

Armstrong Reserve Rehabilitation – Endplan Environmental Consultants Post Activity Report & Quarterly Weed Monitoring Report (1/12)

Activity Date(s):	05/08/20 – 03/11/20	Conducted By:	Jarrad Sherborne
Site Reference:	Armstrong Reserve	Reviewed By:	Alex Johnston
Area (ha):	2.8	Project No:	P904A

Site Condition and Approach

- Armstrong Reserve is a small remnant bushland, the majority of which is classified as a Priority Ecological Community (PEC). The reserve is also known habitat for Declared Rare Flora (DRF).
- Edge effects are evident around the site, particularly along the north western boundary which adjoins residential allotments. Grasses and ornamental plants were observed to be encroaching from numerous residences.
- Introduced grasses such as Kikuyu, Buffalo are most common as well as Veldt Grass (Annual and Perennial) and South African Lovegrass. Watsonia and Gladiolus species are also present around the edges of the reserve.
- A high abundance of woody weeds were present across the site, primarily *Acacia longifolia*, *Acacia iteaphylla* and *Acacia pycnantha*.
- The Armstrong Reserve Weed Management Plan (WMP) (Onshore Environmental) was used to develop a weed control prioritisation schedule (see below). This additional differentiation of high and medium priority weeds provides a triaged approach to weed management and more efficient focus of resources.

Action Taken

Date(s):	Activity	Description
05/08/20	Baseline Monitoring	Establishment and data collection of 6x monitoring quadrats. Sites were selected to focus on key revegetation areas where vegetation condition was highly degraded. These sites will be monitored biannually for the project duration.
28/08/20 – 29/08/20	Initial Weed Control Treatment	Initial weed Control was undertaken for the treatment/removal of general weeds (grasses and broadleaf weeds), Geophytes and Woody Weeds. Focus was given to priority 1 weeds and Woody Weeds such as <i>Acacia iteaphylla</i> , <i>Acacia longifolia</i> and <i>Acacia pycnantha</i> , which were found predominantly along Gifford Road. <i>Juncus acutus</i> was observed at the southern point of the reserve on Naturaliste Terrace and was removed.
02/09/20 – 04/09/20	Fuel Load Reduction (Var 1 – 2/3 complete)	Approximately 35m ³ of fine and coarse (>75mm) woody debris was selectively removed from the reserve as a means of fire hazard reduction. Material was collected and disposed of at Vidler Road Landfill and Tranen depot.

14/09/20	Follow-up Weed Control (1/3 First year treatments)	<p>Weed Control was undertaken (grass selective herbicides) for the treatment of introduced grasses. Strong caution was taken due to the presence of native grasses (<i>Conostylis sp.</i> and <i>Austrostipa sp.</i>). Along the access track at the north-western margin of the reserve, particular attention was given to Kikuyu and Buffalo Grass. These grasses display a higher prevalence at this location through encroachment from adjoining residences.</p> <p>The north-eastern margin of the reserve, along Gifford Road, shows a stronger prevalence of grasses such as African Lovegrass and Veldt Grass (Perennial and Annual). <i>Vinca major</i> and <i>Dipogon lignosus</i> (Pink flower) were observed on the southern margin of the reserve off Armstrong Place.</p>
03/11/20	Follow-up Weed Control (2/3 First year treatments)	<p>Weed Control through the wiping of Geophytes, selective spray of grasses and treatment/removal of other priority weeds was completed. There was a particular focus on the wiping of Gladiolus and the spraying of Kikuyu and Buffalo grass along the north-western boundary access track.</p> <p>A <i>Juncus acutus</i> specimen was also discovered and removed from site again at the southern point of the reserve on Naturaliste Terrace. <i>Dipogon lignosus</i> (white flower) was also observed where Gifford Road joins the reserve access track at the north end of the reserve. This specimen and those found on the Armstrong Place margin were cut to kill off accumulated biomass growing within the tree canopy.</p>
20/11/20	Plant orders	<p>The species list was developed and approved, with orders confirmed at local nurseries for first year planting. The species selected were chosen based on their existing presence within the reserve, priority to local provenance material and limited numbers of overstorey species due to the high existing canopy cover. It is anticipated that establishment rates will be lower due to the heavy tree canopy and limited available light in many of the revegetation areas.</p>

Additional Comments

- Further to original survey data, 2 additional introduced species have been recorded and treated/removed. *Juncus acutus* was observed at the southern point of the reserve on Naturaliste terrace within the creek line. Specimens have been removed each time they were observed. *Vinca major* was also observed along the southern boundary of the reserve on Armstrong Place. This species is growing alongside an area of *Dipogon Lignosus* and will require longer term, on-going treatment due to its high abundance.
- The Priority 1 species *Gallium spurium* from the WMP was not identified during site inspections or weed control works in the location it was mapped or anywhere on site.
- Overall weed management requires a more progressive and careful approach than previously estimated due to the high cover of native vegetation, even in areas of very high weed abundance.
- A variation to change the tree guard material from plastic to corflute was sought and approved on 19/11/20 to improve project outcomes without significantly affecting original budgets.
- It is recommended that the remaining budget available for fuel load removal focus on the slashing and removal of treated grasses to reduce fuel loads and assist revegetation works.

Armstrong Reserve Weed Control Schedule

Species	Common Name	Initial Priority	Priority rating	Area	Habit	Winter	Spring	Summer	Autumn	Preferred Control Method	Treatment Notes
Asparagus asparagoides	Bridal Creeper	High	1	14	Perennial geophyte	1				Spray	Encourage biocontrol agents such as the rust fungus. Alternatively, spot spray with 0.02g metsulfuron plus
Galium spurium	False Cleavers	High	1	4	Annual broadleaf	1				Manual removal / spray	Spray in late winter with 1.0g chlorsulfuron (750g/kg) plus wetting agent in 10 L water
Zantedeschia aethiopica	Arum Lily	High	1	2, 3, 10	Perennial geophyte	1	2			Spray / wipe	Spray in late winter with 1.0g chlorsulfuron (750g/kg) or 1.0g metsulfuron (600g/kg) plus wetting agent in 10 L
Acacia iteaphylla	Flinders Range Wattle	Medium	2	12, 15	Woody weed	1	1	1	2	Cut-paint / manual	Seedlings: hand pull and remove individuals; Mature Woody Plants: Fell and remove entire bush/tree, paint
Acacia longifolia	Sydney Golden Wattle	Medium	2	1, 5, 16, 17	Woody weed	1	1	1	2	Cut-paint / manual	Seedlings: hand pull and remove individuals; Mature Woody Plants: Fell and remove entire bush/tree, paint
Acacia pycnantha	Golden Wattle	Medium	2	13	Woody weed	1	1	1	2	Cut-paint / manual	Seedlings: hand pull and remove individuals; Mature Woody Plants: Fell and remove entire bush/tree, paint
Avena barbata	Bearded Oat	Medium	2	1, 3, 9, 17	Winter grass	1	2			Spray	Selective control by spraying with 100 mL/ha Verdict®520 with wetting agent in winter prior to flowering
Cenchrus clandestinus	Kikuyu Grass	Medium	2	11	Summer grass		2	1		Spray	Selective control by spraying with 800 mL/ha Verdict®520 with wetting agent in winter prior to flowering
Cynodon dactylon	Couch	Medium	2	1, 2, 3, 10, 19	Summer grass		2	1		Spray	Selective control by spraying with 1 L/ha Fusilade®212 with wetting agent in winter prior to flowering
Ehrharta longiflora	Annual Veldt Grass	Medium	2	1, 12, 13, 18	Winter grass	1	1			Spray	Selective control by spraying with 1 L/ha Fusilade®212 with wetting agent in winter prior to flowering
Eragrostis curvula	African Lovegrass	Medium	2	3, 9, 12, 13	Winter grass	1	1			Spray	Hand pull and remove scattered plants, or spray in winter with 4 L glyphosate (450g/L) plus wetting agent
Euphorbia terracina	Geraldton Carnation Weed	Medium	2	1, 3, 15	Annual broadleaf		2	1		Manual removal	Spot spray large infestations with metsulfuron methyl 0.1 g/15 L or metsulfuron methyl + 1% glyphosate
Freesia alba x leichtlinii	Freesia	Medium	2	14	Perennial geophyte	1	2			Spray / wipe	Spray in late winter with 0.5g metsulfuron (600g/kg) plus wetting agent / 10 L water (2-3 years of treatment)
Fumaria capreolata	Whiteflower Fumitory	Medium	2	1, 3	Annual broadleaf	1	2			Manual removal	Hand pull scattered plants and remove, or spot spray with 0.1g metsulfuron (600g/kg) plus wetting agent in
Gladiolus undulatus	Wild Gladiolus	Medium	2	1, 2, 7, 12, 17, 18, 21	Perennial geophyte	1	2			Spray / wipe	Spray in late winter with 0.5g metsulfuron (600g/kg) plus wetting agent / 10 L water (2-3 years of treatment)
Olea europaea	Olive	Medium	2	4	Woody weed	2	1	1	2	Cut-paint / manual	Hand pull and remove scattered plants
Pittosporum undulatum	Sweet Pittosporum	Medium	2	1, 10, 18, 19, 21	Woody weed	1	1	1	1	Cut-paint / manual	Hand pull scattered plants and remove, or spot spray with 200 mL glyphosate (450g/kg) plus wetting agent in
Stenotaphrum secundatum	Buffalo Grass	Medium	2	1, 2, 13, 14, 20	Summer grass		2	1		Spray	Selective control by spraying with 800 mL/ha Verdict®520 with wetting agent in winter prior to flowering
Watsonia versfeldii	Watsonia	Medium	2	9	Perennial geophyte	1	2			Spray / wipe	Hand pull and remove scattered plants, or spray with 100g 2,2-DPA(740g/kg) plus wetting agent in 10 L water
Agapanthus praecox	Agapanthus	Medium	3	10, 20	Perennial geophyte	1	1	1	1	Manual removal	Hand pull and remove scattered plants or spray with 10g metsulfuron plus wetting agent / 1 L water
Bromus diandrus	Great Brome	Medium	3	1, 3	Winter grass		1			Spray	Selective control by spraying with 100 mL/ha Verdict®520 with wetting agent in winter prior to flowering
Bromus hordeaceus	Soft Brome	Medium	3	2	Winter grass		1			Spray	Selective control by spraying with 100 mL/ha Verdict®520 with wetting agent in winter prior to flowering
Dipogon lignosus	Dolichos Pea	Medium	3	10	Annual broadleaf	1				Spray / manual removal	Spray in winter prior to flowering with 500 mL/ha Lontrel® plus wetting agent to provide reasonably selective
Ehrharta calycina	Perennial Veldt Grass	Medium	3	17	Winter grass	1	1			Spray	Selective control by spraying with 1 L/ha Fusilade®212 with wetting agent in winter prior to flowering
Oxalis compressa	Soursob	Medium	3	1, 2, 12, 14	Perennial geophyte	1	2			Spray	Spray in late winter with 0.1g metsulfuron (600g/kg) plus wetting agent / 10 L water
Paspalum dilatatum	Paspalum	Medium	3	1, 2	Woody weed	1	1	1	1	Manual removal	Selective control by spraying with 800 mL/ha Verdict®520 with wetting agent in winter prior to flowering
Plantago lanceolata	Ribwort Plantain	Medium	3	1, 3, 12	Perennial geophyte	1				Spray / manual removal	Hand pull scattered plants and remove, or spot spray with 200 mL glyphosate (450g/kg) plus wetting agent in
Washingtonia filifera	California Fan Palm	Medium	3	2	Woody weed	1	1	1	1	Manual removal	Hand pull or dig out and remove entire plant
Yucca filamentosa	Adam's Needle	Medium	3	20	Monocot - succulent	1	1	1	1	Manual removal	Hand pull or dig out and remove entire plant
Callistemon citrinus	Bottlebrush	Medium	4	15	Woody weed	2	1	1	2	Cut-paint / manual	Hand pull and remove scattered plants
Conyza bonariensis	Flaxleaf Fleabane	Medium	4	1	Annual broadleaf		1	1		manual removal	Spray in winter prior to flowering with 500 mL/ha Lontrel® plus wetting agent to provide reasonably selective
Hypericum perforatum	St John's Wort	Medium	4	6	Perennial geophyte				1	Spray / manual removal	Hand pull scattered plants or spot spray larger areas with 100 mL glyphosate (450g/L) plus wetting agent in 10
Oxalis pes-caprae	Soursob	Medium	4	12	Perennial geophyte	1	2			Spray	Spray in late winter with 0.1g metsulfuron (600g/kg) plus wetting agent / 10 L water
Oxalis purpurea	Largeflower Wood Sorrel	Medium	4	3	Perennial geophyte	1	2			Spray	Spray in late winter with 0.1g metsulfuron (600g/kg) plus wetting agent / 10 L water
Cerastium glomeratum	Mouse Ear Chickweed	Medium	5	12	Annual broadleaf	1	1			Spray	Hand pull scattered plants or spot spray larger areas with 100 mL glyphosate (450g/L) plus wetting agent in 10
Petrorhagia dubia	Velvet Pink	Medium	5	2	Annual broadleaf	1				Manual removal	Remove small and/or isolated plants manually before seed set
Romulea rosea	Guildford Grass	Medium	5	3	Perennial geophyte	1				Spray / wipe	Spray in late winter with 0.5g metsulfuron (600g/kg) plus wetting agent / 10 L water (2-3 years of treatment)
Stylosanthes sp. indet	Stylo	Medium	5	3, 4	Broadleaf	1	1	1	1	Spray	Spray in winter prior to flowering with 10 mL Lontrel® plus wetting agent in 10 L water to provide reasonably

Photographs



Treated Kikuyu – Weed Control – 14/09/20



Stockpiles of removed debris – Fuel Load Reduction – 02/09/20



Gladiolus wiped – Weed Control – 03/11/20



***Juncus Acutus* – Weed Control – 3/11/20**



Vinca major – Weed Control – 14/09/20



Dipogon lignosus – Weed Control – 14/09/20