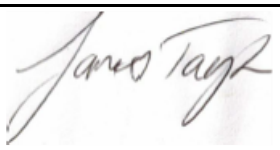
Warrambeen Offset Management
1372 Rokewood Shelford Rd
Shelford 3329

ph. (03) 52813250
e. offsets@warrambeen.com

Landowner of offset site	Ian, Trish and James Taylor
Location and address of offset site	"860 Paddock" Warrambeen Pty Ltd, Rokewood – Shelford Rd, Shelford.
Interested Party	**Dacland Stage 1 – Year 4** **Dacland Stage 2 – Year 3** **Dacland Stage 3 – Year 2**
Responsible Authority	Golden Plains Shire, DoE and DELWP
Type of Offset Size of Offset	Vegetation 6.58 Ha
Signature	
Date	March 10, 2020

Information to be included:

- A copy of the Management Action Table from the OMP with information on which actions have been completed for the year/s of this reporting period;
- A description of the specific monitoring results from surveys undertaken for vegetation/flora species;
- Fencing work;
- Success of weed and pest animal control work;
- Successful management tools (i.e. techniques used to control weed species, protection of new plants, monitoring technique, etc.);
- Any problems or issues experienced (i.e. new infestation of weed species, storm damage to fencing, etc.)
- Include any corrective actions and contingency measures where monitoring indicates that there has been a degradation in the native vegetation and Golden Sun Moth population and habitat; and,
- Provide any photographs showing evidence of works.

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Summary of Independent Monitoring Report

(Excerpt from Nature Advisory Report No 11212, February 2020)

"The habitat scores for the current assessment – 67 for Stage 2 and 52 for Stage 3 – were notably higher than for the February assessment – 48 for both stages. Despite an observed increase in the overall diversity of indigenous species (due to the different timing of the assessments), this contrast is mostly attributed to a difference in the landscape context score, which was found to be underestimated for the previous assessment.."

"Targeted surveys for threatened species were not included in this monitoring plan. Nonetheless, two state-listed threatened flora species have been incidentally encountered and recorded during offset site monitoring. One Small Milkwort was recorded in Stage 1 in February 2019 and numerous Small Scurf-pea have been recorded throughout the offset site since 2017, forming large matts in association with rock outcropping. Small Milkwort is listed as threatened under the FFG Act and as vulnerable on the DELWP Advisory list, while Small Scurf-pea is listed as threatened under the FFG Act and as endangered on the DELWP Advisory list.

One federally-listed flora species, listed as critically endangered under the EPBC Act, has been recorded during the offset site monitoring; Spiny Rice-flower. Two plants were identified (and their locations recorded with a GPS) within Stage 1 during February 2019."

See Appendix 1 for threatened flora species figure.

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Monitoring results for vegetation/flora species

(Excerpt from Nature Advisory Report No 11212, February 2020)

"Evidence on site, including floristic composition and soil characteristics, suggested that Heavier-soils Plains Grassland Heavier Soils (EVC 132_61) was present within the study area"

Offset Zone	Bioregion	EVC	Description
Stage 1	VVP	*Heavier-soils* Plains Grassland (EVC 132_61) NTGVVP	A continuous portion of a larger, high-quality native grassland that was dominated by a number of indigenous grasses and herbs. Tussock grasses, Wallaby grasses, Kangaroo grass and Spear grass species were co-dominant across the area, with native herbs such as Scaly Buttons, Blue Devil, and Poison Lobelia common and widespread throughout the entire site. Two small shrubs of Spiny Rice-flower, was also found onsite. Recruitment was very low, with moderately high leaf litter presence. The area was gently undulating, with a number of basalt rocky rises. Introduced species were present, with Wild Oat, and Soft Brome providing the highest cover.
Stage 2	VVP	*Heavier-soils* Plains Grassland (EVC 132_61) NTGVVP	The site description and species composition were much the same as Stage 1, though, Spiny Rice-flower was not noted. Higher weed cover and high leaf litter was present at this site.

Offset Zone	Bioregion	EVC	Description
Stage 3	VVP	*Heavier-soils* Plains Grassland (EVC 132_61) NTGVVP	A continuous portion of a larger, high-quality native grassland that was dominated by indigenous grasses. Tussock grasses, wallaby grasses, Kangaroo Grass and spear grasses were co-dominant across the area, with native herbs such as Scaly Buttons, Blue Devil and Lemon Beauty Heads common across the site. Recruitment opportunities were relatively low, with high leaf litter presence. The area was gently undulating with a number of basalt rocky rises. Introduced species were more abundant here than the other stages, with Oat, Soft Brome, Spear Thistle and Quaking Grass providing the highest levels of cover.

*(Table from Nature Advisory Report No 11212, February 2020)

"The habitat scores for the current assessment – 67 for Stage 2 and 52 for Stage 3 – were notably higher than for the February assessment – 48 for both stages. Despite an observed increase in the overall diversity of indigenous species (due to the different timing of the assessments), this contrast is mostly attributed to a difference in the landscape context score, which was found to be underestimated for the previous assessment……..

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Offset Zone	EVC	Area (ha)	Habitat Score (out of 100)
Stage 2	*Heavier-soils* Plains Grassland (EVC 132_61)	11.6	67
Stage 3	*Heavier-soils* Plains Grassland (EVC 132_61)	13.5	52

*(Table from Nature Advisory Report No 11212, February 2020)

The majority of weeds consisted of annual grasses, and the overall quality of the native grassland at the offset site is still considered to be of high quality. The variation in weed cover could also be due to seasonal variation as the last survey was undertaken in late summer (February 2019) and this survey was in Spring (November 2019)."

See below for the pest plant species recorded on-site at the time of the survey.

Common Name	Scientific name	Weed Category	Control under offset plan - Ensure cover does not increase beyond current level	Stage 1 (YR 1) - 2016	Stage 1 (YR 2) & Stage 2 (YR 1) - 2017	Stage 1 (YR 3), Stage 2 (YR 2) & Stage 3 (YR 1) - Feb 2019	Stage 2 (YR 3) - Nov 2019	Stage 3 (YR 2) - Nov 2019
Barley Grass	*Hordeum vulgare*	Low-threat	X	-	<1%	<1%	-	-
Briar Rose	*Rosa rubiginosa*	High-threat woody	X	-	-	1%	<1%	-
Brown-Top Bent	*Agrostis capillaris*	Low-threat	X	-	-	<1%	-	-
Buck's-horn Plantain	*Plantago coronopus*	Low-threat	X	<1%	<1%	<1%	<1%	-
Capeweed	*Arctotheca calendula*	Low-threat	X	<1%	<1%	<1%	<1%	<1%
Clover	*Trifolium* spp.	Low-threat	X	15%	2%	2%	2%	2%
Flatweed	*Hypochaeris radicata*	Low-threat	X	1%	1%	1%	1%	1%
Hair Grass	*Aira* sp.	Low-threat	X	1%	<1%	<1%	<1%	<1%
Large Quaking-grass	*Briza maxima*	High-threat	X	-	<1%	1%	**3%**	**3%**
Lesser Hawkbit	*Leontodon saxatilis*	Low-threat	X	-	-	<1%	-	-
Narrow-leaved Clover	*Trifolium angustifolium* var. *angustifolium*	Low-threat	X	<1%	<1%	<1%	<1%	<1%
Oat	*Avena* spp.	High-threat	X	4%	20%	10%	**12%**	**15%**
Onion Grass	*Romulea rosea*	High-threat	X	-	<1%	<1%	**2%**	**2%**
Prickly Lettuce	*Lactuca serriola*	Low-threat	X	-	-	<1%	-	-
Rough Dog's-tail	*Cynosurus echinatus*	Low-threat	X	<1%	<1%	<1%	<1%	<1%
Rough Sow-thistle	*Sonchus asper s.l.*	Low-threat	X	<1%	<1%	<1%	<1%	-
Saffron Thistle	*Carthamus lanatus*	Low-threat	X	<1%	<1%	<1%	<1%	<1%
Serrated Tussock	*Nassella trichotoma*	High-threat weed	X	-	-	-	**<1%**	**<1%**
Soft Brome	*Bromus hordeaceus*	High-threat weed	X	3%	<1%	<1%	**3%**	**4%**

Common Name	Scientific name	Weed Category	Control under offset plan - Ensure cover does not increase beyond current level	Stage 1 (YR 1) - 2016	Stage 1 (YR 2) & Stage 2 (YR 1) - 2017	Stage 1 (YR 3), Stage 2 (YR 2) & Stage 3 (YR 1) - Feb 2019	Stage 2 (YR 3) - Nov 2019	Stage 3 (YR 2) - Nov 2019
Spear Thistle	*Cirsium vulgare*	High-threat weed	X	<1%	<1%	1%	**3%**	**3%**
Squirrel-tail Fescue	*Vulpia bromoides*	High-threat weed	X	<1%	5%	5%	**6%**	**7%**
Sweet Vernal Grass	*Anthoxanthum odoratum*	Low-threat	X	-	<1%	<1%	-	-
Toowoomba Canary-grass	*Phalaris aquatica*	High-threat	X	-	<1%	<1%	**2%**	**1%**
Wimmera Rye-grass	*Lolium rigidum*	High-threat weed	X	1%	1%	1%	**2%**	**1%**
Wood-sorrel	*Oxalis* sp.	Low-threat	X	<1%	<1%	<1%	-	-
Yorkshire Fog	*Holcus lanatus*	High-threat	X	1%	5%	5%	5%	3%

*(Table from Nature Advisory Report No 11212, February 2020)

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Successful management tools

(i.e. techniques used to control weed species, protection of new plants, monitoring technique, etc.)

Targeted weed control has proven effective within this offset at reducing the overall weed coverage.

We note that several weed species have increased more than acceptable levels, we will graze the site more intensely next Spring. It should be noted that the only way to control wild oats is grazing late spring, the same time the seed set is occurring for the native species.

Photos

Photographs on USB stick are available on request.

Fencing work

- Fencing undergoes regular checks and maintenance as per the Farm program, all are in good condition and stock proof.

Weed and pest animal control work

(Excerpt from Nature Advisory Report No 11212, February 2020)

Biomass Control:

Biomass reduction efforts during 2019 had minimal effect on biomass reduction; this was largely due to "High winter rainfall was experienced in 2019 which facilitated substantial growth of pasture grasses and increased biomass at the site. Even so, the current grazing regime is not having an adequate impact on biomass, and a different grazing regime should be trialled in 2020."

Stock Movements

Assessment of the site found that the current grazing pressure at the time of the survey was low, and had minimal effect on biomass reduction.

Sheep in	No.	Sheep Out
16th May 2019	2079 ewes	20th May 2019
7th June 2019	1924 ewea	14th June 2019
1st July 2019	185 ewea	10th September 2019

"This grazing regime may be adapted based on knowledge obtained through ongoing monitoring of the site and the effectiveness of management actions. For example, if it appears grazing is having a minimal effect on biomass then more sheep should be added."*

***(Excerpt from Nature Advisory Report No 11212, February 2020)**

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Weed Cover / Control:

Phil Spark and four staff, were engaged to grid spray paddock

- Fluroproponate, Round Up, Amine, Galon and colour dye.
- Low numbers of serrated tussock were found.
- Thistles were manually chipped, and this will be continued in an effort to reduce the seed bank and incidence of the weed..
- Over 130 hours (by four workers) were spent targeting, Serrated Tussock, Bramble, Broadleaf and Thistle.
- The area impacted by Wild Oats has been and will continue to be isolated and heavily grazed to bare ground.
- Chemical Invoice attached see Appendix 3.
- Photos of Weed Control see Appendix 4.

Fox and Rabbit Control:

- An ongoing shooting programme, maintained every second month with registered shooters.
- No warrens have been located so no fumigation or ripping has been conducted.
- Rabbit observed on the property but not in the offset site.

Management Plan 2020

The current vegetation assessment by Nature Advisory determined that the offset site has an overall high quality native grassland. Weed cover has reduced since year one for each stage, although it is slightly increased from Feb 2019 to Nov 2019 this can be attributed to seasonal variations in weed growth.

Given recommendations by Nature Advisory grazing will be increased to continue to reduce biomass and weed levels within the offset. Maximum grazing within the confines of the OMP will be employed throughout 2020 to help achieve biomass and weed control targets.

Longer periods of grazing will be employed to ensure biomass is reduced, continual monitoring of the effectiveness of this grazing regime will be adapted to ensure it is having maximum impact on the site.

Targeted spraying and manual chipping of weeds during our 3 pass weed control program has proven to be successful within this offset so this will continue. This will include targeting high threat weeds; such as Wild Oat and various thistle species, by strategic grazing in conjunction with the 3 pass weed control program; spot spraying and manual removal. This regime will continue to be monitored regularly by the landowner to assess its effectiveness. Weed control work will follow grazing periods as this is considered essential in effective weed management.

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Photographs –Taken October 30, 2019

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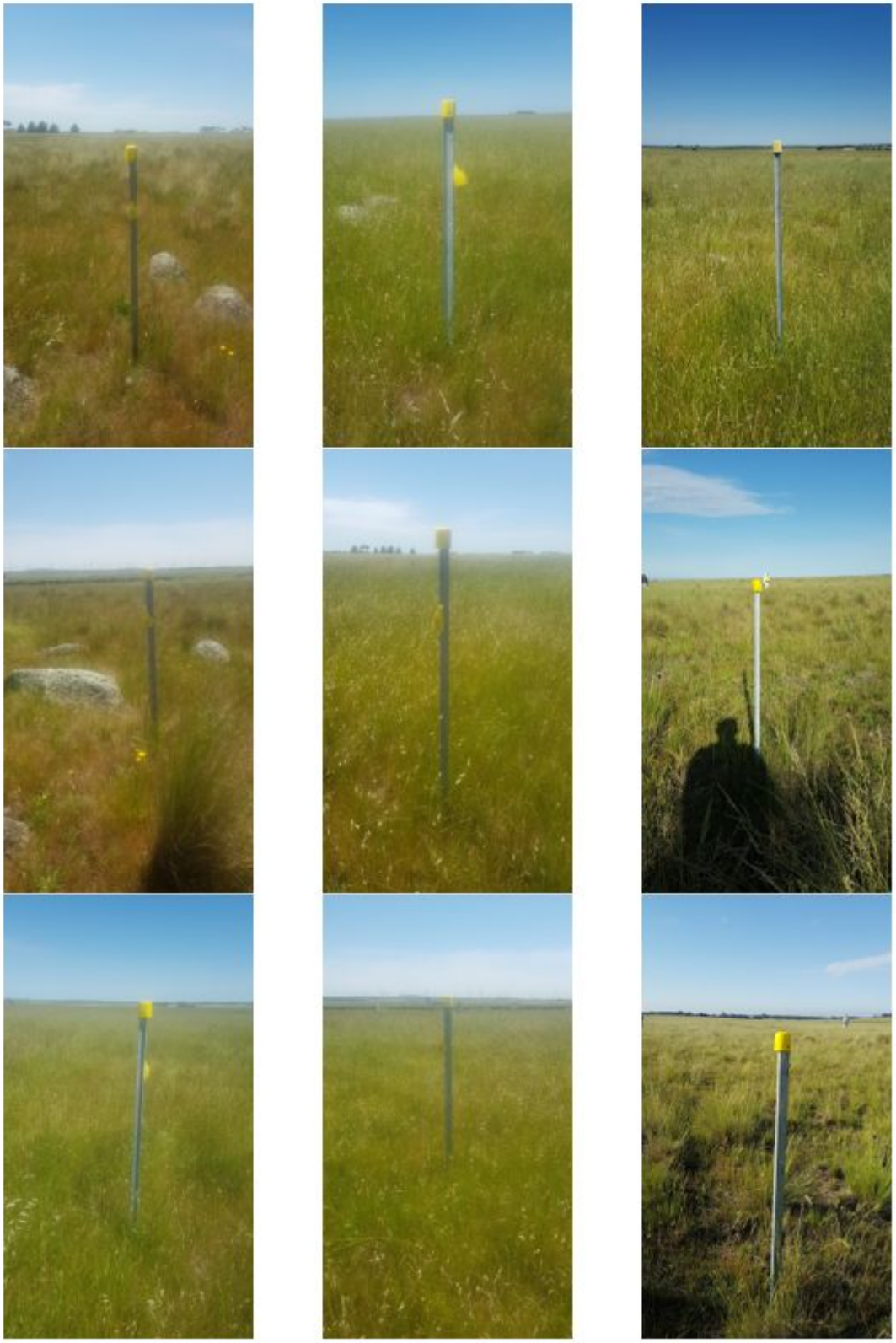

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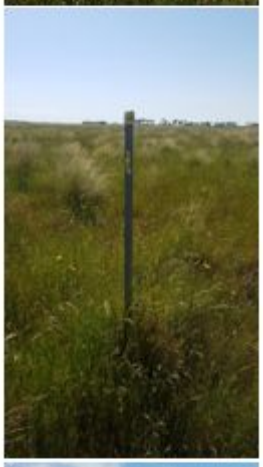


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Appendix 1:
Threatened species

Figure 1: Offset site
Project: Warrambeen Offset Site Client: Manzeene Avenue Development Project Trust Date: 17/02/2020

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Appendix 1: Management action tables

Years 2-3 actions

Management Action	Timing	Target to be achieved	Responsible person	Completed (Yes/No)	Month and Year Completed
Rabbit Control to be carried out if required – Fumigate and collapse burrows where present or shooting	All years as required	• <5% survival of target; • <2% death of non target species.	Warrambeen Gumley Land Trust	Yes	Every 2 Months
Weed control: • Treat *high threat* woody weeds as per Table 11; • Treat other weeds species if required.		• Cover of each *high threat* woody weed species reduced to <1%; • Cover of each weed species maintained at current level • *High threat* weed cover benchmark* not exceeded; • Overall weed cover benchmark* not exceeded.	Warrambeen Gumley Land Trust	Yes	October and November 2019
Monitoring: • Estimate overall weed cover and cover of each *high threat* [woody] weed species (refer to Table 11); • Take pictures at photo points • Assess integrity of offset zone fencing; • Assess level of grazing pressure: • Monitor compliance with land-use commitments and other management commitments. • Monitor quality of NTGVVP	Spring	Monitoring results to be documented and retained for reporting purposes. Results should also inform management approaches and techniques.	Ecologist	Yes	November 2019
Year 2: Fence maintenance to be carried out if required	Following monitoring	Integrity of fencing maintained to exclude entry of threatening herbivores	Warrambeen Gumley Land Trust	Yes	As per farm schedule
Biomass Control: • Sheep to be moved onto site in mid summer and removed before autumn rains, if appropriate • Possibly subdivision of the site through electrical fencing to apply crash grazing for short periods and ensure no species are taken out selectively by sheep • Small areas (< 4 ha) could be burned in consultation with the ecologist	Late Summer – Autumn/Early Winter	• No soil pitting cause by sheep. • Vegetation cover to remain >10cm high with no more than 30% bare ground.	Warrambeen Gumley Land Trust	Yes	Sheep grazing occurred during - May 2019 - June 2019 - July-Sept 2019
Report to be prepared documenting management actions undertaken and monitoring results. Report structure and content to be prescribed by DoE and the Responsible Authority.	Second year after start of management	Report delivered to the Responsible Authority and DoE no later than three months after the due date.	Warrambeen Gumley Land Trust / Ecologist	Yes	March 2020

* = The overall weed cover benchmark is an estimate of the overall weed cover at the commencement of the offset plan. This informs both contractors and auditors of the plan in ensuring that overall weed cover does not increase beyond that benchmark.

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Years 4-10 actions

Management Action	Target to be achieved	Responsible person	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Rabbit Control to be carried out if required – Fumigate and collapse burrows where present or shooting	• <5% survival of target; • <2% death of non target species.	Warrambeen Gumley Land Trust		X		X		X	
Weed control: • Treat *high threat* woody weeds as per Table 11; • Treat other weeds species if required.	• Cover of each *high threat* woody weed species reduced to <1%; • Cover of each weed species maintained at year 1 level • *High threat* weed cover benchmark* not exceeded; • Overall weed cover benchmark* not exceeded.	Warrambeen Gumley Land Trust	X	X	X	X	X	X	X
Monitoring: • Estimate overall weed cover and cover of each *high threat* woody weed species (refer to Table 11); • Take pictures at photo points; • Assess integrity of offset zone fencing; • Assess level of grazing pressure: • Monitor compliance with land-use commitments and other management commitments.	Monitoring results to be documented and retained for reporting purposes. Results should also inform management approaches and techniques.	Ecologist		X					X
Fence maintenance to be carried out if required	Integrity of fencing maintained to exclude entry of threatening herbivores	Warrambeen Gumley Land Trust	X		X		X		X
Biomass Control: • Sheep to be moved onto site in mid summer and removed before autumn rains • Possibly subdivision of the site through electrical fencing to apply crash grazing for short periods and ensure no species are taken out selectively by sheep • Small areas (< 4 ha) could be burned in consultation with the ecologist	• No soil pitting cause by sheep. • Vegetation cover to remain >10cm high with no more than 30% bare ground.	Warrambeen Gumley Land Trust	X	X	X	X	X	X	X
Report to be prepared documenting management actions undertaken and monitoring results. Report structure and content to be prescribed by DoE and the Responsible Authority.	Report delivered to the Responsible Authority and DoE no later than three months after the due date.	Warrambeen Gumley Land Trust/ Ecologist		X					X

* = The overall weed cover benchmark is an estimate of the overall weed cover at the commencement of the offset plan. This informs both contractors and auditors of the plan in ensuring that overall weed cover does not increase beyond that benchmark.

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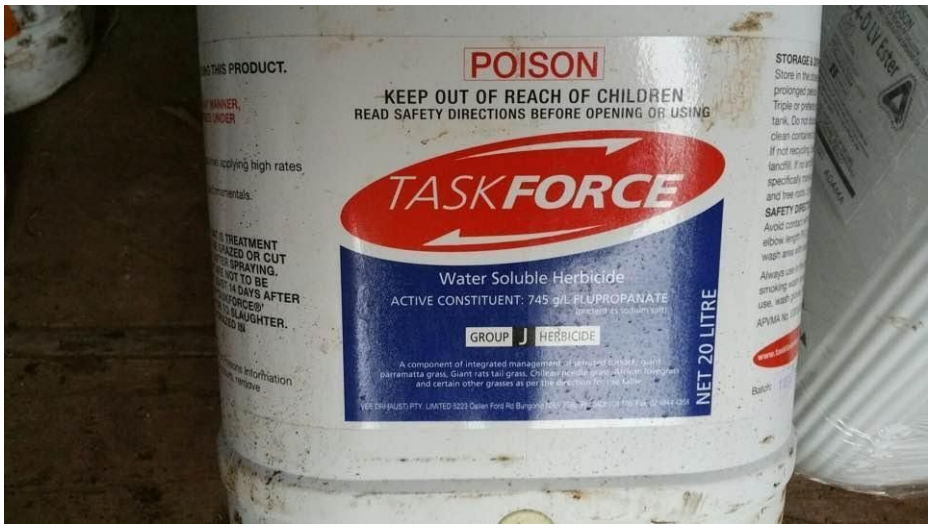
Appendix 3 – Chemical drum photos



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Appendix 4 - Weed Control Pictures

Spot spraying of weeds

Manual Chipping of weeds