Botanical Assessment of Proposed Burn G55, Kurth Kiln Regional Park

Dr Graeme Lorimer, 9th August 2013

Introduction

At the request of the Friends of Hoddles Creek, I conducted a botanical survey of part of Kurth Kiln Regional Park that lies within ecological burn area G55, south of Glenara Rd, Hoddles Creek. The area is proposed to be burned in the current financial year and the Friends group had concerns that the existing information about the gully's vegetation was inadequate to allow ecological implications to be properly taken into account. The burn is for 'Landscape Management' and therefore has ecological outcomes as the greatest objective, according to the 2012 *'Code of Practice for Bushfire Management on Public Land'*.

I conducted the survey during 3½ hours on 11th May 2013, assisted by Laurence Gaffney, Meredith Bryce, Rob Dabal, Cathy Willis, Josh Revell and Meryl Knoll. My route is marked in magenta on Figure 1. Starting in the south, we walked northeast along a non-perennial tributary of Hansen Ck. We spread out in the manner of a line search to detect as many plants along the gully as we could. On approaching the park boundary, we turned west-northwest along the park boundary to its northwestern corner, then back to the start via a western boundary track and the electricity easement. We diverted to check for plants in an unusual hollow near the western boundary, covered with tree-ferns.

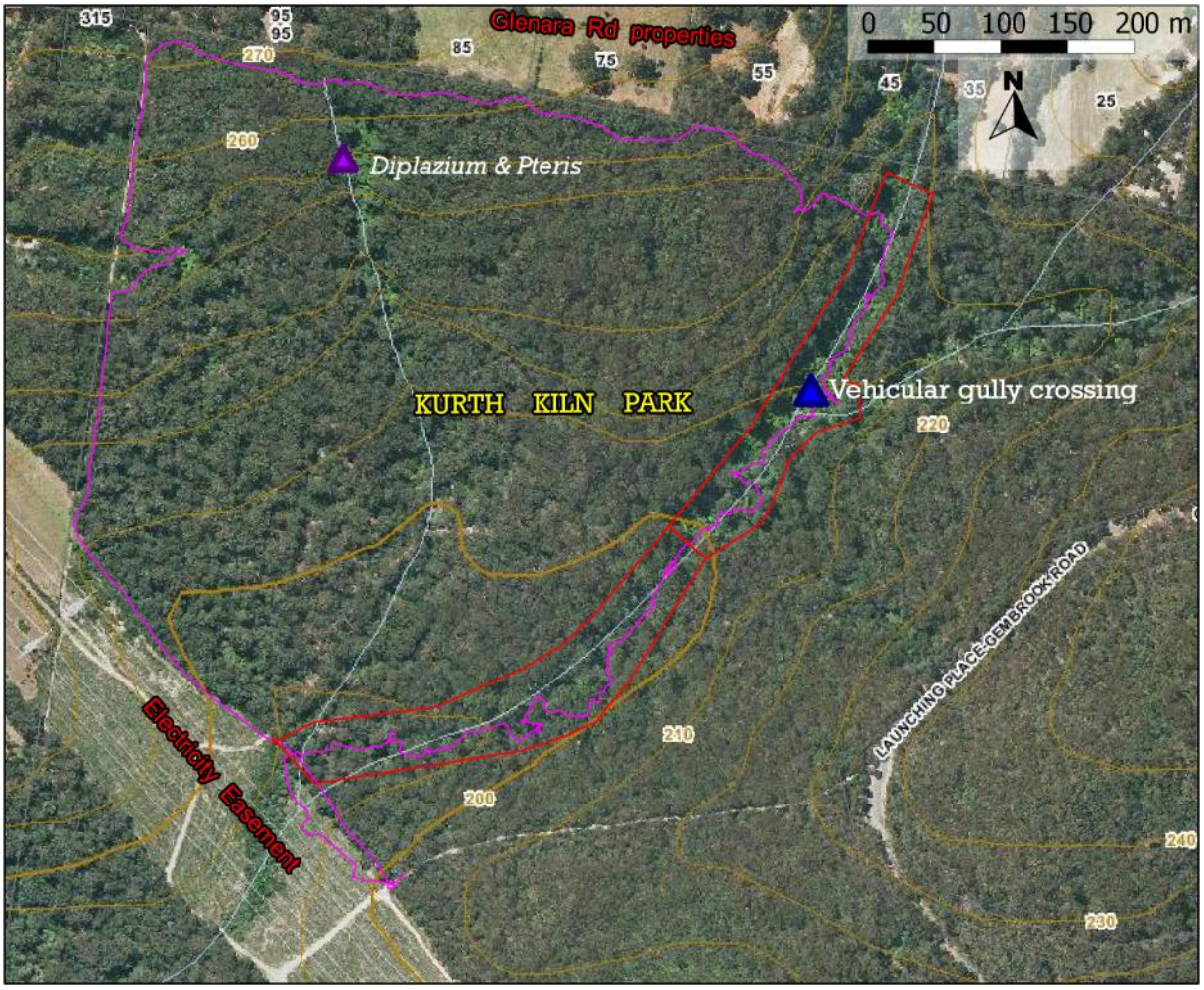

Figure 1. Aerial photograph of the surveyed area, with the author's route in magenta.

Messrs Gaffney and Dabal had already inspected the area on 16th April 2013, compiling plant lists as they went. It was the presence of uncommon, fire-sensitive species on the list that prompted our more detailed survey.

Results

Walking northeast along the alluvium within the formation of the main gully, I observed a transition in vegetation type half way up the gully, just downstream of a minor gully to the southeast. Because of the change in vegetation, I compiled separate lists of plants above and below the transition point – see the Appendix. The areas corresponding to the two lists are outlined in red on Figure 1. Note the different degree of shade in the upstream (northeastern) red-outlined area, corresponding to differences in vegetation and steepness of the adjacent slope.

The downstream area contains very few eucalypts and the upstream area contains none. In each case, neither the vegetation composition nor the non-perennial nature of the stream are consistent with Riparian Forest, which is how both areas are mapped by the Department of Environment and Primary Industries.

The downstream area's vegetation is a reasonable match for the Ecological Vegetation Class (EVC) known as Swampy Riparian Complex, which is listed as regionally endangered. Its species are not sensitive to fire, except perhaps a small number of ferns that are outliers from further upstream, in locations that would not burn during an ecological burn. The vegetation's fire ecology is intermediate between 'Treed Swampy Wetland' and 'Riparian (Higher Rainfall)', in the terms of Ecological Vegetation Divisions (EVDs)[*]. The minimum and maximum tolerable fire interval would be approximately 25 and 150 years. Before the maximum tolerable fire interval is reached, I believe it is likely that the vegetation would become more like the vegetation further upstream.

The upstream area's vegetation may be best described (in the current EVC system) as Fern Swamp. It contains abundant plants that are highly sensitive to fire, e.g. four species of filmy-ferns. It would fall within Cheal's 'Closed Forest' EVD, which should never be deliberately burned. It is quite biologically significant because of the heavy depletion of Victoria's rainforests and related communities. As a member of the rainforest group of EVCs, it is regionally endangered and warrants a high level of protection from fire.

The Department of Environment and Primary Industries' vegetation mapping shows Lowland Forest on each side of the gully and throughout the non-gully sections of our walk. I found this to be correct only to the southeast of the more downstream (southwestern) of the two red-outlined areas in Figure 1. The rest of the area supports Damp Forest in lower areas and Shrubby Foothill Forest on higher ground to the northwest of the gully. These inaccuracies in mapping do not significantly affect the sensitivity of the vegetation to ecological burning but they do affect the desirability of burning in relation to the district's distribution of forest age classes. That is because in the Yarra Ranges (and probably in Kurth Kiln Regional Park), there is a greater over-representation of young age classes of Damp Forest and Shrubby Foothill Forest than for Lowland Forest, according to DEPI's 'growth stage analysis'.

Toward the northwest of Figure 1, a purple triangle marks the approximate location where we found the uncommon ferns, *Diplazium australe* (Austral Lady Fern) and *Pteris tremula* (Tender Brake). Neither of these was found in the red-outlined areas. They indicate a gully with fire-sensitive vegetation, which deserves further botanical exploration.

[*] Cheal D. (2010). *'Growth Stages and Tolerable Fire Intervals for Victoria's Native Vegetation Data Sets'*. Fire and Adaptive Management Report No. 84, Department of Sustainability & Environment, East Melbourne.

Implications for the Proposed Burn

As the proposed burn G55 is in a 'Landscape Management Zone' and hence has ecological benefit as a major aim, it would be a serious mistake to burn the very fire-sensitive vegetation in the more upstream (northeastern) of the red-outlined areas in Figure 1. A buffer of adjacent vegetation should also be left unburnt, with considerable care not to allow the buffer to be inadvertently burnt.

The gully containing the *Diplazium* and *Pteris* should also be spared from fire unless a more detailed botanical survey shows otherwise.

The same applies to the gully to the east-northeast of the blue triangle on Figure 1, judging from the aerial photograph.

In preparation for the burn, a track has been excavated across the significant Fern Swamp Vegetation at the location marked with a blue triangle on Figure 1. The track, pictured in Figure 2, passes through the middle of the main colony of the locally rare Shiny Shield-fern, *Lastreopsis acuminata*, and has almost certainly killed some of them. Opening the previously dense canopy has created a risk of trail bike damage and weeds such as blackberry establishing in place of the rare vegetation that has been cleared. Along the whole gully, this location appears to be the least environmentally acceptable place for a creek crossing. Unfortunately, the epiphytic ferns that are the most significant aspect of the cleared vegetation cannot be replaced artificially and will take many decades to recover, if ever.

Figure 2. Fireline track crossing the Fern Swamp vegetation.

The Department of Environment and Primary Industries' mapping of vegetation in the district around Hoddles Creek has repeatedly proved to be unreliable (consistent with warnings that accompany the mapping report). This has led to false impressions of the vegetation's rarity and sensitivity to fire and excavation. I recommend that the mapping be ground-truthed prior to any future burn in the district.

Appendix

The table below lists the species of ferns and flowering plants that I observed in each of the two areas outlined in red on Figure 1 (plus observations of Rob Dabal in blue). Species are ordered alphabetically according to the names adopted by the Australian Plant Census (http://www.anbg.gov.au/chah/apc).

The column headed 'Downstream' contains observations on the valley floor in the more southwestern of the two areas outlined in red on Figure 1, and the column headed 'Upstream' is for the other red-outlined area. Within those two columns, the entry for each species indicates the species' abundance, using the following symbols:

- – Scarce, or so concentrated in one or two locations as to be at risk of being destroyed by chance;
- ✓ Present in moderate numbers, not dominant within a vegetation stratum;
- D Dominant (or sharing dominance) within the relevant vegetation stratum, at least in some areas;
- M Many individuals but with too little cover to be dominant in the relevant vegetation stratum.

Scientific Name	Common Name	Downstream	Upstream
Indigenous			
Acacia dealbata	Silver Wattle	–	–
Acacia melanoxylon	Blackwood	✓	✓
Acaena novae-zelandiae	Bidgee-widgee	–	
Asplenium bulbiferum	Mother Spleenwort		✓
Australina pusilla	Shade Nettle	–	✓
Bedfordia arborescens	Blanket-leaf		–
Blechnum cartilagineum	Gristle Fern	–	
Blechnum chambersii	Lance Water-fern	–	✓
Blechnum nudum	Fishbone Water-fern	D	✓
Blechnum patersonii	Strap Water-fern	✓	M
Blechnum wattsii	Hard Water-fern		✓
Callitriche muelleri	Round Water-starwort		–
Carex appressa	Tall Sedge	✓	–
Cassinia aculeata	Common Cassinia	–	
Cassinia trinerva	Three-nerved Cassinia		–
Chiloglottis cornuta	Green Bird-orchid		–
Clematis aristata	Mountain Clematis	✓	✓
Coprosma quadrifida	Prickly Currant-bush	D	✓
Crepidomanes venosum	Veined Bristle-fern		M
Cyathea australis	Rough Tree-fern	M	✓
Dichondra repens	Kidney-weed	–	–
Dicksonia antarctica	Soft Tree-fern	✓	D
Eucalyptus obliqua	Messmate Stringybark	–	
Eucalyptus radiata	Narrow-leaf Peppermint	–	
Euchiton involucratus	Common Cudweed	–	
Gahnia sieberiana	Red-fruit Saw-sedge	–	
Galium ?gaudichaudii	Rough Bedstraw	–	
Geranium sp.	a crane's-bill	✓	
Goodenia ovata	Hop Goodenia	–	
Grammitis billardierei	Common Finger-fern		✓
Gynatrix pulchella	Hemp Bush	–	
Hedycarya angustifolia	Austral Mulberry	–	✓
Hydrocotyle geraniifolia	Forest Pennywort	✓	
Hydrocotyle hirta	Hairy Pennywort	✓	–
Hymenophyllum australe	Austral Filmy Fern		–
Hymenophyllum cupressiforme	Common Filmy Fern		–
Hymenophyllum flabellatum	Shiny Filmy Fern		✓
Hypolepis rugosula	Ruddy Ground-fern	–	
Isolepis inundata	Swamp Club-rush	✓	
Juncus planifolius	Broad-leaf Rush	–	–
Kunzea ericoides group	Burgan	✓	–
Lastreopsis acuminata	Shiny Shield-fern		D
Lepidosperma elatius	Tall Sword-sedge	✓	✓
Lobelia anceps	Angled Lobelia	–	
Lomatia fraseri	Tree Lomatia		–
Microlaena stipoides	Weeping Grass	–	
Microsorum pustulatum	Kangaroo Fern		–
Myrsine howittiana	Muttonwood	–	
Olearia argophylla	Musk Daisy-bush	✓	D
Olearia lirata	Snowy Daisy-bush	✓	
Oxalis exilis/perennans	Wood-sorrel	✓	–
Parsonsia brownii	Twining Silkpod	✓	✓
Pimelea axiflora	Bootlace Bush	✓	
Pittosporum bicolor	Banyalla	–	✓
Poa ensiformis	Purple-sheathed Tussock-grass	✓	
Poa tenera	Slender Tussock-grass	✓	
Polystichum proliferum	Mother Shield-fern		✓
Pomaderris aspera	Hazel Pomaderris	D	✓
Prostanthera lasianthos	Victorian Xmas-bush	M	✓
Pteridium esculentum	Austral Bracken	✓	
Pterostylis melagramma	Tall Greenhood	–	
Pterostylis nutans	Nodding Greenhood	–	
Pterostylis pedunculata	Maroon-hood	–	
Rubus parvifolius	Small-leaf Bramble	–	
Rumohra adiantiformis	Leathery Shield-fern		–
Sambucus gaudichaudiana	White Elderberry	–	–

Scientific Name	Common Name	Downstream	Upstream
Schoenus maschalinus	Leafy Bog-rush	✓	
Stellaria flaccida	Forest Starwort	–	
Tetrarrhena juncea	Forest Wire-grass	✓	
Viola hederacea	Ivy-leaf Violet	✓	–
Introduced			
Cirsium vulgare	Spear Thistle	–	
Conyza sp.	Fleabane	–	–

Scientific Name	Common Name	Downstream	Upstream
Hypochoeris radicata	Cat's Ear	–	–
Ilex aquifolium	Holly	–	✓
Pittosporum undulatum	Sweet Pittosporum	–	
Rubus anglocandicans	Blackberry	–	
Solanum americanum	Glossy Nightshade	–	
Solanum mauritianum	Tobacco-bush	–	
Sonchus oleraceus	Sow-thistle	–	–