ground flora in the presently unaffected or lightly infested areas. The river margins remain infested but much of the problem south of River Track has been controlled by efforts of HFNC.
- Wild Gladiolus – this is a problem that has increased since 2006, with major expansion from the river side to the heathland south of the River Tk and Old Railway Bridge Tk.
- Off-road vehicular traffic – trail bikes and 4WD recreational vehicles travel at will across the reserve on weekends and public holidays and constitute a significant threat to flora, through spread of weeds and disease. DPI and other staff monitoring ground water bores at several points in the reserve also contributed to the damage (at least pre-2010) by driving along roads closed in winter and then off-road to access the bores. All bores are within short walking distance from navigable tracks that are open in winter.
- Proliferation of tracks – there is currently an attempt to prevent traffic through the central wet section along the river during winter months but that is unlikely to be heeded and there will be a continuation of vehicles going off-road to get around boggy spots (there is access to both ends of the reserve). HFNC is convinced that the only practical solution, in the absence of regular supervision of the reserve, is to upgrade the river track so that there is no need for any vehicle to depart from it. There is an urgent need for signage requesting that vehicles stay on designated tracks to prevent the destruction of native vegetation from wheels and the spread of Cape Tulip and Sparaxis seed and *Phytophthora* dieback fungus in transferred mud.
- Fire – a ban on fires from November to April (the fire season) would be effective in reducing that danger to this (and other) reserve, State Forest and National Parks in SW Victoria.
- Phytophthora – dieback is not known to be present; care is needed to prevent it entering.
- Campers – much of the river foreshore areas have been degraded and there needs to be some restriction to prevent further loss of the habitat areas south from the River Tk banks.
- Horses – this reserve has become a popular place for groups to bring large numbers of horses. They roam the entire reserve, even in winter. There are no restrictions on where the animals are ‘stabled’ and thus they degrade areas of native vegetation that had been in good condition.
- Wood cutting – evidence of wood removal on a large scale was noted in September 2008. Campers also have large fires to burn wood cut from the reserve.
- Toilets – there are none and this is a serious problem because the reserve has a large visitor presence. The appeal of the riverside areas is being degraded.

Future of the reserve

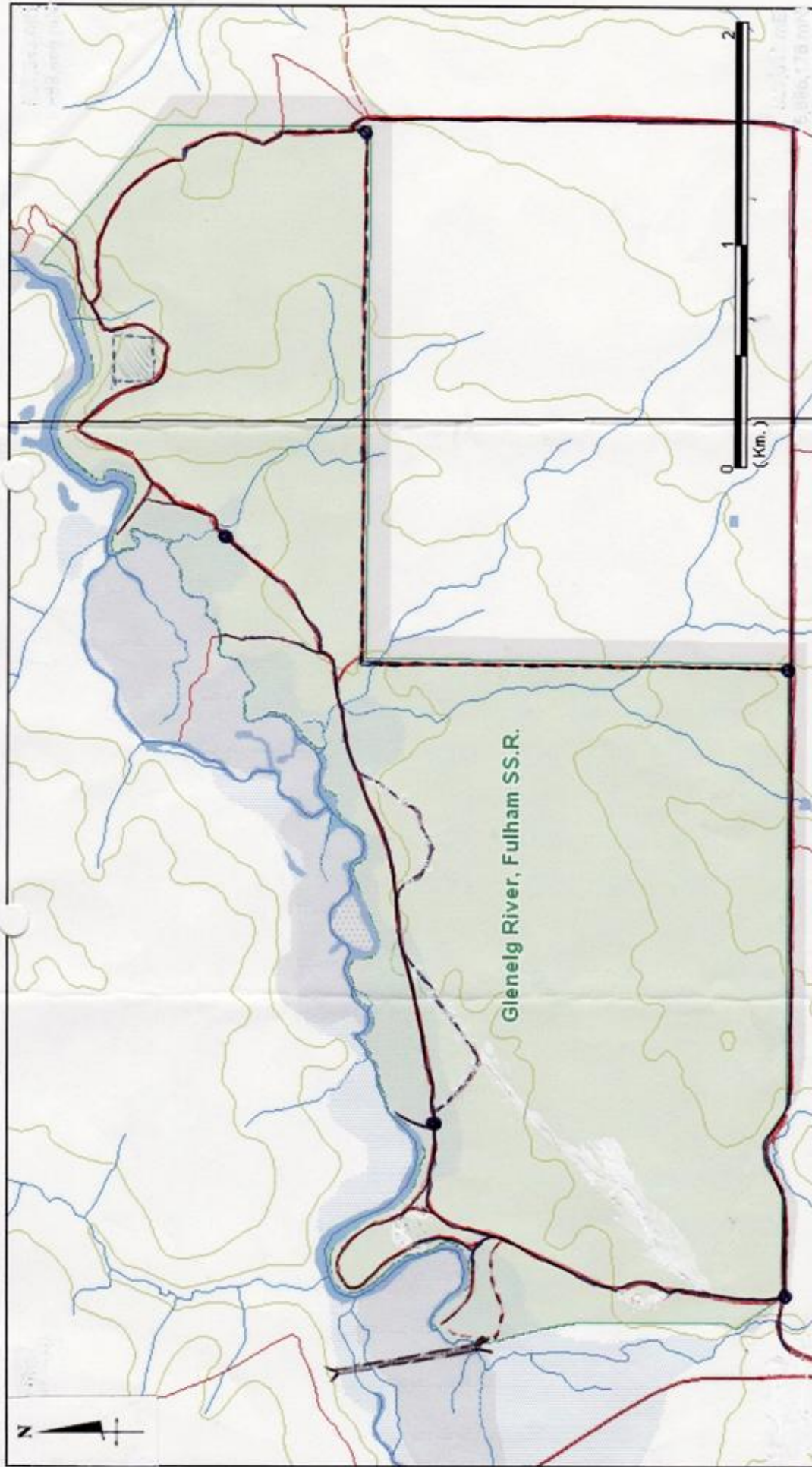
In October 2005 HFNC had a campout at Fulham and recognized the threat of environmental weeds and inadequate management of human activities in the reserve, and resolved to offer assistance to Parks Victoria (see Appendix 1). Our main efforts were to concentrate on eradicating Sparaxis and Cape Tulip from the important botanic areas south of the River Track. Failure to do that at a stage when the infestation there was manageable would have meant the certain longer-term degradation of the entire reserve. Whether that objective can be met remains to be seen.

HFNC had the following objectives when beginning work at Fulham:

- Control of exotic weeds (Phalaris, Cocksfoot, Cape Tulip, Sparaxis, Wild Gladiolus, African Weed Orchid, etc.) in the main area of reserve south of the River Track (in the western half of the reserve). HFNC, in consultation with Parks Victoria, has undertaken to locate and carefully spot-spray or herbicide-wipe those weeds in the spring of 2006 and thereafter.
- Suggest ways of reducing off-road damage to the reserve by visitors and their vehicles.
- Continue to monitor the flora of the reserve, updating that list and list of birds and other fauna.
- Have the botanic significance of this reserve recognized and therefore ultimately gazetted as a Flora Reserve, to give it greater protection (see Appendix 2).

References

- Beaglehole AC (1984) The Distribution and Conservation of Vascular Plants in South West Victoria. Bird PR, (1992) Expansion of the range of the Black Wallaby in Western Victoria. *Victorian Naturalist* **109**(3): 89-91.
- Bird, Rod (2006) Fire and Tree Hollows. *Wingspan* **16**(1): 60.
- DSE/CFA (2007) Victoria Point Fire – Bryan Swamp Horsham Fire District Fire 44 2006/07 Season. A case study.
- Land Conservation Council Victoria (1978) Report on the South-Western Area, District 2.



Scale 1 : 25,000

Glenelg River, Fulham SS.R.

Table 1. Fulham Streamside Reserve Vascular Flora

Records of AC (Cliff) Beaglehole (1975 to 1990) and others to 2013 – compiled by PR Bird
(records other than by ACB are noted; blank dates represent ACB records in Oct-Nov 1975)

Sig.	Botanic Name	Common Name	Date	Observer	Notes
1	<i>Acacia acinacea</i>	Gold-dust Wattle	9 Aug 87		
2	(*) <i>Acacia baileyana</i>	Cootamundra Wattle	9 Aug 87		
3	<i>Acacia brownei</i>	Heath Wattle	9 Aug 87		
4	<i>Acacia implexa</i>	Lightwood	16 Jun 87		
5	<i>Acacia mearnsii</i>	Black Wattle			
6	<i>Acacia melanoxylon</i>	Blackwood	16 Jun 87		
7	<i>Acacia myrtifolia</i>	Myrtle Wattle	16 Jun 87		
8	<i>Acacia paradoxa</i>	Hedge Wattle			
9	<i>Acacia pycnantha</i>	Golden Wattle	16 Jun 87		
10	<i>Acacia ulicifolia</i>	Juniper Wattle	9 Aug 87		
11	<i>Acacia verniciflua</i>	Varnish Wattle			
12	<i>Acaena anserinifolia</i>	Bidgee-widgee	16 Jun 87		
13	<i>Acaena echinata</i>	Sheep's Burr	16 Jun 87		
14	<i>Acianthus exertus</i>	Midge Orchid	~2004	GD & HA	
15	<i>Acrotriche serrulata</i>	Honey-pots	16 Jun 87		
16	<i>Agrostis avenacea</i>	Common Blown-grass			
17	RT+ <i>Agrostis limitanea</i>	Blown-grass	16 Jun 87		sole Vic rec.
18	* <i>Aira cupaniana</i>	Hair-grass			*
19	RT <i>Allocasuarina luehmannii</i>	Bull-oak	16 Jun 87		3 trees in 1987
20	<i>Allocasuarina muelleriana</i>	Slaty Sheoak	11 Aug 87		
21	<i>Allocasuarina verticillata</i>	Drooping Sheoak			
22	<i>Amphibromus neesii</i>	Swamp Wallaby-grass			
23	<i>Amphipogon strictus</i>	Grey-beard Grass			
24	<i>Amyema miquelli</i>	Box Mistletoe			
25	<i>Amyema pendulum</i>	Drooping Mistletoe			
26	* <i>Anagallis arvensis</i>	Pimpernel			
27	* <i>Anagallis minima</i>	Chaffweed	01 Nov 89		
28	<i>Angiathus preissianus</i>	Salt Angianthus			
29	<i>Anogramma leptophylla</i>	Annual Fern	16 Jun 87		
30	* <i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	16 Jun 87		
31	<i>Aphelia gracilis</i>	Slender Aphelia	16 Jun 87		
32	<i>Apium annuum</i>	Annual Celery	21 Jan 90		
33	<i>Apium prostratum</i>	Sea-celery	21 Jan 90		In isolated spring
34	* <i>Arctotheca calendula</i>	Cape Weed			
35	<i>Arthropodium minus</i>	Small Vanilla-lily	01 Nov 89		
36	<i>Arthropodium</i> sp. aff <i>strictus</i>	- Chocolate-lily			
37	<i>Arthropodium strictus</i>	Common Chocolate-lily			
38	<i>Asperula conferta</i>	Common Woodruff	24 Aug 87		
39	<i>Astroloma conostephioides</i>	Flame Heath			
40	<i>Astroloma humifusum</i>	Cranberry Heath			
41	<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass	16 Jun 87		
42	<i>Austrodanthonia geniculata</i>	Kneed Wallaby-grass			
43	<i>Austrodanthonia racemosa</i>	- Wallaby-grass	16 Jun 87		
44	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass	16 Jun 87		
45	<i>Austrostipa densiflora</i>	Dense Spear-grass	7 Nov 89		
46	<i>Austrostipa elegantissima</i>	Feather Spear-grass			
47	<i>Austrostipa</i> sp 1	- Spear-grass			
48	<i>Austrostipa</i> sp. 2	- Spear-grass			
49	* <i>Avelinia michelii</i>	Avellinia			
50	* <i>Avena fatua</i>	Wild Oat	16 Jun 87		
51	<i>Banksia marginata</i>	Silver Banksia	21 Jan 90	PRB	
52	<i>Banksia ornata</i>	Desert Banksia	21 Jan 90		Regen. in 2005
53	<i>Baumia articulata</i>	Jointed Twig-rush			
54	<i>Baumia juncea</i>	Bare Twig-rush			
55	<i>Baumia rubiginosa</i>	Soft Twig-rush			
56	<i>Billardiera cymosa</i>	Sweet Apple-berry			
57	<i>Boronia nana</i>	Waxy Boronia	11 Nov 90	HT	1 plant, E end
58	<i>Bossiaea prostrata</i>	Creeping Bossiaea	24 Aug 87		
59	<i>Brachyloma ciliatum</i>	Fringed Brachyloma	16 Jun 87		
60	<i>Brachyloma daphnoides</i>	Daphne Heath			
61	<i>Brachyscome perpusilla</i>	Rayless Daisy			
62	RT <i>Brachyscome readeri</i>	Reader's Daisy			
63	<i>Brachyscome uliginosa</i>	Small Swamp Daisy			
64	* <i>Briza maxima</i>	Large Quaking-grass			
65	* <i>Briza minor</i>	Lesser Quaking-grass			

66	*	<i>Bromus diandrus</i>	Great Brome	16 Jun 87		
67	*	<i>Bromus hordeaceus</i>	Soft Brome	16 Jun 87		
68	*	<i>Bromus lanceolatus</i>	Mediterranean Brome	21 Jan 90		
69	*	<i>Bromus rubens</i>	Red Brome			
70		<i>Brunonia australis</i>	Blue Pincushion			
71		<i>Bulbine bulbosa</i>	Bulbine Lily			
72		<i>Bulbine semibarbata</i>	Leek Lily			
73		<i>Burchardia umbellata</i>	Milkmaids			
74		<i>Bursaria spinosa</i>	Sweet Bursaria			
75		<i>Caesia caliantha</i>	Blue Grass-lily			
76		<i>Caladenia carnea</i>	Pink Fingers			
77		<i>Caladenia cucullata</i>	Hooded Caladenia	7 Nov 89		
78		<i>Caladenia formosa</i>	Crimson Spider-orchid	21 Sep 13	RZ	W of Entry Tk
79		<i>Caladenia latifolia</i>	Pink Fairy	~2004	GD & HA	
80		<i>Caladenia patersonii</i>	Common Spider-orchid	24 Sep 11	DL	Entry Tk, N end
81		<i>Caladenia pusillus</i>	Tiny Fingers	2009	PRB	E, marsh fringe
82		<i>Caladenia tentaculata</i>	Mantis Spider Orchid			
83		<i>Calandrinia granulifera</i>	Pigmy Purslane			
84		<i>Callitriche</i> sp.	Water Starwort	24 Aug 87		
85		<i>Callitris gracillis</i>	Slender Cypress	16 Jun 87		
86		<i>Callitris rhomboidea</i>	Oyster Bay Cypress	28 Sep 06	PRB	1 tree, W mid area
87		<i>Calochilus robertsonii</i>	Purplish Beard Orchid	7 Nov 89		
88		<i>Calytrix tetragona</i>	Common Fringe-myrtle			
89	*	<i>Carduus pycnocephalus</i>	Slender Thistle	24 Aug 87		
90	*	<i>Carduus tenuiflorus</i>	- Thistle	7 Nov 89		
91		<i>Carex appressa</i>	Tall Sedge			
92		<i>Carex tereticaulis</i>	- Sedge			
93		<i>Carpobrotus modestus</i>	Inland Pigface	13 Sep 08	PRB	1 plant N-S ck
94		<i>Cassytha glabella</i>	Slender Dodder-laurel			
95	*	<i>Centaureum tenuiflorum</i>	- Centaury			
96		<i>Centipeda cunninghamii</i>	Common Sneezeweed			
97		<i>Centrolepis aristata</i>	Pointed Centrolepis			
98		<i>Centrolepis cephaliformis</i>	Cushion Centrolepis			
99		<i>Centrolepis glabra</i>	Smooth Centrolepis			
100		<i>Centrolepis polygyna</i>	Wiry Centrolepis			
101		<i>Centrolepis strigosa</i>	Hairy Centrolepis			
102	*	<i>Cerastium glomeratum</i>	Common Mouse-ear Chickweed	16 Jun 87		
103		<i>Chaemescilla corymbosa</i>	Blue Stars	24 Aug 87		
104		<i>Cheilanthes austrotenuifolia</i>	Rock Fern	16 Jun 87		
105		<i>Cheilanthes sieberi</i>	- Fern	9 Aug 87		
106		<i>Chenopodium glaucum</i>	Glaucous Goosefoot			
107		<i>Chiloglottis trapezoides</i>	Dainty Bird-orchid	2005	AP	N Edgewood Rd
108		<i>Chiloglottis x pescottiana</i>	Dainty Bird-orchid hybrid	2005	AP	N Edgewood Rd
109		<i>Chorizandra enodis</i>	Black Bristle-rush			
110		<i>Chrysocephalum apiculatum</i>	Common Everlasting			
111		<i>Chrysocephalum leucopsidium</i>	Satin Everlasting	24 Aug 87		
112	*	<i>Cicendia filiformis</i>	Slender Cicendia			
113	*	<i>Cirsium vulgare</i>	Spear Thistle	16 Jun 87		
114		<i>Clematis microphylla</i>	Small-leaved Clematis	14 Sep 06	PRB	1 plant, SW
115		<i>Comesperma calymega</i>	Blue-spike Milkwort			
116	RT	<i>Comesperma polygaloides</i>	Small Milkwort			
117		<i>Comesperma volubile</i>	Love Creeper			
118		<i>Convolvulus erubescens</i>	Pink Bindweed			
119		<i>Correa reflexa</i>	Common Correa	16 Jun 87		
120		<i>Corunastylis despectans</i>	Sharp Midge Orchid	~2004	GD & HA	
121		<i>Corybas incurvus</i>	Slaty Helmet-orchid			
122		<i>Cotula australis</i>	Common Cotula	16 Jun 87		
123	*	<i>Cotula coronopifolia</i>	Water Buttons			
124		<i>Craspedia glauca</i>	Common Billy-buttons			
125	*	<i>Crassula alata</i>	Three-part Crassula			
126		<i>Crassula decumbens</i>	Spreading Crassula			
127	RT+	<i>Crassula exerta</i>	Large-fruiting Crassula			
128		<i>Crassula helmsii</i>	Swamp Crassula	16 Jun 87		
129		<i>Crassula sieberiana</i>	Sieber Crassula	16 Jun 87		
130	*	<i>Crepis vesicaria</i>	Dandelion Hawkesbeard	11 Nov 90		
131	*	<i>Critesion hystriax</i>	Mediterranean Barley-grass			
132	*	<i>Critesion murinum</i>	Common Barley-grass	7 Nov 89		
133		<i>Cymbonotus preissianus</i>	Austral Bear's Ears	11 Aug 87		
134		<i>Cynoglossum australe</i>	Australian Hound's Tongue			
135		<i>Cynoglossum suaveolens</i>	Sweet Hound's Tongue			
136	*	<i>Cynosurus echinatus</i>	Rough Dog's Tail	16 Jun 87		
137		<i>Cyperus gunnii</i>	Flecked Flat-sedge	16 Jun 87		
138		<i>Cyperus lucidus</i>	Leafy Flat-sedge			

139	<i>Cyperus tenellus</i>	Tiny Flat-sedge			
140	<i>Cyrtostylis reniformis</i>	Small Gnat Orchid	~2004	GD & HA	
141	* <i>Dactylis glomeratum</i>	Cocksfoot	2005	PRB	
142	<i>Daucus glochidiatus</i>	Austral Carrot			
143	<i>Daviesia arenaria</i>	- Bitter-pea	9 Aug 87		
144	<i>Deyeuxia quadriseta</i>	Reed Bent-grass			
145	<i>Dianella revoluta</i>	Black-anther Flax-lilly	9 Aug 87		
146	<i>Dianella longifolia</i>	Pale Flax-lily	Oct 06	PRB	SW area
147	<i>Dichelachne crinita</i>	Long-hair Plume-grass			
148	<i>Dichondra repens</i>	Kidney-weed			
149	<i>Dillwynia glaberrima</i>	Smooth Parrot-pea			
150	<i>Dillwynia hispida</i>	Red Parrot-pea			
151	<i>Dillwynia sericea</i>	Showy Parrot-pea			
152	<i>Dipodium punctatum</i>	Hyacinth Orchid	21 Jan 90		
153	* <i>Disa bracteata</i>	South African Orchid	~2003	GD & HA	
154	<i>Distichlis distichophylla</i>	Australian Salt-grass			
155	* <i>Dittrichia graveolens</i>	Stinkwort			
156	<i>Diuris chryseopsis</i>	Golden Moth Orchid	~2004	GD & HA	SE cnr
157	<i>Diuris orientis</i>	Wallflower Orchid	~2004	GD & HA	
158	<i>Diuris pardina</i>	Leopard Orchid	1 Nov 89		
159	<i>Diuris sulphurea</i>	Tiger Orchid			
160	<i>Drosera glanduligera</i>	Scarlet Sundew			
161	<i>Drosera peltata</i>	Pale Sundew			
162	<i>Drosera pygmaea</i>	Tiny Sundew	24 Aug 87		
163	<i>Drosera whittakeri</i>	Scented Sundew			
164	* <i>Ehrharta calycina</i>	Perennial Veldt-grass	7 Nov 89		
165	<i>Eleocharis acuta</i>	Common Spike-rush			
166	<i>Eleocharis pusilla</i>	Small Spike-rush			
167	<i>Eleocharis sphacelata</i>	Tall Spike-rush			
168	<i>Elymus scaber</i>	Common Wheat-grass			
169	<i>Epilobium cinerium</i>	Variable Willow-herb			
170	* <i>Erodium cicutarium</i>	Common Heron's-bill	16 Jun 87		
171	<i>Eryngium ovinum</i>	Blue Devil	16 Jun 87		
172	<i>Eucalyptus</i> aff. <i>arenacea</i>	aff. Desert Stringybark	Jan 2009	DP	NW cnr (penin.)
173	<i>Eucalyptus baxteri</i>	Brown Stringybark			
174	<i>Eucalyptus camaldulensis</i>	River Red Gum			
175	<i>Eucalyptus leucoxydon</i>	Yellow Gum	16 Jun 87		
176	<i>Eucalyptus melliodora</i>	Yellow Box			
177	<i>Eucalyptus viminalis</i> (?)	Manna Gum	16 Sep 06	PRB	SE – check this
178	<i>Eutaxia microphylla</i>	Common Eutaxia	28 Sep 06	PRB	mid area, S of Tk
179	<i>Exocarpos cupressiformis</i>	Cherry Ballart	16 Jun 87		
180	<i>Gahnia filum</i>	Chaffy Saw-sedge			
181	* <i>Galium divaricatum</i>	Slender Bedstraw			
182	* <i>Galium murale</i>	Small Bedstraw			
183	<i>Geranium retrorsum</i>	- Crane's-bill	16 Jun 87		
184	* <i>Gladiolus undulatus</i>	Wild Gladiolus			
185	<i>Glossodia major</i>	Wax-lip Orchid	24 Aug 87		
186	RT <i>Glycine latrobeana</i>	Clover Glycine			
187	<i>Gnaphalium gymnocephala</i>	Creeping Cudweed			
188	<i>Gnaphalium indutum</i>	Tiny Cudweed			
189	* <i>Gnaphalium purpureum</i>	Purple Cudweed	16 Jun 87		
190	<i>Gompholobium ecostatum</i>	Wedge-pea	11 Nov 90	PRB	
191	<i>Gonocarpos elatus</i>	Tall Raspwort	16 Jun 87		
192	<i>Gonocarpos tetragynus</i>	Common Raspwort			
193	<i>Goodenia geniculata</i>	Bent Goodenia			
194	<i>Goodenia humilis</i>	Swamp Goodenia			
195	<i>Gratiola pubescens</i>	- Brooklime	16 Jun 87		
196	<i>Hakea muelleriana</i>	Desert Hakea			
197	<i>Hakea rugosa</i>	Dwarf Hakea			
198	<i>Haloragis heterophylla</i>	Varied Raspwort	16 Jun 87		
199	<i>Helichrysum leucopsidium</i>	Satin Everlasting	24 Aug 87		
200	<i>Helichrysum scorpiodes</i>	Button Everlasting	24 Aug 87		
201	<i>Hemarthria uncinata</i>	Mat Grass			
202	<i>Hibbertia stricta</i>	Erect Guinea-flower			
203	<i>Hibbertia virgata</i>	Twiggy Guinea-flower	9 Aug 87		
204	* <i>Holcus lanatus</i>	Yorkshire Fog			
205	* <i>Holcus setosus</i>	Annual Fog	1 Nov 89		
206	* <i>Hordeum leporinum</i>	Common Barley-grass	7 Nov 89		
207	<i>Hovea linearis</i>	Common Hovea			
208	<i>Hyalosperma demissum</i>	Moss Sunray			
209	<i>Hydrocotyle callicarpa</i>	Small Pennywort			
210	<i>Hydrocotyle capillaris</i>	Thread Pennywort			
211	<i>Hydrocotyle foveolata</i>	Yellow Pennywort			

212	<i>Hydrocotyle laxiflora</i>	Stinking Pennywort			
213	* <i>Hypchoeris glabra</i>	Smooth Cat's-ear			
214	<i>Hypericum gramineum</i>	Small St. John's Wort			
215	* <i>Hypochoeris radicata</i>	Cat's Ear	16 Jun 87		
216	<i>Hypolaena fastigata</i>	Tassel Rope sedge			
217	<i>Hypoxis glabella</i>	Yellow Star	11 Aug 87		
218	<i>Hypoxis pusilla</i>	Tiny Star	16 Jun 87		
219	<i>Imperata cylindrica</i>	Blady Grass			
220	<i>Iseotopsis graminifolia</i>	Grass Cushion			
221	<i>Isoetes drummondii</i>	Plain Quillwort	11 Aug 87		
222	<i>Isolepis fluitans</i>	Floating Club-rush			
223	* <i>Isolepis hystrix</i>	Awned Club-rush			
224	<i>Isolepis nodosa</i>	Knobby Club-rush			
225	<i>Isolepis</i> sp.	- Clubrush	1 Nov 89		
226	<i>Isopogon ceratophyllus</i>	Horny Conebush			
227	<i>Isotoma fluviatilis</i>	Swamp Isotome			
228	<i>Juncus amabilis</i>	- Rush			
229	<i>Juncus bufonius</i>	Toad Rush			
230	<i>Juncus capitatus</i>	Capitate Rush			
231	<i>Juncus holoschoenus</i>	Joint-leaf Rush			
232	<i>Juncus homalocaulis</i>	Wiry Rush			
233	<i>Juncus krausii</i>	Sea Rush			
234	<i>Juncus pallidus</i>	Pale Rush			
235	<i>Juncus planifolius</i>	Broad-leaf Rush	16 Jun 87		
236	<i>Juncus subsecundis</i>	Finger Rush	16 Jun 87		
237	<i>Kennedia prostrata</i>	Running Postman			
238	<i>Lagenifera huegelii</i>	Coarse Lagenifera			
239	* <i>Leontodon taraxacoides</i>	Hairy Hawkbit	16 Jun 87		
240	<i>Lepidosperma carphoides</i>	Black Rapier-sedge			
241	<i>Lepidosperma congestum</i>	Clustered Sword-sedge			
242	<i>Lepidosperma lineare</i>	Little Sword-sedge			
243	<i>Lepidosperma semiteres</i>	Wire Rapier-sedge	11 Aug 87		
244	<i>Leporella fimbriata</i>	Fringed hare Orchid	~2004	GD & HA	
245	<i>Leptocarpus brownii</i>	Coarse Twine-rush			
246	<i>Leptorhynchus squamatus</i>	Scaly Buttons			
247	<i>Leptospermum continentale</i>	Prickly Tea-tree			
248	(*) <i>Leptospermum laevigatum</i> ?	Coastal Tea-tree ?	23 Oct 05	PRB	1 on trk in
249	<i>Leptospermum myrsinoides</i>	Heath Tea-tree			
250	<i>Leptospermum obovatum</i>	River Tea-tree			
251	<i>Leucopogon virgatus</i>	Common Beard-heath			
252	<i>Levenhookia dubia</i>	Hairy Stylewort			
253	<i>Linum marginale</i>	Native Flax	23 Oct 05	PRB	Post-fire, W of tk
254	<i>Lobelia alata</i>	Angled Lobelia	21 Jan 90		
255	<i>Lobelia irrigua</i>	Salt Pratia			
256	* <i>Lolium perenne</i>	Perennial rye-grass	16 Jun 87		
257	<i>Lomandra collina</i>	Pale Mat-rush			
258	<i>Lomandra filliformis</i>	Wattle Mat-rush			
259	<i>Lomandra micrantha</i>	Small-flower Mat-rush	24 Aug 87		
260	<i>Lomandra sororia</i>	Small Mat-rush			
261	<i>Luzula</i> sp.	- Woodrush			
262	* <i>Lycium ferocissium</i>	African Box-thorn			
263	<i>Lythrum hyssopifolia</i>	Small Loosestrife	16 Jun 87		
264	* <i>Medicago polymorpha</i>	Burr Medic	16 Jun 87		
265	<i>Melaleuca decussata</i>	Totem-poles	11 Aug 87		
266	<i>Melaleuca neglecta</i>	Mallee Honey-myrtle			
267	<i>Melicytus dentata</i>	Tree Violet	23 Oct 05	PRB	NW near river
268	<i>Mentha diemenica</i>	Slender Mint	11 Aug 87		
269	<i>Mentha pulegium</i>	Pennyroyal	16 Jun 87		
270	<i>Microlaena stipoides</i>	Weeping Grass			
271	<i>Microseris</i> sp.	Yam-daisy			
272	<i>Microtis parviflora</i>	Slender Onion-orchid	1 Nov 89		
273	<i>Microtis unifolia</i>	Common Onion-orchid			
274	<i>Millotia tenuifolia</i>	Soft Millotia			
275	<i>Mimulus repens</i>	Creeping Monkey-flower			
276	<i>Mitrasacme paradoxa</i>	Wiry Mitrewort			
277	* <i>Monchia erecta</i>	Erect Chickweed	1 Nov 89		
278	<i>Montia fontana</i>	Water Blinks	1 Nov 89		
279	* <i>Moraea flaccida</i>	One-leaf Cape Tulip	11 Aug 87		
280	<i>Myoporum parvifolium</i>	Creeping Myoporum			
281	<i>Myosotis australis</i>	Austral Forget-me-not	23 Oct 05	PRB	Post-fire, W end
282	<i>Myriocephalus rhizocephalus</i>	Woolly-heads	1 Nov 89		
283	<i>Myriophyllum crispata</i>	- Water-milfoil	7 Nov 89		
284	<i>Myriophyllum integrifolium</i>	Tiny Water-milfoil	7 Nov 89		

285	*	<i>Myrsiphyllum asparagoides</i>	Smilax			
286		<i>Neopaxia australasica</i>	White Purslane	16 Jun 87		
287		<i>Neurachne alopecuroides</i>	Fox-tail Mulga Grass			
288	*	<i>Olea europaea</i>	Olive	11 Nov 90		West, bend
289		<i>Opercularia varia</i>	Variable Stinkweed			
290		<i>Ophioglossum lusitanicum</i>	Austral Adder's-tongue			
291		<i>Orthocercis strictum</i>	Horned Orchid			
292		<i>Oxalis perennans</i>	Wood Sorrel			
293		<i>Paracalenana minor</i>	Small Duck Orchid	~2004	GD & HA	
294	*	<i>Parapholis incurva</i>	Coast Barb-grass			
295	*	<i>Parentucellia latifolia</i>	Common Parentucellia			
296		<i>Pelargonium rodneyanum</i>	Magenta Stork's-bill			
297		<i>Pentapogon quadrifidus</i>	Five-awned Spear-grass			
298	*	<i>Pentaschistis airoides</i>	False Hair-grass	7 Nov 89		
299	*	<i>Petrorhagia velutina</i>	Hairy Pink	7 Nov 89		
300	*	<i>Phalaris aquatica</i>	Toowoomba Canary-grass	16 Jun 87		
301		<i>Pheladenia deformis</i>	Bluebeard Orchid	~2004	GD & HA	
302		<i>Phragmites australis</i>	Common Reed			
303		<i>Phylloglossum drummondii</i>	Pigmy Clubmoss			
304		<i>Pimelia humilis</i>	Common Rice-flower			
305	*	<i>Plantago bellardii</i>	Hairy Plantain			
306	*	<i>Plantago coronopus</i>	Buck's-horn Plantain			
307		<i>Plantago gaudichaudii</i>	-Plantain	7 Nov 89		
308	*	<i>Plantago lanceolata</i>	Ribwort			
309		<i>Plantago varia</i>	Variable Plantain			
310		<i>Platylobium obtusangulum</i>	Common Flat-pea			
311		<i>Pleurosorus rutifolius</i>	Blanket Fern	16 Jun 87		
312	*	<i>Poa annua</i>	Annual Meadow-grass	16 Jun 87		
313		<i>Poa labillardieri</i>	Great Tussock-grass			
314		<i>Poa sieberiana</i>	Small Tussock-grass			
315		<i>Podolepis jaceoides</i>	Showy Podolepis			
316		<i>Podotroche angustifolium</i>	Sticky Longheads	9 Aug 87		
317	*	<i>Polypogon maritimus</i>	Coast Beard-grass			
318		<i>Poranthera microphylla</i>	Small Poranthera			
319		<i>Potamogeton ochreatus</i>	Blunt Pondweed			
320		<i>Potamogeton pectinatus</i>	Fennel Pondweed			
321		<i>Prasophyllum elatum</i>	Tall Leek-orchid			
322		<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed	16 Jun 87		
323		<i>Pteridium esculentum</i>	Austral Bracken	16 Jun 87		
324		<i>Pterostylis nana</i>	Dwarf Greenhood	1 Oct 89		
325		<i>Pterostylis nutans</i>	Nodding Greenhood	17 Sep 06	DL	N end of EntryTk
326		<i>Pterostylis pedunculata</i>	Maroon-hood	24 Aug 87		
327	RT	<i>Ptilotus erubescens</i>	Hairy-tails			
328		<i>Ptilotus macrocephalus</i>	Featherheads	29 Oct 13	PRB	W end
329		<i>Pyrorchis nigricans</i>	Red-beaks			
330	RT	<i>Quinetia urvillei</i>	Quinetia	7 Nov 89		
331		<i>Ranunculus rivularis</i>	Small River Buttercup	16 Jun 87		
332		<i>Ranunculus robertsonii</i>	Slender Buttercup			
333	*	<i>Romulea rosea</i>	Common Onion-grass			
334	*	<i>Rumex acetosella</i>	Sheep Sorrel			
335		<i>Rumex brownii</i>	Slender Dock			
336	*	<i>Rumex crispus</i>	Curled Dock			
337		<i>Samolus repens</i>	Creeping Brookweed	1 Nov 89		
338	*	<i>Schinus molle</i>	Pepper-tree			
339		<i>Schoenus apogon</i>	Common Bog-wash			
340		<i>Schoenus breviculmis</i>	Matted Bog-rush			
341		<i>Sebaea albidiflora</i>	White Sebaea			
342		<i>Sebaea ovata</i>	Yellow Sebaea	16 Jun 87		
343		<i>Selliera radicans</i>	Selliera			
344		<i>Senecio glomeratus</i>	Annual Fireweed	16 Jun 87		
345		<i>Senecio picridioides</i>	- Fireweed	16 Jun 87		
346		<i>Senecio pinnatifolius</i>	Variable groundsel	20 Sep 07	PRB	a few plants, SW
347		<i>Senecio quadridentatus</i>	Cotton Fireweed			
348		<i>Senecio squarrosus</i>	Leafy Fireweed	24 Aug 87		
349	*	<i>Sherardia arvensis</i>	Field Madder	7 Nov 89		
350	*	<i>Silene gallica</i>	French Catchfly	7 Nov 89		
351		<i>Siloxerus multiflorus</i>	Small Wrinklewort			
352		<i>Solanum laciniatum</i>	Kangaroo Apple	14 Sep 11	PRB	Towards bridge
353	*	<i>Solanum nigrum</i>	Black Nightshade			
354		<i>Solanum simile</i>	Oondoroo			
355		<i>Solenogyne dominii</i>	- Solenogyne			
356	*	<i>Soliva sessilis</i>	Jo Jo			
357	*	<i>Sonchus asper</i>	Rough Sow Thistle			

358	*	<i>Sonchus oleraceus</i>	Sow Thistle			
359	*	<i>Sparaxis bulbifera</i>	Harlequin-flower	7 Nov 89		
360	*	<i>Spergularia rubra</i>	Red Sand-spurrey			
361		<i>Stackhousia monogyna</i>	Candles	14 Sep 06	PRB	W side, near Rail
362	*	<i>Stellaria media</i>	Chickweed	24 Aug 87		
363	*	<i>Stellaria pallida</i>	Lesser Chickweed	1 Nov 89		
364		<i>Stuartina muelleri</i>	Spoon Cudweed			
365		<i>Stylidium calcaratum</i>	White Book Trigger-plant			
366		<i>Stylidium inundatum</i>	Hundreds and Thousands			
367	*	<i>Taraxacum</i> sp.	- Dandelion			
368	R	<i>Templetonia stenophylla</i>	Leafy Templetonia	16 Sep 06	PRB	1 plant, SE side
369		<i>Tetratea ciliata</i>	Pink Bells			
370		<i>Thelymitra antennifera</i>	Rabbit-ears			
371		<i>Thelymitra carnea</i>	Pink Sun-orchid			
372	RT+	<i>Thelymitra chasmogama</i>	Globe-hood Sun-orchid			
373		<i>Thelymitra holmesii</i>	Blue-star Sun-orchid			
374		<i>Thelymitra ixioides</i>	Dotted Sun-orchid			
375	RT+	<i>Thelymitra luteocilium</i>	Fringed Sun-orchid			
376	RT	<i>Thelymitra macmillanii</i>	Crimson Sun-orchid			
377		<i>Thelymitra nuda</i>	Scented Sun-orchid			
378		<i>Thelymitra pauciflora</i>	Slender Sun-orchid			
379		<i>Thelymitra rubra</i>	Salmon Sun-orchid			
380		<i>Themeda triandra</i>	Kangaroo Grass			
381		<i>Thysanotus patersonii</i>	Twining Fringe-lily			
382	*	<i>Tribolium acutiflorum</i>	-	1 Nov 89		
383		<i>Tricoryne elatior</i>	Yellow Rush-lily	24 Aug 87		
384	*	<i>Trifolium angustifolium</i>	Narrow-leaf Clover	7 Nov 89		
385	*	<i>Trifolium campestre</i>	Hop Clover	16 Jun 87		
386	*	<i>Trifolium cernuum</i>	Drooping-flower Clover			
387	*	<i>Trifolium dubium</i>	Suckling Clover	16 Jun 87		
388	*	<i>Trifolium glomeratum</i>	Cluster Clover	16 Jun 87		
389	*	<i>Trifolium ornithopodioides</i>	Birdsfoot Fenugreek			
390	*	<i>Trifolium repens</i>	White Clover	16 Jun 87		
391	*	<i>Trifolium subterraneum</i>	Subterranean Clover	16 Jun 87		
392		<i>Triglochin centrocarpa</i>	Dwarf Arrowgrass			
393		<i>Triglochin mucronata</i>	Prickly Arrowgrass			
394		<i>Triglochin procera</i>	Water-ribbons			
395		<i>Triglochin striata</i>	Streaked Arrowgrass			
396		<i>Triodia bunicola</i>	Common Porcupine Grass			
397		<i>Triptilodiscus pygmaeus</i>	Common Sunray			
398		<i>Typha domingensis</i>	- Bulrush	21 Jan 90		
399		<i>Typha orientalis</i>	- Bulrush			
400		<i>Utricularia tenella</i>	Pink Bladderwort			
401		<i>Vallisneria spiralis</i>	Eel-weed			
402	*	<i>Verbascum virgatum</i>	Twiggy Mullein	16 Jun 87		
403		<i>Veronica gracilis</i>	Slender Speedwell	Oct 06	PRB	NW area
404		<i>Villarsia reniformis</i>	Running Marsh-flower			
405		<i>Viminaria juncea</i>	Golden Spray	9 Aug 87		
406		<i>Viola sieberiana</i>	Tiny Violet			
407		<i>Vittadinia</i> sp1 (<i>cuneata</i> ?)	New Holland Daisy	16 Jun 87		
408		<i>Vittadinia</i> sp2 (<i>gracilis</i> ?)	New Holland Daisy	16 Jun 87		
409	*	<i>Vulpia bromoides</i>	Squirrel-tail Fescue			
410	*	<i>Vulpia myuros</i>	Rats's-tail Fescue			
411		<i>Wahlenbergia gracilentia</i>	Annual Bluebell			
412		<i>Wahlenbergia gracilis</i>	Sprawling Bluebell			
413		<i>Wahlenbergia multicaulis</i>	Bluebell			
414		<i>Wahlenbergia stricta</i>	Tall Bluebell			
415		<i>Wilsonia rotundifolia</i>	Round-leaf Wilsonia	1 Nov 89		
416		<i>Wurmbea dioica</i>	Early Nancy	9 Aug 87		
417		<i>Xanthorrhoea minor</i>	Small Grass-tree			
418		<i>Zoysia macrantha</i>	Prickly Couch	24 Aug 87		

Observers other than AC (Cliff) Beaglehole (observer space left blank, 1975-1990) were:
GD = Glenys Dixon, HA = Helen Anderson, AP = Andrew Pritchard (DSE), HT = Hilary Turner,
PRB = Rod Bird, DL = Diane Luhrs, DP = David Pitts (DSE), RZ = Reto Zollinger

* = exotic sp.; T = threatened; R = rare

Summary: 418 species with 87 aliens and 331 indigenous species.

Table 2. HFNC BIRDLIST Fulham Streamside Reserve (Feb. 1983 to Oct. 2015) – records for the western block

No.	Species	First recorded		Oct	Sep	Sep	Sep	Sep	Sep-	Sep-	Sep-	Sep-	Sep-	Sep-
		Date	Observer	2005	2006	2007	2008	2009	Oct	Oct	Oct	-Oct	Nov	Oct
1	Australasian darter	04/12/1994	J Cleary				*	*						
2	Australasian reed-warbler	04/12/1994	R Bird								*	*		*
3	Australasian shoveler	12/09/2008	R Bird				*							
4	Australian magpie	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	*
5	Australian pelican	21/09/2013	D Luhrs									*		
6	Australian raven	12/11/1990	R Bird											
7	Australian shelduck	18/09/2009	D Luhrs					*						*
8	Australian white ibis	01/11/2014	DLuhrs											*
9	Australian wood duck	11/06/1990	R Bird	*	*	*	*	*	*	*		*	*	*
10	Azure kingfisher	22/10/2005	R Bird	*										
11	Black swan	11/11/1990	R Bird				*		*			*		
12	Black-chinned honeyeater	18/09/2006	R Bird		*									
13	Black-eared cuckoo	01/01/1983	K Lakeman											
14	Black-faced cuckoo-shrike	04/12/1994	R Bird	*	*	*	*	*	*	*	*	*		*
15	Black-fronted dotterel	12/09/2008	R Bird				*							
16	Black-tailed native hen	12/09/2008	D Luhrs				*							
17	Brown falcon	04/12/1994	R Bird		*				*					*
18	Brown goshawk	12/09/2008	R Bird				*							
19	Brown thornbill	22/10/2005	R Bird	*	*	*	*	*	*	*	*	*	*	*
20	Brown treecreeper	29/03/1986	R Bird	*	*		*			*		*	*	*
21	Brown-headed honeyeater	15/04/2006	R Bird					*			*			
22	Buff-rumped thornbill	15/04/2006	R Bird		*			*		*	*			
23	Chestnut teal	05/11/2013	R Bird									*		
24	Collared sparrowhawk	04/12/1994	R Bird			*	*			*		*		
25	Common bronzewing	04/12/1994	R Bird	*	*	*	*	*	*	*	*	*	*	*
26	Crested pigeon	17/09/2010	R Bird						*	*		*		
27	Crested shrike-tit, e fm	11/06/1990	R Bird		*									
28	Crimson rosella	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	*
29	Diamond firetail	04/12/1994	R Bird											
30	Dusky moorhen	29/03/1986	R Bird		*	*	*			*	*	*	*	*
31	Dusky woodswallow	01/01/1983	K Lakeman		*	*								*
32	Eastern rosella	04/12/1994	R Bird				*			*		*		
33	Eastern spinebill	16/04/2006	R Bird											
34	Eastern yellow robin	01/01/1983	K Lakeman			*								
35	Eurasian coot	29/03/1986	R Bird	*	*	*	*	*	*			*	*	*
36	Fairy martin	29/03/1986	R Bird											
37	Fan-tailed cuckoo	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	*
38	Flame robin	16/09/2007	R Bird			*								
39	Forest raven	18/09/2009	R Bird	*	*	*	*	*	*					
40	Galah	25/10/1987	R Bird	*	*	*	*	*	*	*	*	*	*	*
41	Gang-gang cockatoo	11/06/1990	R Bird	*	*	*			*	*	*	*	*	*
42	Golden whistler	15/04/2006	R Bird				*			*				
43	Great egret	18/09/2006	R Bird		*					*				
44	Great cormorant	21/09/2013	R Bird									*		*
45	Grey currawong	04/12/1994	R Bird	*	*	*	*	*	*	*	*	*	*	*
46	Grey fantail	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	*
47	Grey shrike-thrush	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	*
48	Grey teal	22/10/2005	R Bird	*		*	*	*	*br	*	*			*
49	Hoary-headed grebe	29/03/1986	R Bird							*				
50	Horsfield's bronze-cuckoo	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	*
51	Intermediate Egret	01/11/2014	D Luhrs										*	
52	Jacky winter	29/03/1986	R Bird		*	*	*		*	*		*	*	*
53	Latham's snipe	18/01/1990	R Bird											
54	Laughing kookaburra	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	*
55	Little black cormorant	17/09/2010	D Luhrs						*		*	*		
56	Little eagle	11/10/2010	R Bird						*					
57	Little grassbird	18/09/2006	R Bird		*	*					*	*	*	
58	Little pied cormorant	29/03/1986	R Bird	*	*		*			*			*	*
59	Little raven	12/09/2008	R Bird				*	*	*	*	*	*	*	*
60	Long-billed corella	29/03/1986	R Bird	*	*	*	*		*	*	*	*	*	*
61	Magpie-lark	18/01/1990	R Bird		*	*		*		*	*			
62	Masked lapwing	22/10/2005	R Bird	*	*		*	*	*	*	*	*	*	*

No.	Species	Date	Observer	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
63	Masked woodswallow	01/01/1983	K Lakeman							*		*		
64	Mistletoebird	22/10/2005	R Bird	*	*						*	*	*	*
65	Musk duck	22/10/2005	R Bird	*				*			*	*		
66	Musk lorikeet	25/10/1987	R Bird	*	*		*		*	*	*	*	*	*
67	Nankeen night-heron	19/10/2015	R Bird											*
68	New Holland honeyeater	29/03/1986	R Bird		*	*	*		*	*	*	*	*	*
69	Pacific black duck	25/10/1987	R Bird	*			*	*	*	*	*	*	*	
70	Pallid cuckoo	22/10/2005	R Bird	*		*	*	*	*	*				
71	Peregrine falcon	22/10/2005	R Bird	*						*				
72	Pied cormorant	04/12/1994	J Cleary											
73	Pied currawong	11/11/1990	R Bird			*	*		*	*	*	*	*	*
74	Powerful owl	16/11/2007	J Cayley			*		*						
75	Purple swamphen	29/03/1986	R Bird	*			*				*	*	*	
76	Purple-crowned lorikeet	11/11/1990	R Bird		*		*		*	*		*		
77	Rainbow bee-eater	01/01/1983	K Lakeman								*			
78	Rainbow lorikeet	16/09/2007	R Bird			*				*	*			
79	Red wattlebird	04/12/1994	R Bird	*	*	*	*	*	*	*	*	*	*	
80	Red-browed finch	01/01/1983	K Lakeman		*				*	*		*		
81	Red-capped robin	01/01/1983	K Lakeman		*							*		
82	Red-rumped parrot	29/03/1986	R Bird	*	*		*	*		*		*		
83	Red-tailed black-cockatoo	18/09/2010	R Bird						*					
84	Restless flycatcher	29/03/1986	R Bird		*	*		*	*					*
85	Royal spoonbill	01/11/2014	R Bird										*	
86	Rufous songlark	18/01/1990	R Bird	*	*	*	*	*		*		*		
87	Rufous whistler	25/10/1987	R Bird	*	*			*	*	*	*	*	*	*
88	Sacred kingfisher	11/11/1990	R Bird	*				*	*	*	*	*	*	
89	Scarlet robin	29/03/1986	R Bird	*			*			*		*		*
90	Shining bronze-cuckoo	25/10/1987	R Bird	*	*				*	*		*	*	*
91	Silvereye	15/04/2006	R Bird		*				*	*			*	
92	Southern boobook	22/10/2005	R Bird	*		*	*		*				*	
93	Southern whiteface	29/03/1986	R Bird					*		*				
94	Speckled warbler	14/07/2001	R Farnes											
95	Spiny-cheeked honeyeater	18/09/2010	R Bird						*					
96	Straw-necked ibis	10/09/2011	J Hayes							*				
97	Spotted pardalote	04/12/1994	R Bird	*	*	*	*		*	*	*	*	*	*
98	Striated pardalote	25/10/1987	R Bird	*	*	*	*	*	*	*	*	*	*	*
99	Striated thornbill	22/10/2005	R Bird	*						*				
100	Stubble quail	28/09/2006	R Bird		*					*	*	*		
101	Sulphur-crested cockatoo	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	*
102	Superb fairy-wren	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	*
103	Swamp harrier	25/10/1987	R Bird					*	*				*	
104	Tawny frogmouth	12/09/2008	R Zollinger				*						*	
105	Tree martin	04/12/1994	R Bird		*	*							*	
106	Varied sittella	04/12/1994	R Bird	*	*	*	*	*	*	*			*	
107	Wedge-tailed eagle	11/06/1990	R Bird	*		*		*						
108	Weebill	22/10/2005	R Bird	*	*	*	*		*	*	*	*	*	*
109	Welcome swallow	29/03/1986	R Bird	*	*		*				*	*	*	
110	Whistling kite	16/09/2007	R Bird			*	*		*		*		*	
111	White-browed babbler	15/04/2006	R Bird		*		*	*	*	*	*	*	*	*
112	White-browed scrubwren	29/03/1986	R Bird		*	*	*	*	*	*	*	*	*	
113	White-eared honeyeater	15/04/2006	R Bird							*	*			
114	White-faced heron	29/03/1986	R Bird		*		*	*	*	*	*	*	*	
115	White-necked heron	18/09/2009	D Luhrs					*		*			*	
116	White-plumed honeyeater	29/03/1986	R Bird	*	*	*	*	*	*	*		*	*	
117	White-throated gerygone	12/09/2008	R Bird				*							
118	White-throated treecreeper	29/03/1986	R Bird		*	*	*	*	*	*	*	*	*	*
119	White-winged chough	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	
120	White-winged triller	12/09/2008	R Bird				*		*					
121	Willie wagtail	29/03/1986	R Bird	*	*	*	*	*				*	*	*
122	Yellow thornbill	04/12/1994	R Bird											
123	Yellow-billed spoonbill	01/11/2014	D Luhrs										*	
124	Yellow-faced honeyeater	04/12/1994	R Bird		*	*			*		*	*	*	*
125	Yellow-rumped thornbill	29/03/1986	R Bird	*	*	*	*	*	*	*	*	*	*	*
126	Yellow-tailed black-cocky	29/03/1986	R Bird								*	*	*	
Total number of species seen at each survey period				50	60	51	63	48	60	65	52	65	62	46

Appendix 1.

HAMILTON FIELD NATURALISTS CLUB



PO Box 591, Hamilton, Victoria, 3300



Brian McKinnon
Parks Victoria
Casterton

8 Nov 2005

Dear Brian

This letter relates to the **Fulham Streamside Reserve** and our concern over its weed management.

The Hamilton Field Naturalists Club spring campout at the **Fulham Streamside Reserve** gave us a spectacular display of wildflowers (particularly on the areas burned in the wildfire of February 2005 - a tremendous display of lilies, orchids, yam daisies, Podolepis, etc) and also dramatic evidence of weed invasion that threatens this magnificent flora area, and uncontrolled vehicle access to some parts (and problems caused by sections of "official" tracks that cannot cope with wet conditions).

We are very concerned about the future of this priceless natural asset. Perhaps one of the reasons for its apparent neglect has been that the Land Conservation Council in the mid 1980s decided to list it as a Streamside Reserve rather than as a Flora Reserve. We believe they did that because of the traditional recreational fishing aspect along the 5 km river frontage that defines the northern edge of the reserve. Our club had advocated it as a Flora Reserve, on account of the flora values. Our members have been actively involved in flora surveys there since 1987, with botanist Cliff Beaglehole, and have a current botanical list for the reserve of 300 native species. We added another 5 species on our last trip.

As you will be aware, there are rare and endangered species present (notably orchids) and some unique outliers. The latter include *Callitris gracilis*, *Melaleuca neglecta* and *Triodia*. . We believe (as did Cliff Beaglehole) that this is the best flora reserve in the Dundas Tableland landform. Since grazing was removed in 1987 it has shown a remarkable improvement in species such as Buloke and Slender Cypress.

We know that weed control is not easy (we have worked on *Sparaxis* and Phalaris on Crown Reserves) but were appalled by the outcome of spraying to control Cape Tulip on non-target flora on the Fulham Streamside Reserve. We believe that a team was still working there last week and continuing to damage the reserve. We would be happy to visit the area with you as soon as possible and highlight the problems.

There are three main weed threats on the Fulham Reserve:

- **Cape Tulip** – some large and small areas have been completely blitzed by the spray operators, except for tulips that have survived on the sprayed areas. There has been little attempt to spot-spray just the offending plants. The result has (and will be) the loss of the native species that are often intimately associated with the tulip. We noted one remarkable small area near the track along the river (near the *Melaleuca neglecta* saline area) that contained over 100 *Caladenia tentaculata* orchids, and the only patch we saw in 2 days, adjacent to tulip plants. These will be wiped out if the spray operator returns and adopts the same heavy-handed approach. A similar situation exists for *Pyrorchis nigricans* orchids on the bank of the river nearest the reserve entrance track. There were thousands of orchids there (and we saw no others in the reserve) and these would be very vulnerable to tulip spraying.
- **Sparaxis bulbifera** – this needs to be urgently tackled. There are infestations at critical places along tracks, and along the Edgewood Road, among some of the finest stretches of native vegetation. Unless attention is paid to this terrible weed then we will lose a priceless tract of relatively pristine landscape. The problem is already large but it is possible to prevent the weed from invading the remaining areas of vegetation away from the river. We did apply some treatment to a couple of isolated outbreaks, but much more comprehensive attack is needed.
- **African weed Orchid** – we noted that action is being taken to control this pest. We also found many plants outside of the areas that someone had marked with bamboo stakes and red tape (plants inside these areas had been spot-sprayed with herbicide and red dye). We dug up and destroyed any plants

and bulbs we found outside those areas but our search was by no means systematic. We were pleased that the spread so far does not seem to be as extensive as we feared.

Whatever the cost to control the agricultural weed (Cape Tulip) in an acceptable manner, one cannot justify an approach that destroys the value and integrity of the Reserve. We note that the DPI Corporate Plan (2004-2007) has, as one of the four Government Commitments "*protecting the environment for future generations*". Clearly, the present damaging practice cannot continue.

It may be necessary, at this stage, for contractors to continue to get Cape Tulip under control. But they need a very specific task proposal, so that they can learn about the job, properly cost it, and be able to operate in a way that complies with the task prescription.

We think the following matters are of importance when engaging a contractor for this area:

- **Using an appropriate spray head** – the sprayers used at Fulham delivered a burst of spray with a wide arc. We recommend a shielded head that delivers the spray to the particular plant over a very narrow circle. That is not possible to do with the equipment used at Fulham. Even where efforts had been made in some places to restrict the size of the spot sprayed the sprayed area around a single plant still approached a square metre. That is perhaps 10-20 times the necessary size. To achieve that, spot-spraying, rather than the "swipe" method, must be used. This approach would be slower but it is necessary to prevent collateral damage on important flora reserves. Keeping the sprayed areas small is also essential if one wants adjacent native species (rather than weeds) to re-colonise the areas. A back-pack system is much to be preferred in such areas, rather than the motorised systems that employ hoses and hand-gun delivery heads.
- **Operator training** – the operators needs to target the particular species when working on non-farmland areas where there are other important values to protect. The operators will need on-site training to identify important native flora so that they can be more careful in critical areas.
- **Other weeds** – *Sparaxis bulbifera* is a serious environmental threat here, so why not spot-spray those - and the odd Phalaris clump - when encountered whilst spraying Tulip?

We believe that the only way to make a desirable impact is to engage the services of people (such as field naturalists) who have the botanical knowledge, interest and time to spend on the problem, to target the offending species without destroying too many non-target species. That way there is also a good chance that the bare spots will be filled by the adjacent native species, rather than weeds.

We believe that members of the Hamilton Field Naturalists Club are willing, have the time and expertise, and would be prepared to spend 3 or 4 days at a time (perhaps on 2 occasions) each spring, camping on site, to systematically treat fringes of areas most at risk (and any spots within) to get control of the situation. Nothing has been done in the past to control *Sparaxis* and most other environmental weeds, hence the present parlous state of affairs on all our reserves.

Our club would be happy to submit a tender to undertake such work. We envisage perhaps 4 people being engaged on the project. Our costs would include chemicals, fuel, some equipment maintenance, and a small amount for labour. We anticipate spending perhaps 5 hours per person per day walking the area and spraying the pest species. We would concentrate on *Sparaxis*, Cape Tulip, Phalaris and African Weed Orchid in the critical areas adjacent to (and in) the high-value flora areas of the reserve. We believe that this would be a very economic and effective way of getting the job done. Clearly, something has to be done or we can forget about keeping pristine flora reserves.

Our club has an ABN, is incorporated and has insurance cover.

Yours faithfully

John Cayley

President,
Hamilton Field Naturalists Club

[**Postscript** – HFNC adopted the herbicide-wiping method for Cape Tulip and most of the *Sparaxis* infestations when we found that even spot-spraying would create too much collateral damage. The herbicide-wipe method was also found to be much less stressful for the operator, while ensuring a kill on the target plant]

Appendix 2.

HAMILTON FIELD NATURALISTS CLUB



PO Box 591, Hamilton, Victoria, 3300
hamiltonfnc@live.com.au



To:

1 May 2009

Victorian Environmental Assessment Council
Level 6, 8 Nicholson St,
East Melbourne, Victoria 3002

Re. Remnant Native Vegetation Investigation

FULHAM STREAMSIDE RESERVE – our submission relates to this 860-ha reserve that adjoins the Glenelg River and disused Hamilton-Natimuk Railway Reserve, 10 km north of Balmoral, in SW Victoria.

In 1982 the Land Conservation Council recommended the area be reserved as the Kanagulk Streamside Reserve. HFNC submits that the status of Streamside Reserve was inappropriate then, and now, and does not confer the status nor protection that the area deserves. AC Beaglehole and HFNC have listed 110 species of bird in and 325 native species of flora in the reserve, with some outstanding rarities and isolates, such as *Melaleuca neglecta*, *Callitris gracilis* and *Triodia bunicola* (see attached report by HFNC Oct 2008).

The reserve could be a prime high-value conservation linkage for Habitat 141 between Mt Arapiles-Little Youngs Forest-Grampians by way of the railway reserves that pass through to Wannon River and beyond. It provides a repository of flora and fauna species of considerable consequence for connectivity.

This reserve (Dundas Tableland bordering on Wimmera Plains) is a fantastic place with varied habitats from river flats, wetlands, plains woodlands to heathy woodlands (see attached DSE Ecological Vegetation Class map), with a high proportion of the reserve covered by EVCs classes rated as “endangered”, “vulnerable” or “depleted” (see attached DSE Bioregional Conservation Status map).

The reserve desperately needs more money spent on tracks, vehicle control, people control and weed control. Details of problems and threats in the reserve are given in the HFNC Oct 2008 report). In brief:

- the weeds *Sparaxis bulbifera* and Cape Tulip, in particular, pose an enormous threat, aggravated by past indiscriminate broad-scale spraying of Cape Tulip that denuded large areas while not being very effective in controlling the target species
- off-road vehicles scar the land, damage the flora and transfer weeds into the botanically rich heathland
- there is inadequate supervision of users and signage to indicate values and appropriate usage.
- funds are not available to provide an all-weather track along the river for fishermen, sight-seers and 4WD enthusiasts. This results in off-road detours that degrade the surrounds and carries *Sparaxis* into new areas, rendering past efforts at weed control futile (this weed has the potential to dominate the entire reserve, as occurs in much of the roadsides in this region of SW Victoria – the infestation along the river is extensive and now beginning to advance away into the botanically-rich heathland adjoining).

- the lowly status of the reserve does not encourage anyone to enjoy without spoiling. This criticism extends to DPI personnel who monitor the bores in the area. They insist on driving along tracks signed-posted as being closed in winter, and then off the tracks to the bores, instead of walking the few metres required. Bores were also permitted to be installed in a pristine part of the heathland by Iluka (Mineral Sands), despite the certainty that continued traffic thereafter (by staff and curious visitors) would allow *Sparaxis* and Cape Tulip ingress to the heart of the reserve.

HFNC proposes that the reserve be upgraded to **Flora & Fauna Reserve** or **State Park**, to give it better protection from recreational enthusiasts, to provide better environmental management, and to ensure that it can exist as a valuable flora reserve and contribute substantially to ecological connectivity in the future.

Yours faithfully

Dr PR Bird
Secretary,
Hamilton Field Naturalists Club

[Postscript – VEAC delivered its **Final Report** in March 2011 (see www.veac.gov.au). While offering many suggestions as to how ecological connectivity might be improved across fragmented landscapes (with a major emphasis on road and railway reserves), VEAC did not propose any amendments to public land use to improve the security and management of biodiversity on individual reserves and sites.

VEACV acknowledged the significant past and on-going decline in biodiversity, and that retaining existing habitat is the key factor affecting the process of change.

We consider that the failure to propose amendments to upgrade the status and management of significant existing reserves, such as Fulham, is regrettable since they are the key links in any plans for sustaining native biota across currently degraded public and private lands].