

HFNC Report on Kanawalla Rail Flora Reserve works 2008

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Introduction

The Kanawalla Station Ground & Railway Reserve section of the disused Hamilton-Cavendish rail line is the major part remaining in a near-natural condition, representing a valuable remnant of basaltic plains grassland flora, of which less than 0.02% of its previous extent remains in the public domain. The reserve is 100 m wide by 600 m long on the Station Ground section adjacent at the north end to Forts Rd and 25 m wide by 600 m long for the rail reserve south to McFarlanes Rd (see Site Plan). HFNC assessed the potential of the line in Nov. 2003 and 2004. The area was recognized by DCE in 1991 as having high conservation value and potential habitat for Eastern Barred Bandicoot.

Hamilton Field Naturalists Club (HFNC) made a submission on Disused Railway Reserves (including Kanawalla) to the Department of Conservation and Environment in 1991, when the future of local disused railway reserves was subject to a public enquiry. The late Dr Peter Milne surveyed the Kanawalla section in 1978/79, and had made representations later to the Land Conservation Council's SW-2 Study Area review. HFNC noted then, in their club minutes, a wish to manage the area so as to protect the grassland flora. Milne's submission on the Kanawalla section is presented below:

"Extensive area of *Themeda australis* grassland with approx. 70 species. Notable species include *Ranunculus lappaceus* (Australian buttercup), very showy and numerous in one part, *Veronica gracilis* (Slender Speedwell), *Arthropodium milleflorum* (Pale Vanilla-lily) and *Helichrysum scorpiodes* (Button everlasting). An isolated patch of *Dillwynia glaberrima* (Smooth Parrot-pea) and *Hibbertia stricta* (Erect Guinea-flower) is of interest, in a slightly more gravelly section. *Astroloma humifusum* (Cranberry heath) also occurs here. Since the survey was carried out the whole area has been (and still is being) heavily grazed".

Summary of works and funding 2004-2007

In 2004, HFNC applied for a licence from VicTrack to manage the Kanawalla section of the disused Hamilton-Cavendish railway line. Our application stated our intention to restore the flora and we gave details of what was proposed. A licence was granted in 2005, after considerable negotiation.

Funding arrangements

In Dec. 2003 we applied for a Partnership Project with GHCMA for funding of \$2,500 in 2004 but were rejected because CMA policy was not to provide funds for fencing between private and Crown lands, and our targeted environmental weeds were not proclaimed as National weeds of importance.

In Dec. 2004, Mark Wootton of 'Jigsaw Farms' assisted us with fencing the ends of the reserve (220 m, with 2 gates). Mark supplied the posts and 2 gates and his contractor drove the posts (estimated \$900 total). HFNC supplied and erected the wire and droppers.

In 2005, after further consultation with GHCMA in 2004, we obtained \$3,000 through the Second Generation Landcare Grant to protect and enhancing the remnant vegetation on the reserve. Parts of the reserve were being overcome with weeds, and recreational vehicles were degrading the grassland area in the northern block. The sum granted was too little to achieve all our objectives – fencing to control vehicles, removing all the pines, controlling pest plants, clearing the central rail line for access, and establishing indigenous tree vegetation in the small degraded sections of the reserve.

In 2006 we were also given \$1,240 support by DSE (through Andy Govanstone) and \$1,900 by TimberCorp (through John Kiely) to effect the removal of most of the old pines from the northern section of reserve. This was accomplished by August 2006; an equal amount of work was anticipated for the southern block to complete the work.

In 2007 more funding was obtained through the DSE's Crown Land Grants program 'Weeds & Pests on Public Land Initiative' (\$2,000), from GHCMA's Second Generation Landcare Grant (\$5,675), from HFNC's own resources (\$1,495) and \$1,000 from TimberCorp to restore a fence that had to be dismantled to allow falling of huge pines on the western edge of the southern part of the reserve.

From 2004-2007, \$14,815 was obtained from grants, \$1,495 from HFNC, and donated time and materials from Jigsaw Farms (estimated \$900) and Liz Fenton (at least 500 plants valued at ~\$500). HFNC provided \$8,320 “in-kind” labour (@\$20/hr) for tree-planting & aftercare (173 hr), pine removal (101 hr), weed control (81 hr), administration (30 hr), fencing (23 hr) & track clearing (8 hr). Don Jowett donated 2 hr and use of his equipment (~\$100) to slash the boundary of the north block.

The total cost of the project is thus \$17,710 direct costs plus \$8,320 “in-kind” labour, or \$26,000.

Removal of pines and cypress

Pines – 202 pines were cut and burned. The numbers in various diameter ranges were 124 (<30 cm), 41 (30-60 cm), 24 (60-120 cm) and 13 (>120 cm). This was a massive undertaking and achievement.

Cypress – 41 cypress were cut & burned: 4 (<30 cm), 19 (30-60 cm), 17 (60-120 cm) & 1 (>120 cm).

Revegetation

In Sept. 2006 we planted 385 trees indigenous to the area and 50 *Poa* tussocks. In Sept. 2007 we planted a further 448 trees. The trees were *Allocasuarina verticillata* (Nth Hamilton Rail Res & Old Reservoir), *Bursaria spinosa* (Lake Linlithgow), 72 *Banksia marginata* (Yatchaw, & Hawkesdale), 48 *E. ovata* (Hamilton), 47 *E. viminalis* (Hamilton) and *Acacia melanoxylon* (Hamilton). Our plan was to only plant on degraded areas (siding area, old cypress area and areas occupied before by pines). Drooping sheoak, in particular, is able to suppress alien weeds on the fertile, degraded areas.

Restoration/enhancement of grassland flora

This is a critical aspect of the project and involves the eradication, where possible, of alien species. Removal of pines and cypress is one step but spot-spraying of pasture and garden plants is crucial. Foremost is an attack on *Sparaxis bulbifera*, *Oxalis purpurea*, *O. pes-caprae*, Briar Rose and pasture species *Phalaris*, Cocksfoot and *Paspalum*. To date, 81 hr have been devoted to the task, concentrating first on areas least affected to limit the spread (relying on adjacent native species to fill the small gaps created), then working into the worst areas. The task will be on-going. Fire can be used to assist control of aliens and promote natives and that option will be pursued in years to come.

Details of Progress to Date

Flora list

A list of native species present, using older records and new sightings currently stands at 79 native flora species (see Appendix). This list will be updated over the years.

Fencing

Both ends of the reserve have been fenced, with gates and pedestrian entry points installed.

- Dec 2004 – Mark Wooton (Jigsaw Farms) generously supplied ~30 treated pine posts and a new gate, arranged for and paid for a contractor to drive the posts.
- 13 Dec 2004 (6 hr) – RB hung the gates on both ends of the reserve and installed the “Tombstone” pedestrian entry points. A vandal smashed the then unlocked McFarlanes Rd gate and broke the strainer post, so the post had to be removed by hand and replaced, together with an old gate donated by Don Jowett.
- 20 Dec 2004 (3 hr x 3) – JC, RZ and RB ran the 4 heavy-gauge wires and erected droppers on the fence on both blocks. The purpose of the fence is to exclude unwanted vehicles, not animals.
- 7 Jan 2005 (3 hr) – RB cleared old ringlock, barbed wire and posts from the former siding area.
- 21 Oct 2005 (1.5 hr x 2) – JC & RB fitted a new gate to McFarlanes Rd end, replacing an old gate busted down 3 times by vandals. CMA-HFNC signs were installed on both gates.
- October 2007 (2 hr) – JC arranged for contractor Denis Crawford to re-fence the west side of the south section of reserve. This had been removed to allow the falling and burning of the 10 huge pines close to the boundary. The fencing (cost \$2,869) was completed by 20 Oct. 2007.

Signage

In 2005 JC organized the production of signs for the gates. This named the reserve and briefly described its purpose and providers for the project. TimberCorp’s logo was added in August 2006.

Track clearance

The bed of the railway line now is open for vehicular access. It was necessary to remove a few native trees from the line, plus many pine trees.

- 21 Oct 2005 (1.5 hr x 2) – JC & RB cleared part of the central area.
- 26 Feb 2006 (3 hr) – RB cleared the remainder of the mid-section, giving access to all the track.
- 1 Sep. 2007 (1.5 hr) and 24 Nov. 2007 (1 hr) – RB cleared fallen tree from access track and leveled part of rail line path to improve the surface for walkers, bicyclists and vehicles.
- 6 Apr. 2008 (0.5 hr) – RB cleared fallen Blackwood off track at siding area.

Control of pasture and garden weeds

Unfortunately, over the years there has been an invasion of weeds from many sources, and no control. The sources include dumping of garden refuse (with escape of Briar Rose, *Oxalis purpurea*, *Oxalis pes-caprae*, *Sparaxis bulbifera*, Iris, Gladiolus, etc), fertilizer and seed at the station ground, drift of pasture species (Phalaris, Paspalum, Cocksfoot, Yorkshire Fog Grass and Bent Grass) from the roadside, paddocks and grazing sheep (grazing occurred until the mid-90s). An enormous amount of work was required to try and change this situation.

- 26 Sep 2004 (2 hr) – RB spot-sprayed (12 L) mixture of water, metsulfuron-methyl (Ally, Aim or Brushoff), glyphosate (Roundup) and Pulse (a surfactant wetter) on *Sparaxis*, Phalaris, Cocksfoot, Paspalum, Yorkshire Fog-grass, Bent Grass patches and Briar on the N Block
- 29 Oct 2004 (2 hr) – RB sprayed (15 L) weeds and Iris on south block
- 6 Oct 2005 (2 hr) – RB sprayed (15 L) *Sparaxis* and other plants on ramp area and along the line
- 3 Nov 2005 (2 hr) – RB sprayed (15 L) on Phalaris, Paspalum & *O. purpurea* on S end S block
- 11 Nov 2005 (2 hr) – RB sprayed (15 L) on Phalaris, Cocksfoot & Paspalum on N block
- 1 Dec 2005 (3 hr) – RB sprayed (22 L) on Phalaris, Cocksfoot, Bent Grass & Paspalum on N block
- 9 Dec 2005 (3 hr) – RB sprayed (22 L) on Phalaris & Paspalum etc on N block and mid-section
- 16 Dec 2005 (4 hr) – RB sprayed (22 L) on Phalaris & Paspalum on mid-section
- 2 Mar 2006 (3 hr) – RB sprayed (22 L) on Phalaris & Paspalum on N block
- 9-10 Mar 2006 (6 hr) - RB sprayed (44)L on Phalaris & Paspalum on N block, incl. road verges
- 27 Apr 2006 (2 hr x 2) – Don Jowett & RB slashed perimeter breaks on the N Block, in the hope of conducting an ecological burn later (that proved too difficult to arrange with the CFA brigade)
- 28 Apr 2006 (4 hr) – RB sprayed (33 L) on weeds in S block through to N block
- 8 Aug 2006 (4 hr) - RB sprayed (15 L) on *Oxalis purpurea* on S block and *Sparaxis* on N block
- 10 Aug 2006 (4 hr) – RB sprayed (23 L) on *O. purpurea*, Phalaris & Paspalum on S block to McFarlanes Rd, and along the road edge, plus a new patch of *Sparaxis* on N block near Forts Rd
- 13 Aug 2006 (2 hr) – RB sprayed (10 L) on Phalaris & Paspalum on N block, mainly E fence
- 19 Aug 2006 (4.5 h) – RB sprayed spots (48 L) for 110 trees and surrounding weeds on N block
- 27 Aug 2006 (2 h) – RB sprayed (10 L) on 15 spots for trees on S block and 30 spots on N block
- 13 Oct 2006 (3 h) – RB sprayed (25 L) on weeds on road frontage at N block and within.
- 8-9 Mar 2007 (6 hr) – RB sprayed (33 L) on weeds at planted old Cypress area, part of planted area to south and NW to gate, plus roadside and lane.
- 18 Aug 2007 (3 hr) – RB sprayed (17 L) hundreds of “new” *Sparaxis* plants on east side of old siding mound, plus *Oxalis purpurea* down entire eastern fence. Phalaris, Cocksfoot, Briar and Paspalum spot-sprayed also. Weeds near planted trees on old Cypress area also treated.
- 24 Aug 2007 (5 hr) – RB sprayed spots for new trees near old Cypress area and area near Hensley Pk Rd. A big patch of *Oxalis pes-caprae* (Garden Sour-sob) near Cypress east fence sprayed, and a small spot further north. Weeds in area planted in 2006 sprayed and weeds in many guards removed.
- 8 Sep 2007 (2 hr) – RB sprayed (11 L) weeds along west fence, incl. patch of *O. purpurea*.
- 6 Oct 2007 (2 hr) – RB sprayed (10 L) *Sparaxis* and Carrot Weed near ramp (under huge Wild Cherry) and others near previously treated area. Also Briar, Paspalum, Phalaris & Cocksfoot along the central area.
- 17 Oct 2007 (0.5 hr) – RB pulled ~20 *Sparaxis* in flower that were missed in spraying.
- 24 Nov 2007 (2 hr) – RB sprayed (11 L) weeds along and adjacent to track ~ 100 m S of siding.
- 6-7 Apr. 2008 (4 hr) – RB sprayed (27 L) Phalaris, Cocksfoot & Paspalum N & S ends, & siding.
- 15 May 2008 (3 hr) – RB sprayed (10 L) Phalaris, Cocksfoot, Fog Grass around all except 2 lots of trees on S block & a few *Oxalis purpurea* (only a few remain after the 2007 blitz).

Removal of Pines and Macrocarpa Cypress

- Nov 2005 – Tim Jackson cut down 41 Cypress near the former Station Ground; he was able to mill some of the timber, for use as external decking, in recompense for his efforts on our behalf.

Numbers of cypress removed in various diameter ranges

10-30 cm	30-60 cm	60-90 cm	90-120 cm	120-150 cm
4	19	13	4	1

- 21 Oct 2005 – RB & JC cut ~20 small pines from the track
- Dec 2005 – J. Cook and helper cut some small pines on the S block (\$792), before the work was interrupted by neighbor, Barbara Knight. Bill Knight had been informed by RB & D Jowett in Dec 2004 of proposed works but he apparently had not told his wife. Mrs K objected to having some tree debris in view over summer (HFNC had intended to burn the debris on site in winter when it was safe to do so), and demanded that we cart them away (oddly, the Knights’ had 3 large Manna Gum on the reserve cut down before 2004 when their power line was installed, and the debris is still lying on the reserve). Mrs K contacted the CFA, CMA, Shire, Police, local politicians & VicTrack. HFNC had complied with all planning conditions but VicTrack requested a stop to consider Mrs K’s complaints. JC bore the brunt of this vexatious problem.
- 27 Feb 2006 (4 hr x 5) – RZ, KG, DN, RT & JC helped “Bandicoot Bobcats” (\$240) cart away the branches from the S block, to be burned on the roadside near the crossing on Hensley Pk Rd.
- July 2006 – Julian Cook & helper spent 6 hr cutting small pines on S block (\$396). GreenCorps group then cut these up into 70-cm blocks for removal (that made it difficult for contractor Frank Tennant’s machine to move them but we found it handy when trying to stoke the fire later). The crew cut down most of the very small pines around the junction of north and south blocks.
- 27 July 2006 – FT began falling pines on the N block. He cut down and burned 4 pines at the NE cnr, 6 on the W boundary at S end of this N block, and 2 smaller pines near the track at that end. In all, 10 pines were 95-200 cm diam., 2 were 60-90 cm diam. and 2 were 30-60 cm diam. (see table below). This part of the job was finished by 10 Aug. 2006 (\$2,392). One pine was estimated (from ring count) to be 80 years old.
- 7 Aug 2006 (4 hr) – RB cut 6 medium pines on S block and cut them up for removal.
- 10 Aug 2006 – FT used his machine to pile up branches and logs on S block for burning (he did take a few loads up to the fire on the N block but that was too time-consuming).
- 12 Aug 2006 – RB (8 hr) cut 2 more pines on S block, and cut them up for removal, with assistance from JC & GC (each 8 hr), KG & JG (each 5 hr), & DN (3 hr). This material and some other was deposited on the heap for burning. The fire would not stay alight that day.
- 13 Aug 2006 - RB (4 hr) with JC & GC (each 3 hr) had the heap burning (a brisk wind in the afternoon, together with old pine cones and diesel). Also finished tailing the pile on the N block.
- 14 Aug 2006 – D Jowett used his tractor to keep the pile burning. JC & GC assisted.
- 15 Aug 2006 – JC & GC (4 hr) inspected the fire and pushed in remaining sticks and logs.
- May 2007 – FT cut and burned last pines on the reserve in the central and S end ((\$7,744 - see table below). Of these, 11 were v. large (90-180 cm diam.) and 14 were large (60-90 cm diam.).
- 1 Sep 2007 – KG, JS, JC & GC (1 hr each) removed branches from crop. KG cut a wind-thrown Black Wattle off the E fence. RZ (3 hr) carted old wire away. RB (2 hr) pulled 10 small pines.
- June 2007 – JC & GC (8 hr) organized the tree falling and tended fires burning the cleared pines.
- 7 Apr. 2008 – last pines (40 cm and <10 cm) removed by RB (0.5 hr).

Size distribution (diameter ranges) of 202 pines removed from 2005-2008

	<10 cm	10-30 cm	30-60 cm	60-90 cm	90-120 cm	120-150 cm	>150 cm
2005-06	50	39	10	2	5	2	3
2007-08	18	17	31	14	3	5	3
Total	68	56	41	16	8	7	6

In 2006, FT cut all large pines, RB cut 14 pines <60 cm while J Cook’s crew & HFNC cut the smaller pines (<30 cm). In 2007, FT cut all pines (a huge job), except 10 v small pines removed by RB.

Revegetation

The purpose of tree planting on this woodland reserve is twofold:

- To replenish species poorly represented (e.g. Silver Banksia, Drooping Sheoak, Sweet Bursaria)
- To suppress exotic weeds on areas too degraded for economic restitution of native grassland flora.

Planting in 2006

Having removed or suppressed exotic vegetation, HFNC were then able to plant a total of local 385 trees (142 *Allocasuarina verticillata* (100 Nth Hamilton Rail Res & 42 Old Reservoir), 74 *Bursaria spinosa* (Lake Linlithgow), 72 *Banksia marginata* (50 Yatchaw, & 22 Hawkesdale), 48 *E. ovata* (Hamilton), 47 *E. viminalis* (Hamilton) and 50 *Poa sieberiana* tussocks on N and S blocks. The trees were guarded and watered in; 20 mm of rain fell a week later, giving some prospect of surviving this very dry year (in 2007 it was found that at least 80% of the trees had survived to winter):

HFNC planted in 5 degraded areas:

- S block adjacent to gate off McFarlanes Rd – a small area degraded by Phalaris
- NE corner of the N Block occupied by Cypress – the cut pines and cypress were burned in 2006
- Rubble heap near NE cnr on N Block (near Forts Rd) – degraded by Phalaris and Wild Oats
- Area adjacent to Hensley Pk Rd in N Block (each side of gateway) – degraded by Cocksfoot, Phalaris, Wild Oats, Paspalum and other pasture weeds. The old rail line and the Telstra cable, some 6 m inside the boundary, was kept clear of trees
- SW end of N Block – planting around 2 huge pine stumps cleared & burned there in 2006.

2 Sept. 2006 (14 members present and 70 hr) planted 358 trees and 50 *Poa* tussocks:

- Two small areas on the S block adjacent to McFarlanes Rd gate – 15 Drooping Sheoak, 2 Swamp Gums and 50 *Poa* tussocks (the latter for the wet, degraded area in SE cnr).
- NE corner of the N block once occupied by Cypress – 180 trees (45 Manna Gum, 48 Swamp Gum, 47 Sweet Bursaria and 40 Silver Banksia).
- Rubble heap near NE cnr – 22 trees (20 Drooping Sheoak and 2 Silver Banksia)
- Area N of gate on Hensley Pk Rd – 29 trees (20 Sheoak, 2 Silver Banksia & 7 Bursaria)
- Area S of gate on Hensley Pk Rd – 110 trees (70 Sheoak, 20 Banksia & 20 Bursaria).

3 Sept. 2006 (4 hr) – RB planted and guarded remaining 27 trees

- SW corner of the N block – 17 Sheoaks (N Hamilton prov.) & 10 Banksia (Yatchaw prov.).

Planting in 2007

HFNC planted in 3 areas. As in 2006, all holes were crow-barred to penetrate buckshot or clay, water added before tube-stock planted, and plastic guards were secured with 3 bamboo stakes.

- Western boundary of S Block – at 8 sites spaced along the reserve where huge pines had been removed. These areas were deeply covered with pine needles and largely degraded of native species, although we did find regenerating Blue Devils near one huge stump. We planted 20-30 trees at each of these sites, mainly Drooping Sheoak, Silver Banksia and a few eucalypts.
- Mid-section boundary – trees were planted around the stumps of large trees that were removed in 2006 but had not had trees planted there in that year, and 1 tree cleared in 2007.
- Northern Block – extension of planting around the old cypress area (some replacement among trees planted in 2006 and more trees planted adjacent to the NE) plus replacement of trees planted in 2006 that did not survive in the area near the gate on Hensley Park Rd.

1 Sep 2007 (11 members present and 50 hr) – planted 204 trees.

- 87 Drooping Sheoak (N Hamilton prov.), 77 Silver Banksia (Yatchaw & Hawkedale prov.), 40 Swamp Gum (Hamilton prov.) on the S Block, around 7 pine stumps.

22 Sep 2007 (8 members present and 40 hr) – planted 244 trees, 117 at N Block & 127 at Mid-section

- Planted 40 Blackwood, 27 Drooping Sheoak, 34 Silver Banksia, 8 Sweet Bursaria (LLIN prov.), 8 Swamp Gum on N Block old Cypress area and near gate to Hensley Pk Rd.
- Planted 10 Blackwood, 66 Silver Banksia and 51 Drooping Sheoak at 6 spots in mid-section. These were around 3 stumps along the W fence, the tree on the inner corner (nearest the rail line) and 1 tree further south cleared in 2007. Further, we planted trees diagonally opposite the SW cnr on the mound of ash and earth created last year from the burning of pines.

Management of planted trees

- 9 May 2008 – JC, GC & RB (each 3 hr) fitted 32 wire guards to trees planted in 2007 that had been stripped by Black Wallabies, and hand-weeded seedlings on the former cypress area.
- 15 May 2008 – RB (3 hr) fitted another 25 wire guards to trees planted in 2006.

Inspections in April 2008 showed that Black Wallabies had severely trimmed Bursaria, Sheoak, Banksia and Blackwood, despite the plastic guards. The wallaby and kangaroo population has increased since Timbercorp planted Blue Gums on the adjacent property, fronting Forts Rd, in 2005. The macropods exert some useful grazing pressure on the reserve, apart from browsing the seedling trees. We will provide more effective guards for some trees in critical positions. However, most of our browsed trees are alive and the overall survival has been good, at around 80%. The Banksia suffered most in the dry summer and a survival of around 60% was achieved.

Conclusion

Despite some problems, HFNC has made tremendous progress with this grassland conservation/restoration project. The club is proud of its endeavors now that the worst of the hard work is completed and we are able to better enjoy the place for its flowers, trees and birds. We will continue to monitor the flora, adding any new discovery to the list, presently 79 native species. Likewise, we will note any new birds seen in the reserve.

The fencing is now complete. We acknowledge the tremendous assistance from Jigsaw Farms in establishing the boundary fencing and gates. We had problems with vandals smashing gates and cutting chains that secure the gates (most recently in June 2007) but we hope that this will now cease.

The removal of cypress and pine has been accomplished. That was essential work if we were to restore the native vegetation on this reserve. Tim Jackson had a difficult task with 41 large, tough Cypress and we thank him for his efforts in exchange for his use of a few saw logs from the less-branched trees. Our tree contractor, Frank Tennant, did a tremendous job in removing and burning 21 huge (90-200 cm diam.) multi-stemmed pines, 16 very large pines (60-90 cm diam.), at least 32 large pines (30-60 cm diam.) and at least 20 smaller pines (10-30 cm diam.) from the reserve. This was at a very moderate cost of \$10,136 (incl. ~\$600 to hire an excavator to deal with 2 huge, dangerous trees) – a very significant cost-saving for us since some contractors may charge 5-10 times that amount.

Our major tree-planting efforts are complete and appear to be successful, despite dry conditions. We thank Liz Fenton for growing and supplying the trees. We will undertake some limited, targeted further planting in the future, for species that we do not presently have seed available. However, that will be a minor activity and our aim is to see restoration of the vegetation mainly by local recruitment.

Despite initial success in weed suppression, there is a long way to go before we can say that the weed situation is under control. That will take persistent efforts for many years to come, but hopefully it will not be as arduous as it has been to date. HFNC will continue to manage this area. *Sparaxis* infestations (and, hopefully, *Oxalis purpurea*) must be controlled if we are to retain our fantastic display of native lilies and grassland orchids on this reserve. That will require continual monitoring and treatment for many years.

It may not be possible to rid the worst-affected parts of the reserve (highly fertile areas around the old station ground) of Cocksfoot, Phalaris, Paspalum, Wild Oats and *Oxalis pes-caprae*. Our planting of Drooping Sheoak and other species in that area is designed to assist our targeted spot-spraying efforts. The outcome of this endeavour will be of great interest to many.

We were fortunate in having financial support from GHCMA, DSE, and TimberCorp. Without that support we could not have attempted this project. We also thank a neighbor on MacFarlanes Rd, Don Jowett, for his support for the project, including using his tractor to push up pine logs for burning and his slasher for slashing around the perimeter of the northern block.

Finally, we acknowledge the support of VicTrack (and Mike Blackburn in particular) in allowing us to undertake this project and to continue managing the reserve.

APPENDIX

Table 1. Native vascular flora records for Kanawalla Railway Reserve in 1978/79 & 2003-07

No.	Botanic name	Common name	Recorded in 1978/79 by Milne	Recorded by HFNC in 2003/07
1	<i>Acacia mearnsii</i>	Black Wattle	R	c
2	<i>Acacia melanoxylon</i>	Blackwood	R	r
3	<i>Acaena novae-zelandiae</i>	Bidgee-widgee	C	vc
4	<i>Acaena echinata</i>	Sheep's Burr	C	vc
5	<i>Agrostis avenacea</i>	Common Blown-grass	p	p
6	<i>Allocasuarina verticillata</i>	Drooping Sheoak	r	vr
7	<i>Arthropodium milleflorum</i>	Pale Vanilla-lily	r	p
8	<i>Arthropodium strictum</i>	Chocolate Lily	c	p
9	<i>Asperula conferta</i>	Common woodruff	p	vc
10	<i>Astroloma humifusum</i>	Cranberry Heath	r	c
11	<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass	p	p
12	<i>Austrodanthonia geniculata</i>	Kneed Wallaby-grass	p	p
13	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass	p	p
14	<i>Austrostipa</i> spp.	Spear Grass	p	vc
15	<i>Bossiaea prostrata</i>	Creeping Bossiaea	r	c
16	<i>Brunonia australis</i>	Blue Pincushions	r	r
17	<i>Bulbine bulbosa</i>	Bulbine Lily	c	c
18	<i>Burchardia umbellata</i>	Milkmaids	c	vc
19	<i>Caesia calliantha</i>	Blue Grass-lily	r	r
20	<i>Chrysocephalum apiculatum</i>	Common Everlasting	r	c
21	<i>Convolvulus remotus</i>	Pink bindweed	r	c
22	<i>Cynoglossum suaveolens</i>	Sweet hounds-tongue		c
23	<i>Dianella revoluta</i>	Black-anther Flax-ily	r	r
24	<i>Dianella longifolia</i>	Fale Flax-lily		r
25	<i>Dichelacne crinita</i>	Long-hair Plume-grass		p
26	<i>Dillwynia glaberrima</i>	Smooth Parrot-pea	vr	
27	<i>Diuris pedunculata</i>	Golden Moths	r	c
28	<i>Drosera peltata</i>	Pale Sundew	c	vc
29	<i>Elymus scabrum</i>	Common Wheat-grass		p
30	<i>Erodium crinitum</i>	Blue Heron's-bill		c
31	<i>Eryngium ovinum</i>	Blue Devils	r	r
32	<i>Eucalyptus camaldulensis</i>	River Red Gum	r	c
33	<i>Eucalyptus ovata</i>	Swamp Gum	r	r
34	<i>Eucalyptus viminalis</i>	Manna Gum		r
35	<i>Exocarpos cuppresiformis</i>	Cherry Ballart		r
36	<i>Geranium solanderi</i>	Austral Cranes-bill	c*	c
37	<i>Gnaphalium involucreatum</i>	Jersey Cudweed	p*	p
38	<i>Gonocarpos tetragynus</i>	Common Raspwort	c*	vc
39	<i>Goodenia geniculata</i>	Bent Goodenia	r*	
40	<i>Goodenia pinnatifida</i>	Cut-leaf Goodenia		r
41	<i>Helichrysum scorpioides</i>	Button Everlasting	r*	r
42	<i>Hibbertia stricta</i>	Erect Guinea-flower		vr
43	<i>Hydrocotyle laxiflora</i>	Stinking Pennywort	c*	vc
44	<i>Hypericum gramineum</i>	Small St John's Wort		vc
45	<i>Hypoxis glabella</i>	Yellow Star	r	c
46	<i>Juncus bufonius</i>	Toad Rush		vc
47	<i>Juncus holoschoenus</i>	Joint-leaf Rush	p*	c
48	<i>Juncus pallidus</i>	Pale Rush		r
49	<i>Kennedia prostrata</i>	Running Postman	p	r
50	<i>Leptorhynchus squamatus</i>	Scaly Buttons	p	c
51	<i>Leptospermum continentale</i>	Prickly Tea-tree		vr
52	<i>Lobelia pratioides</i>	Angled Lobelia	p	p

53	<i>Lomandra glauca</i>	Pale Mat-lily		p
54	<i>Lomandra multiflora</i>	Many-flowered Mat-lily		r
55	<i>Microlaena stipoides</i>	Weeping Grass	p	c
56	<i>Microtis parvifolius</i>	Common Onion Orchid	p	c
57	<i>Oxalis perrenans</i>	Wood Sorrel	p	r
58	<i>Opercularia varia</i>	Variable Stinkweed		r
59	<i>Pentapogon quadrifida</i>	5-awned Speargrass		p
60	<i>Pimelea humilus</i>	Common Rice-flower	p	c
61	<i>Pimelea curviflora</i>	Curved Rice-flower	p	vc
62	<i>Poa labillardiera</i>	Common Tussock-grass	p	p
63	<i>Poa sieberana</i>	Tussock-grass		vc
64	<i>Ranunculus lappaceus</i>	Austral Buttercup	r	r
65	<i>Selliera radicans</i>	Swamp Weed		r
66	<i>Sencio squarrosus</i>	Fireweed		r
67	<i>Sencio quadridentatus</i>	Cotton Fire-weed	p	r
68	<i>Stackhousia monogyna</i>	Candles		c
69	<i>Thelymitra</i> sp.	Sun-orchid		p
70	<i>Thelymitra megacaliptra?</i>	Great Sun-orchid		r
71	<i>Thelymitra pauciflora</i>	Slender sun-orchid	c	c
72	<i>Themeda triandra</i>	Kangaroo Grass	vc	vc
73	<i>Thysanotus pattersonii</i>	Twining Fringe-lily		vr
74	<i>Tricoryne elatior</i>	Yellow Grass-lily	p	c
75	<i>Velleia paradoxa</i>	Spurred Velleia		vr
76	<i>Veronica gracilis</i>	Slender Speedwell	r*	c
77	<i>Villarsia umbricola</i>	Lax marsh-flower	p*	p
78	<i>Wahlenbergia gracillis</i>	Sprawling Bluebell	r	p
79	<i>Wahlenbergia multicaulis</i>	Bluebell	p*	

Approximate relative abundance when surveyed:

- vc very common (1000s)
- c common (100s)
- r rare (10s)
- vr very rare (<10)
- p present but abundance not estimated
- * herbarium specimen collected.

SITE MAP

Kanawalla Station Ground and Rail Reserve

(from Department of Conservation & Environment's 1991 Disused Railway Lines Planning Process paper 'Minhamite Station Ground to Balmoral Station Ground (via Hamilton)')

