

Delivery of Stage 1 of the Kangaroo Island *Eucalyptus globulus* wildling eradication strategy

Report to the Kangaroo Island Landscape Board

David Taylor

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1. Background

A management plan for the delivery of Stage 1 of the Kangaroo Island (KI) *Eucalyptus globulus* wildling eradication strategy was developed by the KI Landscape Board (KILB) in early 2025 and approved by the Native Vegetation Council (NVC) in June 2025 (KILB 2025). The purpose of Stage 1 was to undertake a trial to identify and develop efficient and effective methods of controlling *E. globulus* wildlings without creating significant adverse ecological impacts.

The management plan identified ten treatment methods to be tested in *E. globulus* wildling infestations along 32.9 km of interface between a former *E. globulus* plantation and remnant vegetation on the property MacGill North, owned by Kiland Ltd. The scope of the trial was subsequently adapted and reduced in August 2025 (due to budget, weather and time constraints) to the delivery of six treatment methods along 18.7 km of former plantation interface.

This report documents the initial results of the Stage 1 trials and discusses the implications of the findings for Stage 2 of the KI *E. globulus* wildling eradication strategy.

2. Stage 1 Delivery

2.1 Treatments

Stage 1 was delivered by the KILB during October 2025 in accordance with the methodology outlined in the Stage 1 management plan (KILB 2025). All up, six different treatments were tested in 61 segments of wildling infestation along 18.7 km of the former plantation/remnant vegetation interface at MacGill North (Tables 1 and 2; Figure 1). This included the use of five different machines or machine attachments (Figures 2 to 6, and Attachments 1 to 5) and three different herbicides (Table 1).

Table 1. The six control methods trialled at MacGill North during Stage 1 of the KI *E. globulus* wildling eradication strategy (October 2025).

Control Method	Delivery Details	Delivery Period
1. Hand cutting and spraying (also known as the cut stump method) (Hand cutting wildlings and treatment of the stump with Glyphosate)	Cutting and spraying undertaken by a team of four KILB staff	6 th – 31 st Oct
2. Mechanical control – Forestry Mulcher (Track Loader or skid steer with Forestry Mulcher attachment used to mulch wildlings to ground level. Follow-up treatment of resprouting wildlings with herbicide approximately 6 months post cutting)	Two machines trialled: Takeuchi High Flow Track Loader (110 Hp) with Fecon Forestry Mulcher attachment (total weight 7.4 tonne). Owned and operated by Jack Correll. John Deer 333G Compact Track Loader (5.5 tonne) with FAE Forestry Mulcher head (DML/SSL/VT-175). Owned by NPWS SA and operated by Greg Church (NPWS staff).	7 th – 9 th Oct 7 th – 9 th Oct
3. Mechanical control – Stick Rake (Stick Rake mounted on an excavator used to rip roots and completely remove wildlings)	CAT Long Track Excavator (162 Hp) (23 tonne) with Stick Rake attachment. Owned and operated by Dan Haby.	7 th – 8 th Oct
4. Mechanical control – Flail Mower (Flail Mower mounted on an excavator used to mow/cut wildlings. Follow-up treatment of resprouting wildlings with herbicide approximately 6 months post cutting)	Yanmar Excavator (60 Hp) (8 tonne) with fixed tooth mulching head (1 m width). Owned and operated by Scott Morgan.	13 th – 14 th Oct
5. Mechanical control – Grab (Grab attachment mounted on an excavator used to pull wildlings out of the ground)	CAT Long Track Excavator (162 Hp) (23 tonne) with Grab attachment. Owned and operated by Dan Haby.	8 th Oct

6. Chemical control – direct injection of herbicide into the stem.	Three chemicals trialled: Di-bak, Glyphosate, Method Undertaken by KILB staff	16 th and 28 th Oct
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Table 2. Primary, secondary and tertiary treatments applied to segments of wildling infestation at MacGill North during Stage 1 of the KI *E. globulus* wildling eradication strategy. The majority of primary and secondary treatments were completed between the 6th and 31st October 2025. Some secondary and tertiary treatments are yet to be completed.

Site	Density	Length (m)	Estimated Width (m)	Estimated Area (ha)	Primary Treatment	Secondary Treatment	Tertiary Treatment
H3	High	56	10	0.1	Hand Cutting and Spraying		
L1	Low	162	5	0.1	Hand Cutting and Spraying		
L2	Low	154	10	0.2	Hand Cutting and Spraying		
L3a	Low	170	15	0.3	Hand Cutting and Spraying		
L3b	Low	714	15	1.1	Hand Cutting and Spraying		
L3c	Low	123	5	0.1	Hand Cutting and Spraying		
L7a	Low	83	10	0.1	Hand Cutting and Spraying		
L10	Low	223	10	0.2	Hand Cutting and Spraying		
L11a	Low	192	10	0.2	Hand Cutting and Spraying		
L12a	Low	300	10	0.3	Hand Cutting and Spraying		
L13	Low	181	10	0.2	Hand Cutting and Spraying		
L14	Low	458	10	0.5	Hand Cutting and Spraying	Forestry Mulcher (Correll)	Herbicide Spraying (resprouters)*
L17	Low	1829	5	0.9	Hand Cutting and Spraying	Forestry Mulcher (Correll)	Herbicide Spraying (resprouters)*
L22a	Low	1001	10	1.0	Hand Cutting and Spraying		
L22b	Low	482	10	0.5	Hand Cutting and Spraying		
L22c	Low	224	10	0.2	Hand Cutting and Spraying		
L23	Low	193	30	0.6	Hand Cutting and Spraying		
L27	Low	533	10	0.5	Hand Cutting and Spraying		
L39	Low	377	10	0.4	Hand Cutting and Spraying		
L40	Low	210	10	0.2	Hand Cutting and Spraying		
L41a	Low	906	15	1.4	Hand Cutting and Spraying		
L42a	Low	396	10	0.4	Hand Cutting and Spraying		
L43a	Low	530	5	0.3	Hand Cutting and Spraying		
L44	Low	418	10	0.4	Hand Cutting and Spraying		
L45	Low	169	10	0.2	Hand Cutting and Spraying		
	<i>Subtotal</i>	10084		10.4			
H4	High	111	5	0.1	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*

H6	High	257	20	0.5	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
H31a	High	55	20	0.1	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
H35	High	295	15	0.4	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L17a	High	330	5	0.2	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L24a	Low	476	5	0.2	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L24c	Low	166	5	0.1	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L25	Low	195	5	0.1	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L28	Low	261	5	0.1	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L29a	Low	707	10	0.7	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L30a	Low	243	5	0.1	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L33	Low	301	10	0.3	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L34a	Low	655	15	1.0	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L36a	Low	527	10	0.5	Forestry Mulcher (Correll)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
<i>Subtotal</i>		4579		4.5			
H1a	High	188	15	0.3	Forestry Mulcher (DEW)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
H2	High	145	10	0.1	Forestry Mulcher (DEW)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
H5	High	69	15	0.1	Forestry Mulcher (DEW)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
H7a	High	89	10	0.1	Forestry Mulcher (DEW)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L4	Low	58	10	0.1	Forestry Mulcher (DEW)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L5	Low	166	10	0.2	Forestry Mulcher (DEW)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L6	Low	242	15	0.4	Forestry Mulcher (DEW)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
L9	Low	428	10	0.4	Forestry Mulcher (DEW)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
<i>Subtotal</i>		1385		1.6			
H17	High	211	5	0.1	Stick Rake (Haby)	Hand Cutting and Spraying	
H21	High	163	10	0.2	Stick Rake (Haby)	Hand Cutting and Spraying	
H25b	High	326	15	0.5	Stick Rake (Haby)	Hand Cutting and Spraying	
H31b	High	94	20	0.2	Stick Rake (Haby)	Hand Cutting and Spraying	
<i>Subtotal</i>		794		0.9			
H9	High	161	10	0.2	Flail Mower (Morgan)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
H11a	High	116	15	0.2	Flail Mower (Morgan)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
H28b	High	58	10	0.1	Flail Mower (Morgan)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*

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H32	High	75	10	0.0	Flail Mower (Morgan)	Hand Cutting and Spraying	Herbicide Spraying (resprouters)*
	<i>Subtotals</i>	410		0.5			
H31c	High	98	20	0.2	Grab (Haby)	Hand Cutting and Spraying	
	<i>Subtotals</i>	98		0.2			
<i>Grand Total</i>		17350		17.8			
H13	High	302	20	0.6	Herbicide Injection (partial area only)		
H14	High	274	20	0.5	Herbicide Injection (partial area only)		
H19	High	186	20	0.4	Herbicide Injection (partial area only)		
H33	High	238	20	0.5	Herbicide Injection (partial area only)		
H38	High	389	30	1.2	Herbicide Injection (partial area only)		
	<i>Subtotal</i>	1389		3.2			
<i>Grand Total</i>		18739		20.9			

*Resprouters yet to be sprayed



Figure 2. Forestry Mulcher (Correll) - Takeuchi High Flow Track Loader with Fecon Mulcher attachment operating at site L34a.



Figure 3. Forestry Mulcher (DEW) - John Deere 333G Compact Track Loader with FAE forestry mulching head operating at site L6.



Figure 4. Stick Rake (Haby) - CAT Long Track Excavator with Stick Rake attachment operating at site H17.



Figure 5. Flail Mower (Morgan) - Yanmar excavator with a Flail Mower head operating at site H5



Figure 6. Grab (Haby) - CAT Long Track Excavator (162 Hp) (23 tonne) with Grab attachment operating at site H31c.

2.2 Monitoring Vegetation Impacts

The impact of each mechanical and chemical treatment was monitored at high density wildling sites based on the methodology described in the Stage 1 management plan (KILB 2025).

1 x 1 m quadrats were established and surveyed at mechanical treatment sites immediately prior to treatment and immediately post treatment (Table 3). The number of 1 x 1 m quadrats per site was reduced from ten (as specified in the original management plan) to five to better account for the width of vegetation remnants. These five quadrats were evenly spaced across the band of the wildling infestations at each segment.

Circular plots (radius 1 m) around tagged wildlings were established immediately prior to treatment at five chemical treatment sites. These will be surveyed again once the treated wildlings have died (estimated to be 6 months post treatment) (Table 3).

Table 3. The timing of pre and post treatment vegetation monitoring at mechanical and chemical treatment sites at MacGill North.

Site	Monitoring Method	Pre-treatment Survey	Treatment Date	Post-treatment Survey
<i>Forestry Mulcher (Correll)</i>				
H4	Five 1 x1 m quadrats	1/10/25	7/10/25	12/10/25
H6	Five 1 x1 m quadrats	1/10/25	7/10/25	12/10/25
H31a	Five 1 x1 m quadrats	3/10/25	8/10/25	12/10/25
H35	Five 1 x1 m quadrats	3/10/25	7-8/10/25	12/10/25
<i>Forestry Mulcher (DEW)</i>				
H1a	Five 1 x1 m quadrats	30/09/25	7-8/10/25	12/10/25
H2	Five 1 x1 m quadrats	30/09/25	8/10/25	12/10/25
H5	Five 1 x1 m quadrats	1/10/25	9/10/25	12/10/25
H7a	Five 1 x1 m quadrats	1/10/25	8/10/25	14/10/25
<i>Stick Rake (Haby)</i>				
H17	Five 1 x1 m quadrats	2/10/25	7/10/25	12/10/25
H21	Five 1 x1 m quadrats	2/10/25	7/10/25	12/10/25
H25b	Five 1 x1 m quadrats	2/10/25	7-8/10/25	12/10/25
H31b	Five 1 x1 m quadrats	3/10/25	8/10/25	12/10/25
<i>Flail Mower (Morgan)</i>				
H9	Five 1 x1 m quadrats	1/10/25	13/10/25	14/10/25
H11a	Five 1 x1 m quadrats	2/10/25	13/10/25	14/10/25
H28b	Five 1 x1 m quadrats	3/10/25	13/10/25	14/10/25
H32	Five 1 x1 m quadrats	3/10/25	13-14/10/25	14/10/25
<i>Grab (Haby)</i>				
H31c	No plots established*	-	8/10/25	-
<i>Herbicide Injection</i>				
H13	Twenty circular plots (1 m radius)	14/10/25	16/10/25 28/10/25	-
H14	Twenty circular plots (1 m radius)	6/10/25	16/10/25 28/10/25	-
H19	Twenty circular plots (1 m radius)	14/10/25	16/10/25 17/10/25 28/10/25	-

H33	Twenty circular plots (1 m radius)	6/10/25	16/10/25 17/10/25 28/10/25	-
H38	Twenty circular plots (1 m radius)	6/10/25	16/10/25 28/10/25	-

*The trial of the Grab at site H31c was opportunistic and there was no time to establish monitoring plots beforehand.

3. Initial Results

3.1 MacGill North Wildling Infestation Characteristics

Infestation Width and Area

Monitoring of high density sites revealed that the average width of high density sites was 17.7 m. This was 38% wider than what was initially estimated (12.8 m) during the development of the management plan.

The width of low density sites was not measured during the trial but was estimated to be an average of 9.7 m in the management plan. If it is assumed that this figure is also a 38% underestimate, then low density wildling infestation width is more likely to be close to 13.7 m.

Based on these revised widths, the area of infestation treated under this trial is now estimated to be 7.0 ha for high density sites, 20.3 ha for low density sites and 27.3 ha in total.

Infestation Density and Population

Average wildling density recorded in 1 x 1 m quadrats across all high density sites during this trial was 0.625 wildlings/m² (6,250 wildlings/ha). Wildling density at low density sites was not recorded through survey during the trial but is estimated to be 0.0075 wildlings/m² (75 wildlings/ha).

Based on these densities, the wildling population of high density sites prior to treatment is estimated to have been 43,777, while the wildling population in low density sites is estimated to have been 1,518 (45,296 wildlings in total).

3.2 Control method efficiency

Mechanical – high density sites

The time taken to treat segments of high density wildlings varied between the different machines trialled (Figure 7). The Forestry Mulcher (Correll) was the fastest, treating 100 m of interface in an average of 49.9 minutes. The slowest was the Forestry Mulcher (DEW), which averaged 78.4 mins/100 m. The average speed of the Stick Rake and Flail Mower was similar at 74.0 and 74.3 mins/100 m respectively. The speed of the Grab was not measured as this machine was only used opportunistically at one site. However, it is likely to have been similar to that of the Stick Rake.

The Forestry Mulcher (Correll) was the most cost-efficient mechanical treatment method. The Flail Mower was also relatively cost-efficient, while the Stick Rake (Haby) was the most

expensive option. No costing figures were available for the Forestry Mulcher (DEW) as its contribution to the trial was on an in-kind basis. The cost-efficiency of the Grab is expected to have been similar to the Stick Rake.

The costing figures in Table 4 do not include the cost of moving the machine between high density sites. This cost is predicted to have been lowest for the Flail Mower based on the travel times and hourly rates recorded for each machine during the trial (Table 5).

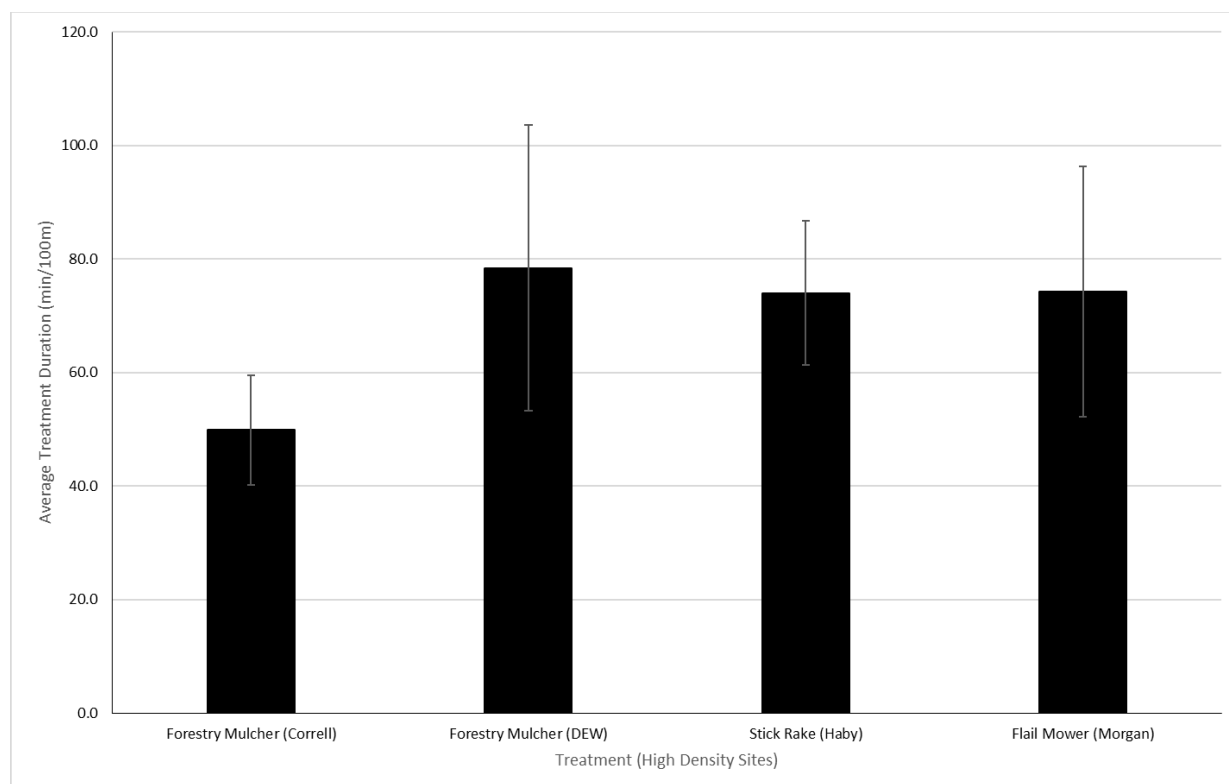


Figure 7. The average time taken to machine treat 100 m of high density *E. globulus* infestation at high density sites.

Table 4. Cost-efficiency of mechanical treatment methods per 100 m of wildling infestation at high density sites.

Treatment Method	Treatment Duration (mins/100m)	Cost per hour	Cost/100m
Forestry Mulcher (Correll)	49.91	\$220.00	\$183.01*
Forestry Mulcher (DEW) ⁺	78.44	-	-
Stick Rake (Haby)	74.03	\$253.00*	\$312.17*
Flail Mower (Morgan)	74.31	\$165.00*	\$204.34*

*Cost does not include costs of shifting the machine to the site or travel between high density sites.

+Forestry Mulcher (DEW) worked on an in-kind basis.

Table 5. The average speed and cost of four different machines travelling from one high density site to another at MacGill North.

Machine	Average Speed (km/hr) (SEM*)	Cost per hour	Travel cost per km
Forestry Mulcher (Correll)	4.2 (0.8)	\$220.00*	\$51.88
Forestry Mulcher (DEW)	2.0 (0.7)	-	-
Stick Rake (Haby)	4.1 (0.3)	\$253.00*	\$61.46
Flail Mower (Morgan)	4.0 (0.3)	\$165.00*	\$40.77

*Standard error of the mean

Mechanical – low density sites

Of the two machines trialled at low wildling density sites, the Forestry Mulcher (Correll) again proved to be the fastest (Figure 8). It was also substantially quicker than hand control undertaken by one person (via cutting and spraying) (Figure 8). This efficiency was reflected in the substantially lower cost of mechanical works using the Forestry Mulcher (Correll) compared to hand control (Table 6).

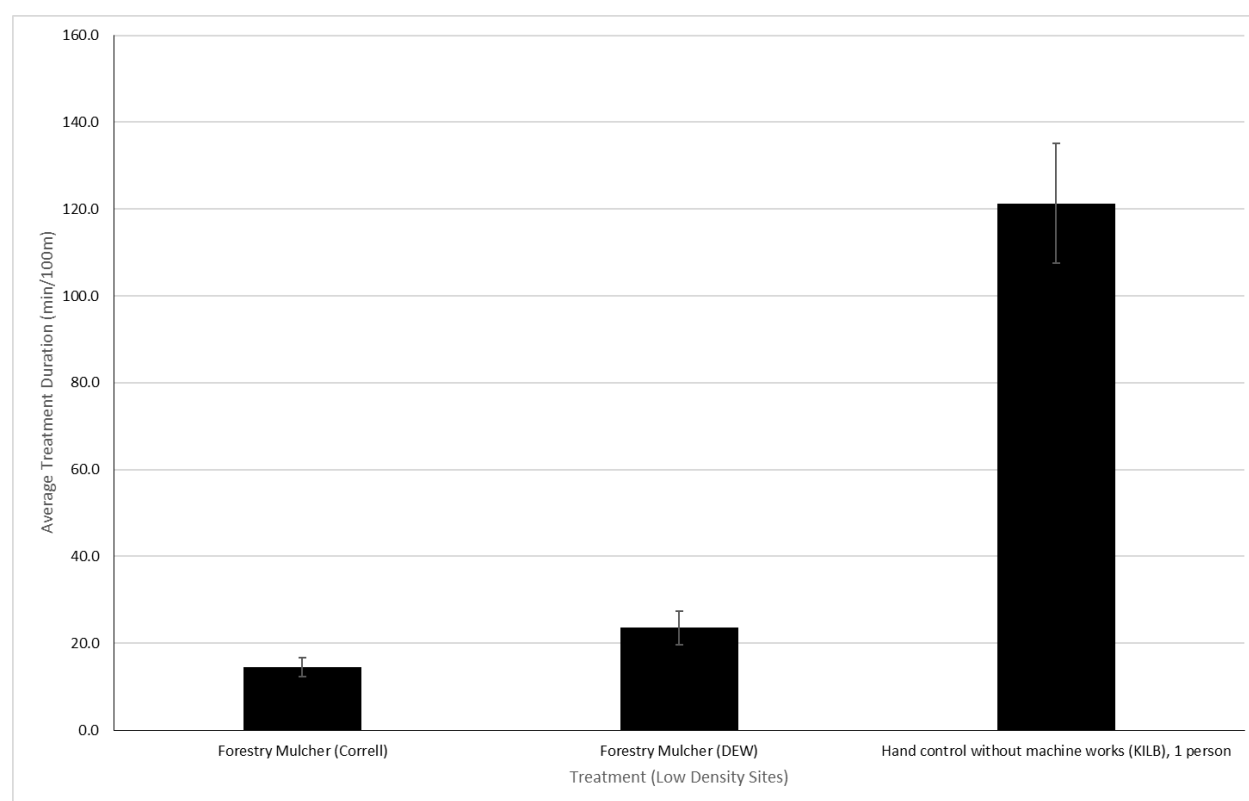


Figure 8. Average time taken to treat 100 m of low density *E. globulus* infestation by machine and by hand (1 person cutting and spraying).

Table 6. Cost-efficiency of mechanical treatment and hand control methods per 100 m of low density wildling infestation.

Treatment Method	Treatment Duration (mins/100m)	Cost per hour (inc GST)	Cost/100m (inc GST)
Forestry Mulcher (Correll)	14.48	\$220.00	\$53.09*
Forestry Mulcher (DEW)	23.57	-	-
Hand cutting and spraying without machine works (KILB), 1 person	121.33	\$84.51 ⁺	\$170.89

*Cost does not include costs of shifting the machine to the site or travel between low density sites.

⁺Hourly rate includes wages, oncosts, vehicle costs, travel time and break times.

Chemical

The time taken to inject three different herbicides into standing wildlings (DBH > 40mm) was recorded and compared to the time taken to cut and swab wildlings at five high density sites.

The average time taken to inject Method into five wildlings (57 seconds) was substantially lower than that needed to insert Di-bak capsules (552 seconds) or apply Glyphosate via drill and fill methods (299 seconds) (Figure 9). This is likely to be due in part to the fact that Method can be injected into each wildling at chest height (rather than into the base for Di-bak and drill and fill methods). The number of injections per wildling using Method (typically 1 to 2) was also less than that needed using Di-bak capsules (1 every 100 mm around the base – typically 2 to 4 capsules per wildling) or drill and fill using Glyphosate (1 drill hole every 100 to 150 mm around the base – typically 2 to 3 drill holes per wildling).

Interestingly, the time taken to apply Method (57 seconds) was also less than that needed to cut and swab the same number of wildlings (70 seconds) (Figure 9). This, and the fact that cutting and spraying involves two people, means that applying Method is potentially the most cost-efficient of all of the herbicide treatments (Table 7).

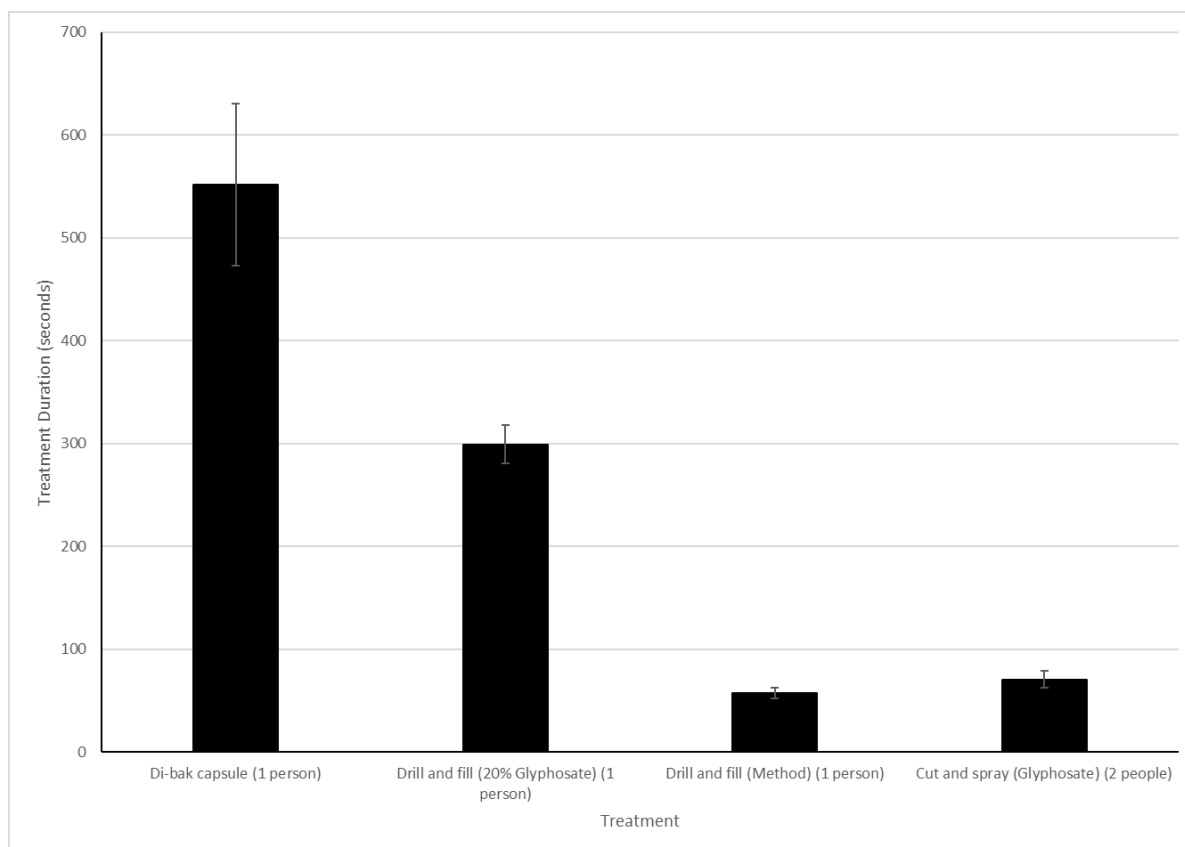


Figure 9. The time taken to chemically treat five large wildlings (> 40 mm DBH) spaced <2 m apart at high density wildling sites H13, H14, H19, H33 and H38 using four different methods.

Table 7. The cost-efficiency of four herbicide treatment methods applied at high density wildling sites.

Treatment Method	Treatment Duration (sec/5 trees)	Cost per hour*	Cost/5 trees
Di-bak capsule (1 person)	551.80	\$84.51	\$12.95
Drill and fill (20% Glyphosate) (1 person)	299.20	\$84.51	\$7.02
Drill and fill (Method) (1 person)	57.40	\$84.51	\$1.35
Cut and swab (Glyphosate) (2 people)	70.60	\$169.03	\$3.31

*Cost is based on wages only and does not include herbicide or equipment (such as chainsaw) costs.

Hourly rate includes wages, oncosts, vehicle costs, travel time and break times.

3.3 Control method effectiveness

Mechanical

None of the five machines used in this trial were completely effective at treating all wildlings at either high or low density sites. This was primarily due to the difficulty machine operators had in detecting and identifying wildlings in dense post-fire remnant vegetation. In some circumstances wildlings were also left because they were too hard to access. This was

particularly the case for the smaller machines (such the Forestry Mulcher (DEW) and Flail Mower) working in and around large fallen trees and old fencelines.

Overall, machine treatment reduced average standing wildling density measured in 1 x 1 m quadrats across all high density sites by 94% (from 0.63 wildlings/m² pre-treatment to 0.04 wildlings/m² post-treatment). Based on these figures the number of standing wildlings within the high density sites treated mechanically is estimated to have been reduced from 26,707 to 1,624 individuals. The effect of mechanical treatment on the wildling population at low density sites was not measured but the effectiveness of the machines used is expected to have been similar.

The wildlings left standing after mechanical treatment at both high and low density sites were subject to hand control (via cutting and spraying). The average time taken to complete this treatment was higher at high density sites (97 person mins/100 m) than at low density sites (80 person/100 mins). This work represents an additional cost when considering the efficiency of mechanical treatment (Tables 4, 6 and 8).

Table 8. The cost of wildling hand control works (cutting and spraying) following mechanical treatment in high and low density sites.

Treatment Method	Treatment Duration (mins/100m)	Cost per hour	Cost/100m
Hand cutting and spraying after machine works at high density sites (KILB), 1 person	96.81	\$84.51 ⁺	\$136.37
Hand cutting and spraying after machine works at low density sites (KILB), 1 person	79.99	\$84.51 ⁺	\$112.67

⁺Hourly rate includes wages, oncosts, vehicle costs, travel time and break times.

The effect of mechanical treatments on the mortality of wildlings is yet to be fully assessed. Mechanical treatment that involves cutting (Forestry Mulcher (Correll), Forestry Mulcher (DEW) and Flail Mower treatments) is expected to stimulate wildlings to resprout vigorously from their base and recent observations have confirmed this (Figure 10). Additional herbicide treatment of the resprouting foliage at these sites will be required approximately 6 to 12 months post treatment.



Figure 10. Resprouting wildlings at site H31a, treated by a Forestry Mulcher (Correll) in October 2025 (Photo S. Walsh, January 2026)

The wildling mortality rate at sites subject to Stick Rake or Grab treatments is yet to be assessed. Theoretically, the action of ripping the roots and pulling individual wildlings will lead to higher rates of wildling mortality than cutting. However, some resprouting from the remaining root systems may also occur and require additional foliar herbicide treatment. Recent observation has confirmed the presence of wildling resprouting at a site subject to treatment with the Stick Rake (Figure 11).



Figure 11. Resprouting wildlings at site H31b, treated with a Stick Rake in October 2025 (Photo S. Walsh, January 2026)

Chemical

The effectiveness of the herbicide treatments is yet to be fully assessed and is not expected to be fully apparent for up to 12 months due to the potential of wildlings to resprout long after treatment. However, recent observations indicate that all Di-bak, Glyphosate and Method treated trees have suffered some level of canopy dieback since treatment.

3.4 Control method impact

Mechanical

The immediate impact of mechanical treatment on native and introduced plant species richness and abundance was most pronounced at sites treated using the Stick Rake (Figures 12 to 15, Appendices 1 to 4). Effective removal of each wildling using the Stick Rake involved ripping the roots and this created significant soil disturbance and vegetation impacts. This action also left a large amount of intact material on the soil surface which had the effect of smothering understorey plants (Figure 16).

In contrast, the immediate ecological impact of the other mechanical treatment methods appeared to be less severe (Figure 17; Appendices 1 to 4). Mulching of the bulk of material by the Forestry Mulchers and Flail Mower reduced the smothering effect of the cut vegetation. Soil disturbance was also limited as neither the Forestry Mulcher nor Flail Mower heads came into contact with the soil. These observations are reflected in the

relatively small difference between the average plant richness and abundance recorded pre and post treatment for these three machines (Figures 12 to 15).

An immediate change in the composition of plant communities following mechanical treatment was detected during this trial. Most plant communities supported an understorey of introduced grasses and forbs prior to treatment (Figure 19). These introduced plants were particularly prevalent along the edge of the remnant vegetation. Mechanical treatment reduced the dominance of these introduced plants relative to other (mainly native) plants (Figure 20). Mechanical treatment also disproportionally affected the proportion of native grasses and introduced trees (wildlings) (Figure 20). These results reflect the initial impacts of treatment. Longer term changes in plant community composition and structure are expected and may involve an increase in introduced plant species dominance over time.

While the full impact of the Grab was not measured in this trial, its use at the one site where it was opportunistically tested demonstrated that it could be used in a way that created limited localised impacts around each wildling (Figure 18). This suggests that this technique may be a suitable control method in sensitive areas.

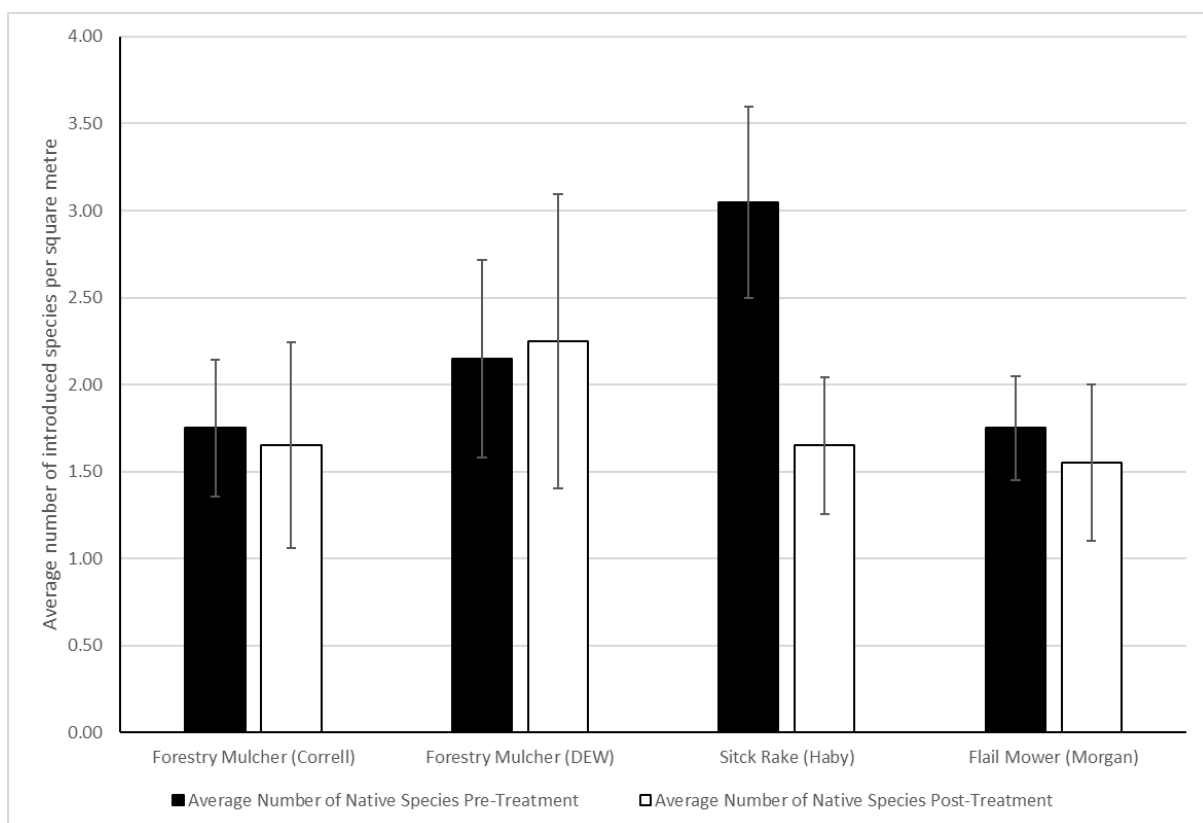


Figure 12. The immediate effect of machine treatment on native plant species richness at MacGill North.

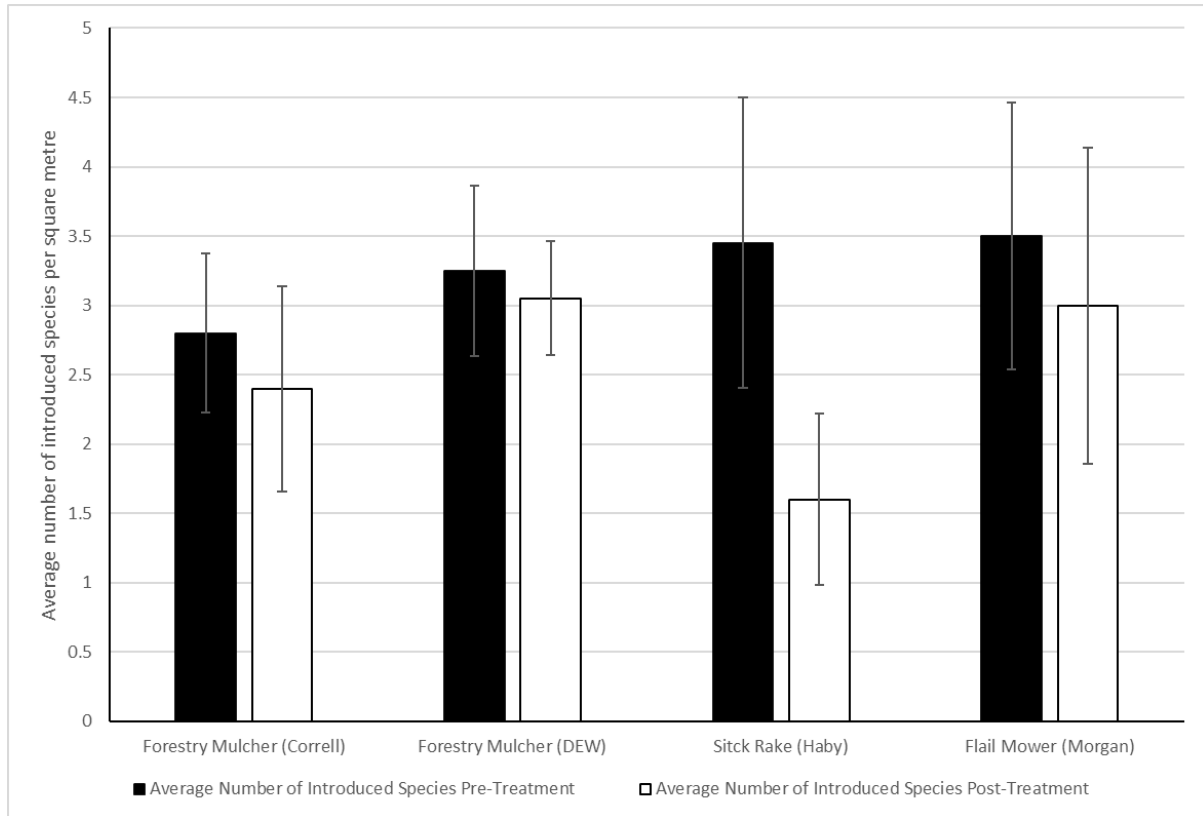


Figure 13. The immediate effect of machine treatment on introduced plant species richness at MacGill North.

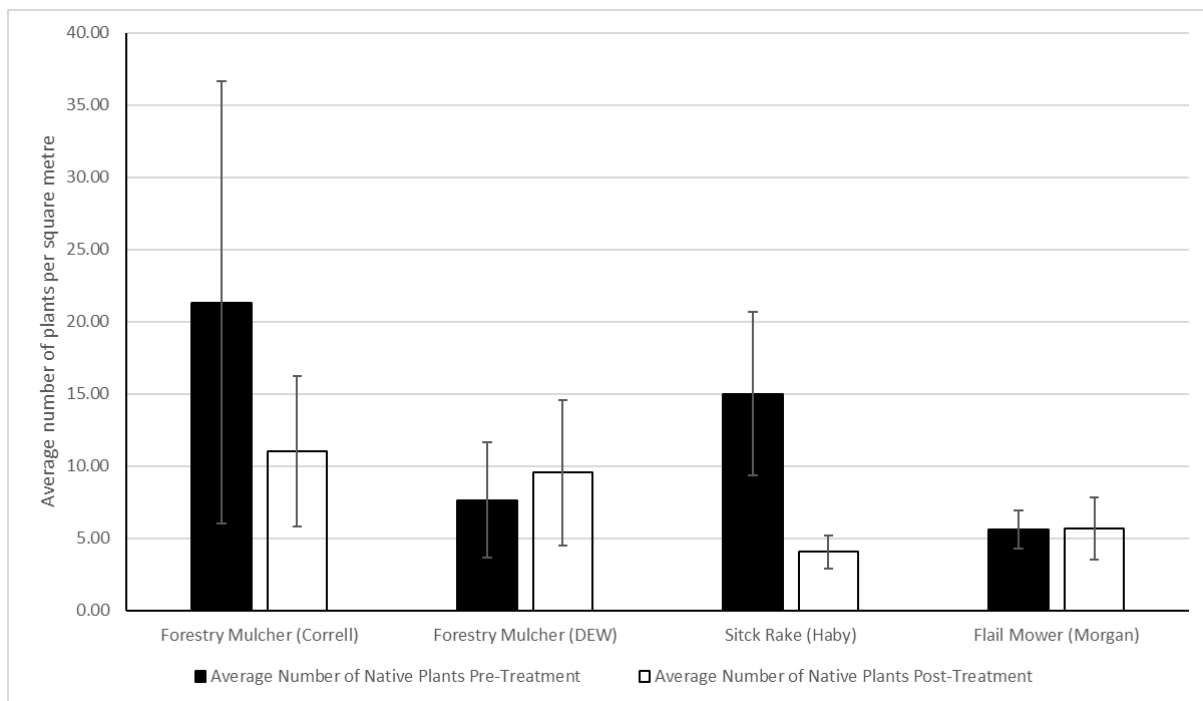


Figure 14. The immediate effect of machine treatment on native plant abundance at MacGill North.

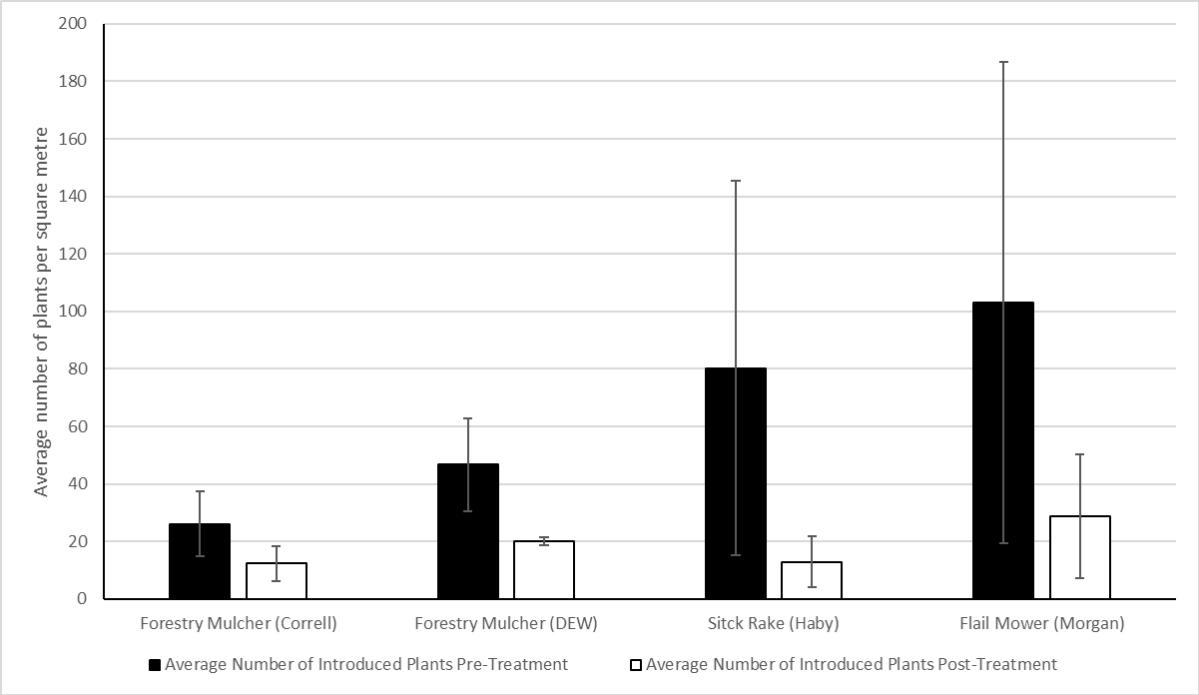


Figure 15. The immediate effect of machine treatment on introduced plant abundance at MacGill North.



Figure 16. The impact of mechanical treatment using a Stick Rake at site H17, October 2025.



Figure 17. The impact of mechanical treatment using a Foresty Mulcher (Correll) at site H4, October 2025.



Figure 18. Localised disturbance created by removing a wildling with the Grab at site H31c, October 2025.

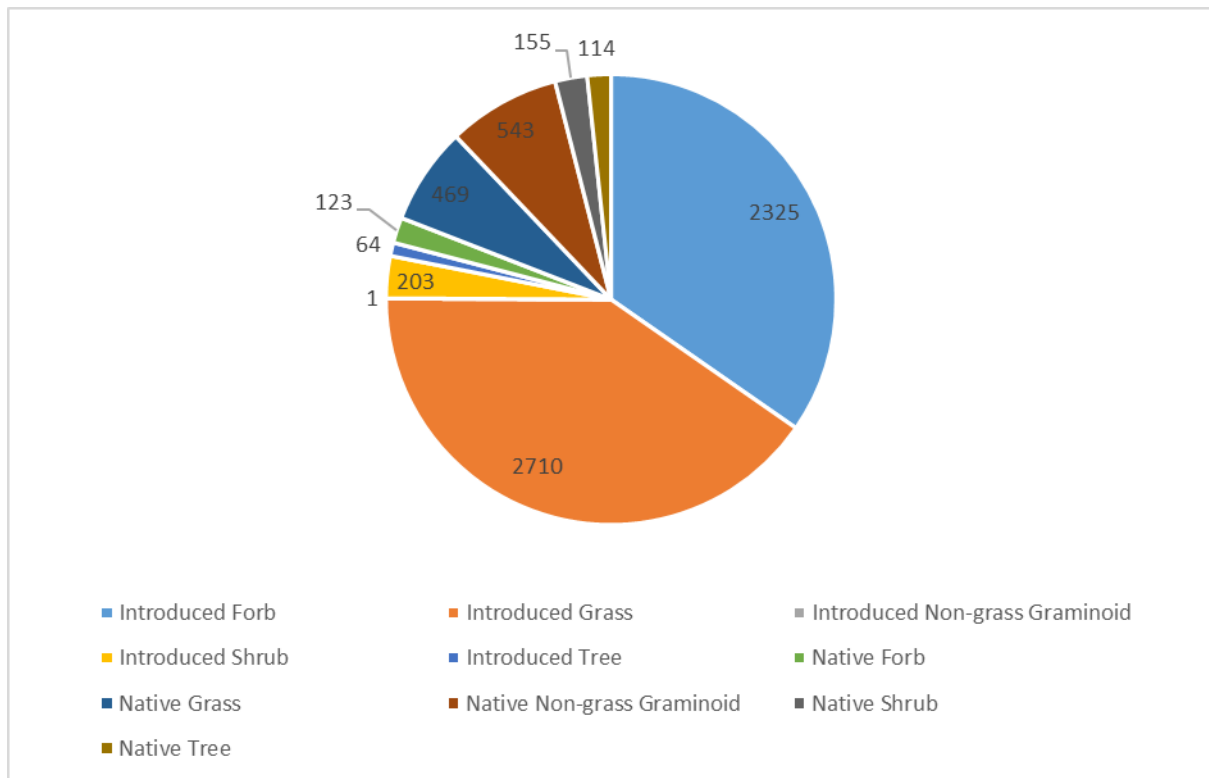


Figure 19. The number of plants of each native and introduced plant lifeform recorded across all sites prior to mechanical treatment.

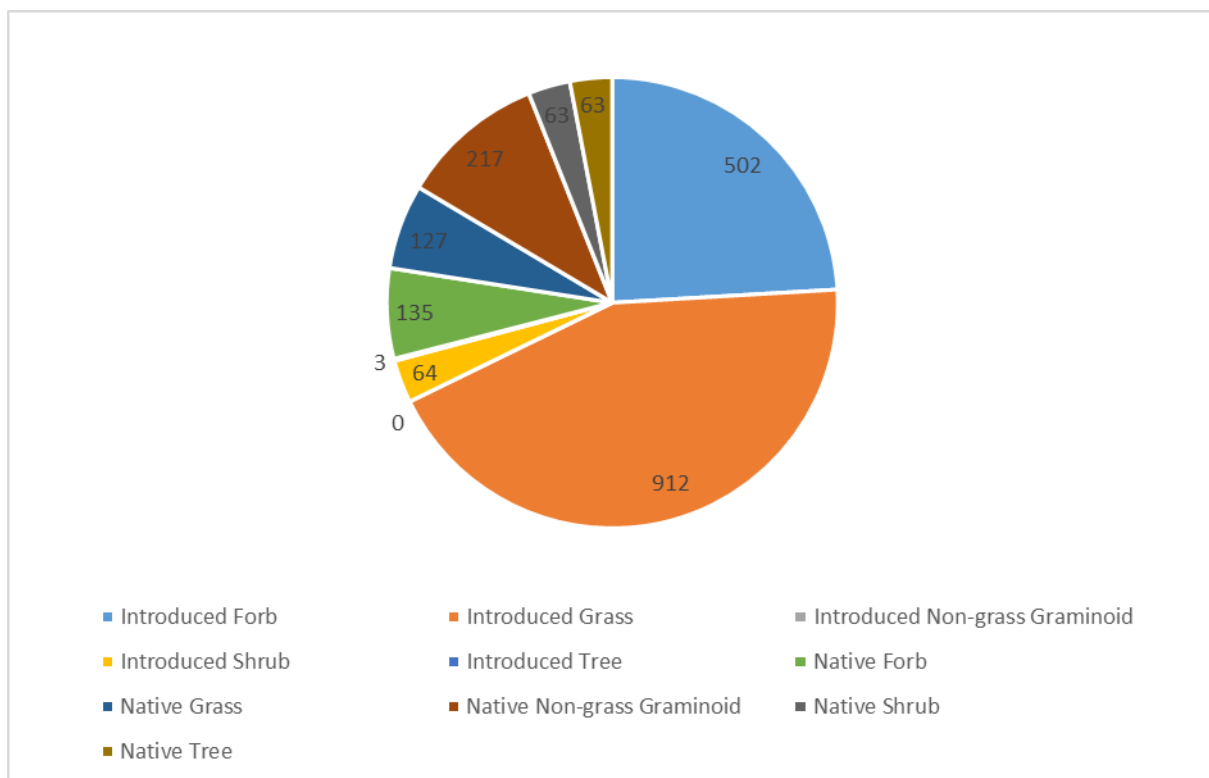


Figure 20. The number of plants of each native and introduced plant lifeform recorded across all sites immediately after mechanical treatment.

Chemical

The impact of chemical treatments on plant communities is yet to be surveyed. Impact are not expected to evident until the treated wildlings have died (6 to 12 months post treatment).

4. Conclusions

The findings of this trial in relation to the efficiency, effectiveness and impact of each of the methods tested are summarised in Table 9. Three methods stood out as being particularly suitable for incorporation into Stage 2 of the KI *E. globulus* wildling eradication strategy:

- Mechanical treatment using a high powered Forestry Mulcher
- Hand cut and swab with the herbicide Glyphosate
- Direct injection with the herbicide Method

If applied under the right circumstances, all three treatments have the potential to deliver cost-efficient and effective wildling control without generating significant adverse environmental impacts.

Table 9. Summary of trial findings for each treatment method and their suitability for application under Stage 2 of the KI *E. globulus* wildling eradication strategy.

Treatment Method	Strengths	Weaknesses	Suitability for Stage 2
Forestry Mulcher (Correll)	The quickest and most cost-efficient of the machine treatments. Relatively low impact on the native plant community relative to the Stick Rake treatment. Powerful enough to push large fallen timber out of the way. Mulching reduces obstacles to staff undertaking follow-up spraying of resprouts.	Some impact on native plant communities. Spinning mulcher is vulnerable to loose wire from old fencing. Secondary treatment is required to kill resprouting wildlings. Unable to work in wet weather due to reduced visibility.	High
Forestry Mulcher (DEW)	Effective at treating small wildlings (<100 mm DBH). Low impact on native vegetation communities relative to other machines. Mulching reduces obstacles to staff undertaking follow-up spraying of resprouts.	The slower of the two Forestry Mulchers tested in this trial. Not able to push large fallen timber out of the way. Spinning mulcher is vulnerable to loose wire from old fencing. Some impact on native plant communities. Secondary treatment is required to kill resprouting wildlings.	Low
Stick Rake (Haby)	Effective at pushing and pulling wildlings completely out of the ground. Powerful enough to push large fallen timber out of the way.	The most expensive mechanical treatment option. The highest impact on native plant communities of the machine treatments.	Low

	Anecdotal evidence suggests that there is a lower wildling survival rate following treatment reducing the need for follow-up control of resprouters.	Secondary treatment is required to kill resprouting wildlings, although likely to less needed than for other machines. Debris on the soil surface creates a significant obstacle to staff undertaking follow-up spraying of resprouts.	
Flail Mower (Morgan)	Effective at treating wildlings (particularly smaller wildlings up to 100 mm DBH). Relatively low impact on the native plant community relative to the Stick Rake treatment. Able to reach to treat wildlings reducing ecological impacts. Low travel cost from one site to another.	Not as cost-efficient as the Forestry Mulcher (Correll). Some impact on native plant communities. Not able to push large fallen timber out of the way. Spinning mulcher is vulnerable to loose wire from old fencing. Secondary treatment is required to kill resprouting wildlings. Debris and high cut stumps create an obstacle to staff undertaking follow-up spraying of resprouts.	Medium
Grab (Haby)	Able to pull plants out of the ground with minimal impacts on surrounding vegetation.	Likely to be a relatively costly option (similar to the Stick Rake)	Medium (may be suitable in select circumstances)
Hand cut and swab (KILB)	A tried and tested method of controlling wildlings. Low impact on native vegetation communities.	Is best undertaken by a team of two people (increasing cost relative to other hand control methods). Safety issues related to the use of a chainsaw.	High
Direct injection – Di-bak capsule (KILB)	Initial observations indicate that this method is effective in causing canopy dieback in wildlings. Drill holes are plugged reducing the risk of chemical spillage.	The slowest and least cost-efficient of the direct injection methods. Di-bak treatments must be made into the base of wildlings, making the task more difficult for field staff.	Low

		The effectiveness of this technique in killing wildlings is to be fully assessed. Off target impacts resulting from this method are yet to be fully assessed.	
Direct injection – Drill and fill (Glyphosate) (KILB)	Initial observations indicate that this method is effective in causing canopy dieback in wildlings.	Slower and less cost-efficient than cutting and spraying and direct injection of Method. Drill and fill treatments must be into the base of wildlings, making the task more difficult for field staff. The effectiveness of this technique in killing wildlings is to be fully assessed. Off target impacts resulting from this method are yet to be fully assessed.	Low
Direct injection – Drill and fill (Method) (KILB)	Initial observations indicate that this method is effective in causing canopy dieback in wildlings. The fastest and most cost-efficient direct injection method trialled. This method was also more cost-efficient than cutting and spraying. Treatment is administered at chest height rather than at the base of each wildling.	The effectiveness of this technique in killing wildlings is to be fully assessed. Off target impacts resulting from this method are yet to be fully assessed.	High

5. Implications for Stage 2 of the KI *E. globulus* wildling eradication strategy

The results of this trial to date provide useful insight into the direction future control programs could take to achieve *E. globulus* wildling eradication on KI.

E. globulus wildling infestations are currently predicted to occur along 1,402 km of the interface between *E. globulus* plantations and remnant vegetation in western and central KI. The pattern of distribution of wildlings observed at MacGill North suggests that this interface is likely to support 748 km (or 1,204 ha) of low density wildling infestation and 319 km (or 565 ha) of high density infestation (Table 10). The number of wildlings within these infestations is estimated to be 3.68 million (Table 10).

The lessons learned from this trial and earlier wildling control works indicate that an eight step process is likely to be effective in achieving eradication (Table 11). These steps incorporate the three methods found in this trial to be suitable for future eradication programs. They also incorporate repeated treatments to ensure that wildling control activities are 100% effective. It should be noted that effective delivery of any wildling eradication strategy is dependent on the clearance of the existing plantations by the landholder (Step 1 of Table 11). This eight step process should be further adapted and improved as more results of the Macgill North trial are collated over time and more lessons are learned from the delivery of control methods over a larger area.

A costing model based on delivering this eight step process over a period of five years estimates that the total cost of wildling eradication will be approximately \$10.4 million (Table 12). This figure includes both the direct costs of treatment and the indirect costs of project management, approvals and administration.

Table 10. Predicted *E. globulus* wildling distribution patterns on KI based on the results of the MacGill North Trial.

Wildling Distribution Pattern	Length/Area/Number of wildlings	Notes
Interface likely to be supporting wildling infestations and requiring treatment	1,067 km	Figures are based on an average of 76.1% of interface requiring treatment and 23.9% not requiring treatment. This was calculated from a desktop analysis of five plantation properties (including MacGill North). Areas deemed to not require treatment included those bordering roadside reserves (as these have already been treated), those bordering neighbouring plantations (as these will be cleared) and those bordering cleared paddocks (as these are expected to be controlled as part of farming activities).
Interface not likely to be supporting wildling infestations and not requiring treatment.	335 km	
Total	1,402 km	
Interface likely to support high density wildling infestations	319 km	Calculated from field observations at MacGill North. 29.9% of the interface is expected to support high wildling density and 70.1% low wildling density. The average width of the infestation at high density sites is expected to be 17.7 m and the average density of wildlings at high density sites is expected to be 6250 wildlings/ha. The average width of the infestation at low density sites is expected to be 13.7 m and the average density of wildlings at low density sites is expected to be 75 wildlings/ha.
	565 ha	
	3,531,049 wildlings	
Interface likely to support low density wildling infestations	748 km	
	1,204 ha	
	76,804 wildlings	
Total	1,067 km	
	1,769 ha	
	3,680,853 wildlings	

Table 11. An eight step process to achieve eradication of *E. globulus* wildlings on KI.

Step	Activity	Additional Notes
1	Clear existing plantations and wildlings in pasture.	This is the responsibility of the landholder and is a critical step. Works to control wildlings in areas in close proximity to existing plantations are unlikely to be feasible or effective until the existing plantation is cleared.
2	Initial treatment of low density sites.	Treatment by either hand cutting and spraying (with Glyphosate) or directly injecting wildlings with the herbicide Method. The MacGill North trial results indicate that the direct injection method may be significantly cheaper than hand cutting and spraying.
3	Map high density sites.	Identification of the location and extent of high density sites will preferably be undertaken as part of the treatment of low density sites under Step 2. Detailed mapping will be preferably undertaken as part of Step 4.
4	Develop management plan and seek regulatory approval to machine treat high density sites.	This action is expected to involve pre-treatment ecological surveys, the development of a management plan and post-treatment ecological assessments. Approval to be sought under the South Australian <i>Native Vegetation Act</i> 1991 and Commonwealth <i>Environment Protection and Biodiversity Conservation Act</i> 1999.
5	Initial treatment of high density sites.	Preferred machine is a high powered track loader with a Forestry Mulcher head. Preferred hand control method immediately following mechanical treatment is either hand cutting and spraying (with Glyphosate) or directly injecting wildlings with the herbicide Method.
6	Follow-up treatment of low density sites	Additional hand control treatments required 12 and 24 months post initial treatment. Both of these treatments are expected to take 80% of the time of the initial treatment. Preferred hand control method is either hand cutting and spraying (with Glyphosate) or directly injecting wildlings with the herbicide Method.
7	Follow-up treatment of high density sites.	Follow-up treatment will be required at high density sites 6 to 12 months and 24 months following the initial treatment. Both follow-up treatments will involve spraying machine cut wildling resprouts (with a Glyphosate and Metsulfuron Methyl mix) and hand controlling uncut wildlings by either hand cutting and spraying (with Glyphosate) or directly injecting wildlings with the herbicide Method. The effort required to undertake the final treatment at 24 months is expected to be half that of the treatment at 6 to 12 months.
8	Final search and treatment	A final search of habitat likely to support wildling infestations will be needed to confirm eradication. This step is also likely to involve responding to new wildling sightings outside of the previous search area. This includes riparian areas away from the plantation edge where wildlings have established as a result of seed being transported by water. Treatments under this step are likely to include foliage spraying of

previously cut wildling resprouts and controlling uncut wildlings by either hand cutting and spraying (with Glyphosate) or directly injecting wildlings with the herbicide Method.

Table 12. Costing model for the implementation of the eight step wildling eradication process.

Step	Activity	Specific Activity	Cost	Explanatory Notes
1	Clear existing plantations	Complete clearance of plantations.	-	Cost of clearance is the landholder's responsibility.
2	Treat low density sites	Hand control via cutting and spraying or direct injection of herbicide.	\$1,277,444	Figure is based wages for casual KILB staff. It includes oncosts including superannuation and vehicle expenses and assumes staff are working in a team of four. An estimated 748 km of interface to be treated taking 15,115 person hours at a cost of \$1,709/km.
3	Map high density sites	Mapping of the perimeter of high density wildling infestations in the field and development of maps.	-	Cost included in steps 1 and 3.
4	Seek and obtain regulatory approval to machine clear high density sites	Development of management plan. Facilitation of approval of the plan under the NV Act 1991 and the EPBC Act 1999. Completion of pre and post treatment ecological monitoring.	\$500,000	Cost includes wages to support the delivery of planning, approval and monitoring actions.
5	Treat high density sites	Mechanical treatment by Forestry Mulcher mounted on a track loader, immediately followed by hand control via cutting and spraying or direct injection of herbicide.	\$1,064,492	Figure is based on an hourly rate for machine works of \$220/hr. It includes cost of machine works within high density sites, the cost of travel between high density sites and the cost of floating the machine between plantations. It also includes the costs of casual KILB staff undertaking hand control work (wages, oncosts and vehicle costs for a team of four). An estimated 319 km of interface to be treated, involving 2,683 machine hours and 5,150 person hours.
6	Follow-up treatment of	Hand control via cutting and spraying or direct injection of herbicide 12 and 24 months post initial treatment	\$2,043,910	Figure is based wages for casual KILB staff. It includes oncosts including superannuation and vehicle expenses and assumes staff are working in a team of four. Each treatment to involve an estimated 748 km of interface and 7,558 person hours at a cost of \$854/km.

	low density sites			
7	Follow-up treatment of high density sites	Foliar spraying of resprouters as well as hand control via cutting and spraying or direct injection of herbicide 6 to 12 month and 24 months post initial treatment.	\$652,904	Figure is based on wages for casual KILB staff. It includes oncosts including superannuation and vehicle expenses and assumes staff are working in a team of four. The first follow-up treatment is expected to involve an estimated 319 km of interface and 5,150 person hours at a cost of \$1,364/km. The second follow-up treatment is expected to involve an estimated 319 km of interface and 2,575 person hours at a cost of \$681/km.
8	Final search and treatment	Search of treated areas to ensure eradication is complete and response to new wildling sightings.	\$150,000	
	Other Direct and Indirect Costs	Chemical and equipment costs for steps 2, 5, 6, 7 and 8,	\$200,000	Includes herbicides costs and equipment for hand control techniques.
		Reduced field crew and machine time.	\$499,367	Includes time lost to weather, and time needed for training and meetings (estimated as 10% of allocated field time).
		Project Management.	\$750,000	Project manager employed for 5 years (estimated \$150,000 per annum).
		KILB office and project supervision.	\$1,098,734	Includes costs associated with supervising and maintaining the project over 5 years (calculated as a 20% oncost).
		Unexpected additional expenses.	\$1,630,370	Contingency for unexpected events or findings (calculated at 20%).
		Inflation costs.	\$596,275	Calculated at 3% assuming that spending is evenly spread over 5 years.
	Total		\$10,440,495	

References

Kangaroo Island Landscape Board (2025) 'Management plan – Delivery of Stage 1 of the Kangaroo Island *Eucalyptus globulus* wildling eradication strategy.' (South Australian Government)

Appendix 1 – Sites treated by Skid Steer with Forestry Mulcher (Correll)

i)



ii)



Figure A1. Site H4: i) before and ii) after treatment.

i)



ii)



Figure A2. Site H6: i) before and ii) after treatment.

i)



ii)



Figure A3. Site H35: i) before and ii) after treatment.

i)



ii)



Figure A4. Site H31a: i) before and ii) after treatment.

Appendix 2 – Sites treated by Skid Steer with Forestry Mulcher (DEW)

i)



ii)



Figure A5. Site H1a: i) before and ii) after treatment.

i)



ii)



Figure A6. Site H2: i) before and ii) after treatment.

i)



ii)



Figure A7. Site H5: i) before and ii) after treatment.

i)



ii)



Figure A8. Site H7a: i) before and ii) after treatment.

Appendix 3 – Sites treated by Excavator with Stick Rake (Haby)

i)



ii)



Figure A9. Site H17: i) before and ii) after treatment.

i)



ii)



Figure A10. Site H21: i) before and ii) after treatment.

i)



ii)



Figure A11. Site H25b: i) before and ii) after treatment.

i)



ii)



Figure A12. Site H31b: i) before and ii) after treatment.

Appendix 4 – Sites treated by Excavator with Flail Mower (Morgan)

i)



ii)



Figure A13. Site H9: i) before and ii) after treatment.

i)



ii)



Figure A14. Site H11a: i) before and ii) after treatment.

i)



ii)



Figure A15. Site H28b: i) before and ii) after treatment.

i)



ii)



Figure A16. Site H32: i) before and ii) after treatment.