



UCMPL Bobadeen Vegetation Offset Area Monitoring Report 2023

Ulan Coal Mines Pty Ltd

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Template 2.8.1

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Abbreviations

Abbreviation	Description
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BMP	Biodiversity Management Plan
CEEC	Critically Endangered Ecological Community
CTRSWP	Central Tablelands Regional Strategic Weed Management Plan
DNG	Derived Native Grassland
EEC	Endangered Ecological Community
EPBC Act	Commonwealth <i>Environmental Protection and Biodiversity Conservation Act 1999</i>
HBT	Hollow bearing tree
LLS	Local Land Services
LWD	Large woody debris
NGC	Native ground cover
NSW	New South Wales
OEH	Office of Environment and Heritage
PCT	Plant Community Type
UCMPL	Ulan Coal Mines Pty Ltd

Executive Summary

Eco Logical Australia (ELA) was engaged by Ulan Coal Mines Pty Ltd (UCMPL) to undertake monitoring of the Bobadeen Vegetation Offset Area (the Offset Area) during 2023. The Offset Area is located in part Lots 1, 3 and 4 in Deposited Plan (DP) 701346, part Lot 15 and 45 in DP 750735, part Lots 2, 54, 61 and 73 in DP 750736. It was established to satisfy commitments to secure biodiversity offsets relating to NSW Project Approval 08_0184 and *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approval EPBC 2009/5252. The Offset Area is to be managed to restore and protect the conservation values at the site and is approximately 1,370 ha in size.

A Conservation Agreement was established between NSW Department of Planning, Industry and Environment (DPIE) administering the NSW *National Parks and Wildlife Act 1974* (NPW Act) and UCMPL, under Part 4 Division 12 of the NPW Act. The Bobadeen Vegetation Offset Area Conservation Agreement (the Conservation Agreement), which includes the Bobadeen Offset Area and the Bobadeen East Offset Area, was signed on 5 May 2019. UCMPL received notification from the NSW Biodiversity Conservation Trust (BCT) that the Bobadeen Conservation Area Agreement was registered on title on 11 December 2019.

Outlined in the Conservation Agreement is a monitoring program (Annexure D) which must be undertaken for a minimum 10-year period, including full floristic assessments within fifteen (15) designated quadrats, establishment of photo monitoring points and a walk-through assessment to record opportunistic sightings of management issues and threatened species. This report provides the results of the fourth monitoring period since the sites establishment in 2017.

Quadrat monitoring, photo-point monitoring and a walkthrough assessment within the Offset Area in 2023 indicates that conservation values within the Offset Area remain intact, with no significant damage or disturbance recorded throughout the Offset Area.

Incremental changes were observed across all sites for most attributes, with fluctuations in results found to be within the expected range of natural variation. These fluctuations are likely to be linked to seasonal variation relating to above average rainfall received in the year prior to the 2023 monitoring period. This is particularly applicable to native species richness, ground cover grasses projected foliage cover (pfc), ground cover other pfc and exotic ground cover pfc. Native species richness and overstorey cover was largely consistent across all sites with some variation in results, however native ground cover grasses saw a substantial increase in pfc.

Monitoring during 2023 identified the priority weeds *Chrysanthemoides monilifera* (Boneseed) and *Hypericum perforatum* (St John's Wort) within the Offset Area. Weed management in accordance with site specific procedures is recommended.

Except for the weed infestation, the Offset Area remains ecologically stable. The condition of the vegetation and associated biodiversity values within the Offset Area remain largely consistent with monitoring undertaken in 2017 and with PCT descriptions provided in the Conservation Agreement.

1. Introduction

The Bobadeen Vegetation Offset Area (Offset Area) is located approximately 9 km north of the village of Ulan, located in the Mid-Western Regional Council Local Government Area in the Central Tablelands geographical region, NSW as shown in Figure 1 below.

The Offset Area is 1,369.8 ha in size and contains eight (8) plant community types (PCTs), which occur in both intact and derived native grassland (DNG) forms (Table 1 and Figure 2).

Table 1: PCTs within the Bobadeen Vegetation Offset Area

PCT Number	PCT Name	Condition	Area (ha)	EEC / CEEC
PCT 479	Narrow-leaved Ironbark – Black Cypress Pine – stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest in sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion	Intact	670.65	
		DNG	30.08	
PCT 481	Rough-barked Apple – Blakely's Red Gum – Narrow-leaved Stringybark +/- Grey Gum sandstone riparian grass fern open forest in the southern Brigalow Belt South Bioregion and Upper Hunter region	Intact	69.83	
		DNG	204.89	
PCT 478	Red Ironbark – Black Cypress Pine – stringybark +/- Narrow-leaved Wattle shrubby open forest on sandstone in the Gulgong – Mendooran region, southern Brigalow Belt South Bioregion	Intact	10.05	
PCT 281	Rough-barked Apple – red gum – Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South (BBS) Bioregion	Intact	0.1	Yes ¹
		DNG	8.25	
PCT 403	Dapper Mugga Ironbark – Western Grey Box – Blakely's Red Gum – Black Cypress Pine grass shrub hill woodland (southern BBS Bioregion)	Intact	1.7	
		DNG	19.97	
PCT 1310	White Box – Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, BBS Bioregion	Intact	73.8	Yes ¹
		DNG	230.21	
PCT 1675	Scribbly Gum – Narrow-leaved Ironbark – <i>Bossiaea rhombifolia</i> heathy open forest on sandstone ranges of the Sydney Basin	Intact	25.64	
PCT 1709	<i>Allocasuarina gymnanthera</i> heathy woodland on sandstone outcrops of the Sydney Basin	Intact	8.43	
-	Cleared land	-	16.2	
Total			1369.8	

¹ Listed as a Critically Endangered Ecological Community under the BC Act and the EPBC Act– *White Box Yellow Box Blakely's Red Gum Woodland*.

The Offset Area contains habitat for 30 vulnerable and three (3) endangered species listed under the Biodiversity Conservation Act 2016 (BC Act) and ten (10) species listed as either vulnerable, endangered or critically endangered under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). These species are listed in Table 2 Annexure B of the Bobadeen Vegetation Offset Area Agreement (Conservation Agreement) (UCMPL 2019).

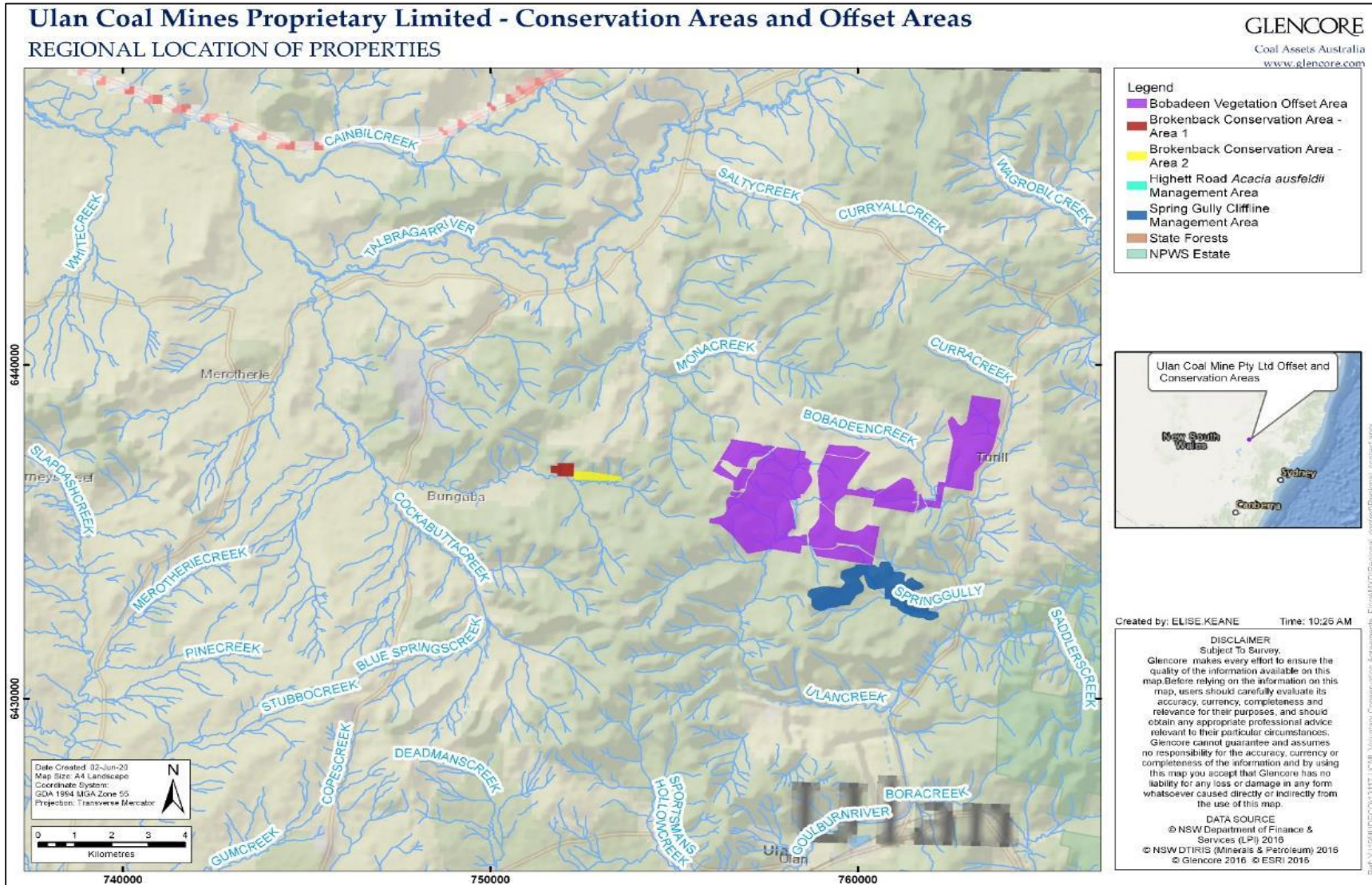


Figure 1: Regional location of Bobadeen Vegetation Offset Area

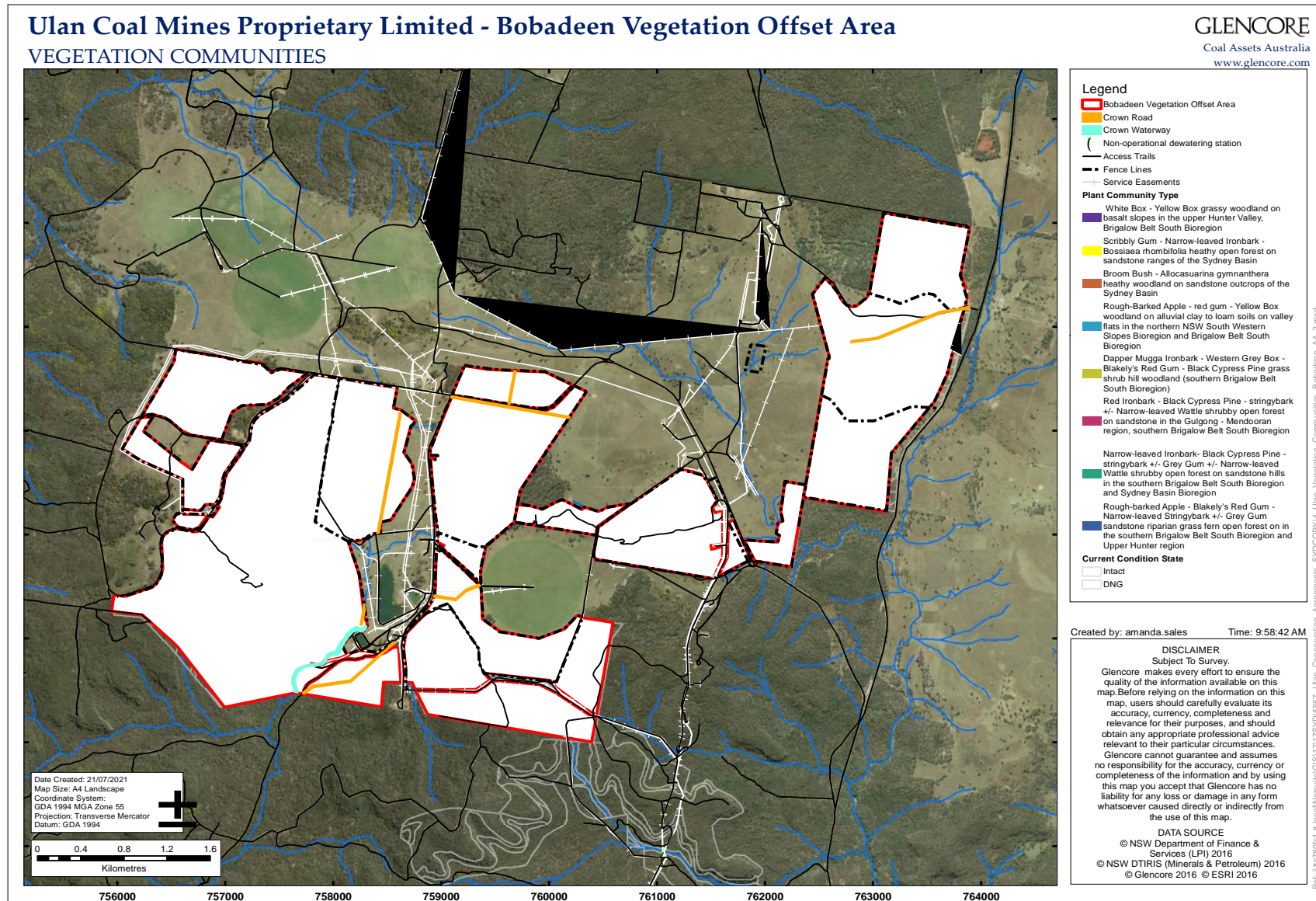


Figure 2: Bobadeen Vegetation Offset Area – vegetation communities

2. Methodology

Monitoring was undertaken in accordance with the Section 7 and Annexure D of the Conservation Agreement (UCMPL 2019) and the Bio Banking Assessment Methodology (OEH 2014) on the 29 May – 1 June and 5-7 June, 15 June, and 19 June 2023 by ELA ecologists. Quadrat data was collected at fifteen (15) monitoring locations as shown in Figure 3, below.

Monitoring undertaken in 2023 is the fourth year of monitoring for the Offset Area since the initial baseline monitoring which was undertaken in 2017. As per Annexure D, Section c) iii) of the Conservation Agreement, the results of 2023 monitoring were compared to results from 2017, 2020, 2021, and 2022 to determine changes from previous monitoring.

2.1. Quadrat and Photo-point Monitoring

Quadrat data was collected at fifteen (15) monitoring locations as shown in Figure 3. Data was collected in accordance with the Bio Banking Assessment Methodology (OEH 2014) within a 20 x 20 m quadrat nested in a 20 x 50 m quadrat. This methodology is consistent with floristic monitoring that is undertaken across UCMPL biodiversity and vegetation offset areas. The following attributes were recorded:

- Floristic cover and abundance within the nested 20 x 20 m quadrat.
 - Cover estimates for each species were recorded from 1 – 5 % and thereafter in 5% increments.
 - Abundance estimates for each species were recorded using the intervals of 1 – 10, 20, 50, 100, 500, 1000 individuals.
- Proportion of canopy species naturally regenerating within the 20 m x 50 m quadrat.
- Non-vascular ground cover percentage (litter, cryptogam, logs >10 cm in diameter, rocks >5 cm in diameter, bare soil) for the 20 x 50 m quadrat.
- Vascular plant cover for the 20 x 50 m quadrat including native overstorey cover, native mid-storey cover (>1 m), native ground cover – grasses, native ground cover – shrubs (<1 m), native ground cover – other and exotic ground cover.
- The occurrence of weeds, feral animal disturbance and other observable impacts.
- Total length of large woody debris (LWD) and hollow bearing trees (HBTs) within the 20 m x 50 m quadrat.

Total native cover, which is not prescribed by the Bio Banking Assessment Methodology (OEH 2014) but by the Conservation Agreement (UCMPL 2019) was calculated from the total of native overstorey cover, native mid-storey cover, native ground cover – grasses, native ground cover – shrubs and native ground cover – other. An anomaly of this method is that more than 100% cover can be recorded; however, covers for attributes are also presented singularly in this report.

Photographs were taken facing north, east, south and west from the transect / plot start point as per methodology outlined in Annexure D of the Conservation Agreement (UCMPL 2019).

As required by the UCMPL Biodiversity Management Plan (BMP) (UCMPL 2019b), annual inspections are undertaken by UCMPL representatives within the Offset Area. Previous monitoring programs saw full

floristic monitoring occur at 2 (two) sites within the Vegetation Offset Area between the initial establishment in 2017 and the first monitoring period of 2020. Site BOB22 was monitored in 2018 and 2019 and BOBC1 in 2019. This data has also been provided in Table 6 (UCMPL 2019b; ELA 2019a; ELA 2020).

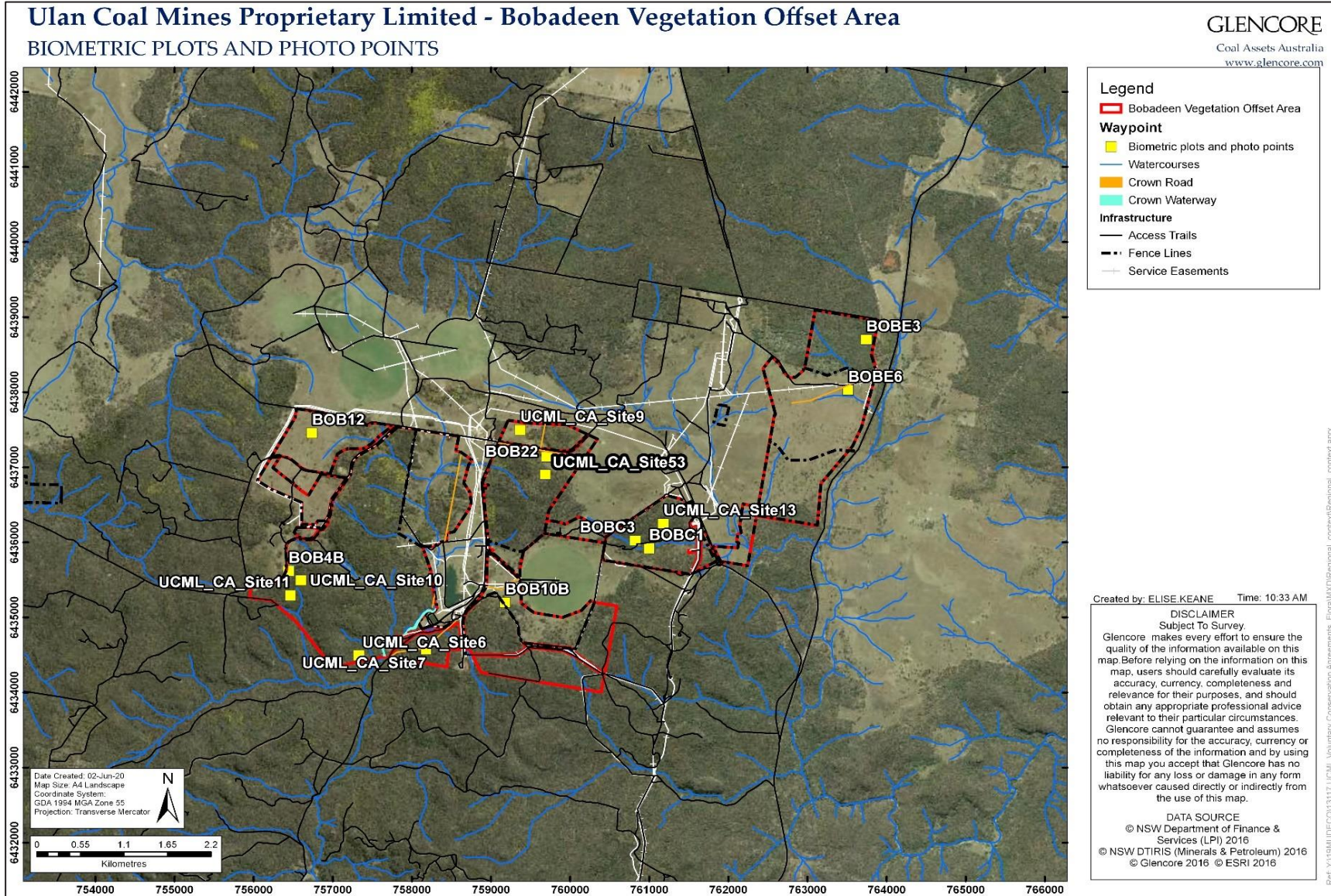


Figure 3: Bobadeen Vegetation Offset Area biometric plots and photo points

2.2. Walk-through assessments

A walk-through assessment was also undertaken within the Offset Area to record opportunistic sightings of management issues including fire events or impacts of fire management, weeds (including compiling a list of exotic species and recording new weed infestations including location and extent), pest animal species and location, visitor impact and vehicle access (including evidence of any recent usage, and the presence of any new tracks, rubbish dumping, natural regeneration of previously disturbed areas and sightings of any threatened species listed under the EPBC Act) and / or the BC Act.

Weeds listed under the Local Land Services (LLS) Central Tablelands Regional Strategic Weed Management Plan (CTRSWP) 2023 – 2027 (LLS 2023) were recorded using handheld GPS.

3. Results

3.1. Quadrat and Photo-point Monitoring

A total of 235 flora species, comprised of 194 native species, 36 exotic species and five (5) species which could not be identified as either native or exotic due to absence of flowering or fruiting material were recorded across the 15 monitoring plots with the Offset Area. A summary of results is provided in Table 2, below.

A full species list is provided in Appendix A. Monitoring data sheets and photos for each site are presented in Appendix B.

Table 2: Quadrat monitoring results 2023

Photo Point / Quadrat No.	Year	Native species richness	Overstorey cover %pfc	Mid-storey cover %pfc	Ground cover – grasses %pfc	Ground cover – shrubs %pfc	Ground cover – other %pfc	Proportion overstorey regen (%)	Exotic cover	Number of Trees with Hollows	Total length of fallen logs*
281 Rough-Barked Apple – red gum – Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion (HU714)											
BOBE6	2023	28	0	8	68	0	2	0	4	0	3
403 Dapper Mugga Ironbark – Western Grey Box – Blakely's Red Gum – Black Cypress Pine grass shrub hill woodland in the southern Brigalow Belt South Bioregion (HU698)											
UCML_CA_Site9	2023	38	1	2.5	44	2	16	100	2	0	0
UCML_CA_Site53	2023	30	20.2	10.8	20	18	16	80	0	1	77
478 Red Ironbark – Black Cypress Pine – stringybark +/- Narrow-leaved Wattle shrubby open forest on sandstone in the Gulgong – Mendooran region, southern Brigalow Belt South Bioregion (HU707)											
BOBC3	2023	57	11.5	3.5	44	6	8	100	2	1	48
UCML_CA_Site13	2023	37	31	12.5	2	2	2	67	0	0	165
479 Narrow-leaved Ironbark- Black Cypress Pine – stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion (HU702)											
BOB22	2023	24	1	5.5	66	10	0	100	0	0	0
BOBE3	2023	34	24	21	14	2	2	100	0	0	155
481 Rough-barked Apple – Blakely's Red Gum – Narrow-leaved Stringybark +/- Grey Gum sandstone riparian grass fern open forest on in the southern Brigalow Belt South Bioregion and Upper Hunter region (HU713)											
BOB10B	2023	34	1.5	21	30	0	2	100	4	0	0
BOBC1	2023	57	13	1.5	32	2	24	60	4	2	37
1310 White Box – Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, Brigalow Belt South Bioregion (HU654)											
BOB4B	2023	37	16.1	1.7	22	22	2	100	4	3	15
BOB12	2023	25	0	0.2	26	0	2	100	68	0	0
1675 Scribbly Gum – Narrow-leaved Ironbark – <i>Bossiaea rhombifolia</i> heathy open forest on sandstone ranges of the Sydney Basin (HU889)											

Photo Point / Quadrat No.	Year	Native species richness	Overstorey cover %pfc	Mid-storey cover %pfc	Ground cover – grasses %pfc	Ground cover – shrubs %pfc	Ground cover – other %pfc	Proportion overstorey regen (%)	Exotic cover	Number of Trees with Hollows	Total length of fallen logs*
UCML_CA_Site6	2023	45	15	9.2	14	38	14	100	2	1	45
UCML_CA_Site7	2023	42	23	4	16	12	16	100	0	1	74
1709 Broom Bush – <i>Allocasuarina gymnanthera</i> heathy woodland on sandstone outcrops of the Sydney Basin (HU923)											
UCML_CA_Site10	2023	56	2.7	6.6	6	26	8	100	0	0	3
UCML_CA_Site11	2023	48	2.5	10	8	14	14	100	0	0	8

3.2. Walk-through assessment

Results from the walk-through assessment across the entire Offset Area is provided in Table 3. A map depicting locations of management issues identified is provided in Appendix C.

Table 3: Walk-through assessment results summary

Category	Comment
Fire events or impacts of fire management	No fire events or fire management activities have occurred in the Offset Area.
Weeds	<p>Seven (7) priority weed species listed under the CTRSTWMP were identified throughout the Bobadeen Vegetation Offset Area during monitoring in 2023 (Appendix C):</p> <ul style="list-style-type: none"> • <i>Chrysanthemoides monilifera</i> (Boneseed) – BOB4B, UCML_CA_Site10 • <i>Dolichandra unguis-cati</i> (Cat’s claw creeper) – recorded opportunistically • <i>Heliotropium amplexicaule</i> (Blue Heliotrope) – recorded opportunistically • <i>Hypericum perforatum</i> (St John’s Wort) – BOB10B, BOB12, BOB4B, BOBE6, UCML_CA_Site9 • <i>Ligustrum lucidum</i> (Broad-leaf privet) – recorded opportunistically • <i>Olea europaea</i> (Olive) – recorded opportunistically • <i>Opuntia stricta</i> (Common Prickly Pear) – recorded opportunistically <p><i>Chrysanthemoides monilifera</i> has been recorded within the Offset Area every year since 2021. Investigations undertaken during 2023 indicate that the source of this weed species may be from an old ornamental garden located to the north of the western section of Offset Area. This species forms dense stands in remnant bushland, outcompetes native plants and reduces food and habitat for native birds and other animals (DPI 2022).</p> <p>Other exotic species present within the Offset Area include:</p> <ul style="list-style-type: none"> • <i>Aster subulatus</i> (Wild Aster) • <i>Bromus hordeaceus</i> (Soft Brome) • <i>Centaureum glomeratum</i> (Mouse-ear Chickweed) • <i>Cineraria lyratiformis</i> (Cineraria) • <i>Cirsium vulgare</i> (Spear Thistle) • <i>Conyza bonariensis</i> (Fleabane) • <i>Cyclosporum leptophyllum</i> (Carrot Weed) • <i>Echium plantagineum</i> (Paterson’s Curse) • <i>Facelis retusa</i> (Annual Trampweed) • <i>Gamochaeta calviceps</i> (Cudweed) • <i>Gamochaeta</i> sp. • <i>Hypochaeris glabra</i> (Smooth Cat’s-ear) • <i>Hypochaeris radicata</i> (Cat’s-ear) • <i>Marrubium vulgare</i> (Horehound) • <i>Modiola caroliniana</i> (Red-flowered Mallow) • <i>Ornithopus compressus</i> • <i>Paronychia brasiliiana</i> (Chilean Whitlow Wort) • <i>Paspalum dilatatum</i> (Paspalum) • <i>Plantago lanceolata</i> • <i>Richardia stellaris</i> • <i>Rumex acetosella</i> (Sorrel) • <i>Salvia verbenaca</i> (Wild Clary) • <i>Setaria parviflora</i> • <i>Setaria pumila</i> (Pale Pidgeon Grass) • <i>Sisymbrium officinale</i> (Hedge Mustard) • <i>Solanum nigrum</i> (Black-berry Nightshade)

Category	Comment
	<ul style="list-style-type: none"> • <i>Sonchus asper</i> (Prickly Sow thistle) • <i>Stellaria media</i> (Chickweed) • <i>Taraxacum officinale</i> (Common Dandelion) • <i>Trifolium repens</i> (White Clover) • <i>Trifolium</i> sp. (a clover species) • <i>Verbena bonariensis</i> (Purpletop) <p>There is a long history of agricultural land use (both cropping and grazing) within the Offset Area, which has resulted in the presence of a high number of exotic annual species. Following certain climatic patterns these species can dominate the herb layer on richer basalt soils in areas in the Offset Area, (e.g. BOBE6, BPB12 and BOB10B).</p>
Pest animals	<p>The following species were recorded opportunistically within the Offset Area:</p> <ul style="list-style-type: none"> • Feral Pig (<i>Sus scrofa</i>) – including damage to native ground cover from diggings throughout the Offset Area • European Fox (<i>Vulpes vulpes</i>) • European Hare (<i>Lepus europaeus</i>) • European Rabbit (<i>Oryctolagus cuniculus</i>) • Fallow Deer (<i>Dama dama</i>).
Visitor impact and vehicle access	No evidence of recent usage and no presence of new tracks.
Rubbish dumping	No evidence of rubbish dumping was recorded within the Offset Area.
Natural regeneration of disturbed areas	Natural regeneration of characteristic overstorey species (e.g. White Box and Blakely's Red Gum) continues to occur throughout previously cleared areas.
Threatened species observations	No threatened species were observed within the Offset Area during 2023 surveys.

3.3. Completed management actions

3.3.1. Weed management

Herbicide was applied to *Opuntia stricta* var. *stricta*, *Hypericum perforatum* and *Heliotropium amplexicaule* within the Offset Area (Figure 4).

Chrysolina beetles (*Chrysolina* spp.), which feed on the leaves of *Hypericum perforatum*, are listed as a means of biological control for St John's Wort (DPI 2022). The presence of Chrysolina beetles was recorded by UCMPL personnel (Figure 4) within the Offset Area. Areas where the Chrysolina beetles were present did not receive herbicide application.



Figure 4: Targeted weed suppression and management conducted by UCMPL

Herbicide was also applied to a patch of approximately 20 individuals of *Chrysanthemoides monilifera* on the western boundary of the Offset Area by UCMPL during 2023. The herbicide application was successful in killing mature plants (Figure 5).



Figure 5: *Chrysanthemoides monilifera* successfully killed by herbicide application during 2023

3.3.2. Pest animal management

Feral pig baiting was undertaken during 2022 within the Offset Area. A wild dog aerial baiting program was also implemented in conjunction with the Central Tablelands LLS near the western region of the Offset Area. The location and extent of the program is outlined in Appendix D.

3.4. Planting survival assessment

The planting survival assessment undertaken in 2022 determined that stem density was adequate in most planted areas throughout the Offset Area, with only one (1) patch with less than 30 stems / ha (consider refill). This patch is located within the eastern section of the Offset Area and is nearby to patches ranked as 'monitor' (i.e. 30 – 60 stems / ha). The presence of large amounts of basalt rocks within this area may be inhibiting planting success. This area may have supported a sparser Box Gum Woodland prior to clearing. As such, lower stem density in this area may be adequate. The results of the planting survival assessment are provided in Appendix E.

4. Discussion

4.1. Changes from previous monitoring

The monitoring results of 2017 and 2020 to 2023 for each monitoring transect, along with comparison to benchmark values, are provided in Table 4, below.

Discussion regarding change since the 2017 monitoring period on a site basis within each PCT is provide below. Due to the small sample size, statistically vigorous analysis to determine trends for each PCT and the broader Offset Area cannot be undertaken. A number of attributes including native species richness, ground cover grasses projected foliage cover (pfc), ground cover shrubs pfc and ground cover other pfc are extremely sensitive to rainfall and survey timing, with all attributes subject to small variations year to year due to observer interpretation.

A decrease in ground cover was recorded at most sites, whilst canopy and mid-storey pfc fluctuated across sites compared with previous monitoring. At sites where there was an increase in overstorey pfc and mid-storey pfc, the ground pfc typically decreased. Most sites recorded a decrease in exotic ground cover; however, exotic ground cover at site BOB12 continues to fluctuate with a large increase recorded in 2023 compared to previous monitoring.

Overall, the Offset Area remains ecologically stable with the condition of the vegetation within the Offset Area remaining consistent with monitoring undertaken during 2017 and with PCT descriptions provided in the Conservation Agreement (UCMPL 2019).

Table 4: Monitoring results 2017 and 2020 -2023

Photo Point / Quadrat No.	Year	Native species richness	Overstorey cover %pfc	Mid-storey cover %pfc	Ground cover – grasses %pfc	Ground cover – shrubs %pfc	Ground cover – other %pfc	Proportion overstorey regen.	Exotic cover	Number of Trees with Hollows	Total length of fallen logs
281 Rough-Barked Apple – red gum – Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and BBS Bioregion (HU714)											
Benchmark values		25	10	2	20	2	5	N/A	N/A	1.5	30
	2017	15	0	0	46	0	8	0	56	0	0
	2020	32	0	0	10	0	22	0	36	0	0
BOBE6	2021	25	0	0	60	0	6	100	4	0	0
	2022	29	0.5	3	80	0	0	0	6	0	0
	2023	28	0.5	7.5	68	0	2	0	4	0	0
403 Dapper Mugga Ironbark – Western Grey Box – Blakely's Red Gum – Black Cypress Pine grass shrub hill woodland (southern BBS Bioregion (HU698)											
Benchmark values		30	10	2	2	2	2	N/A	N/A	2	20
	2017	32	0	0	28	0	2	100	12	0	0
	2020	44	0	9	48	0	2	100	0	0	0
UCML_CA_Site9	2021	47	0	2.5	24	2	12	100	12	0	1
	2022	45	5.1	0	58	2	2	100	6	0	0
	2023	38	1	2.5	44	2	16	100	2	0	0
	2017	29	10	0.2	2	2	10	100	0	0	135
	2020	32	27.5	0.2	2	0	2	100	0	0	135
UCML_CA_Site53	2021	40	28.5	3	8	16	4	75	4	0	138
	2022	46	19	1.5	10	34	8	67	0	2	138
	2023	30	20.2	10.8	20	18	16	80	0	2	138
478 Red Ironbark – Black Cypress Pine – stringybark +/- Narrow-leaved Wattle shrubby open forest on sandstone in the Gulgong – Mendooran region, southern BBS Bioregion (HU707)											
Benchmark values		25	20	10	5	5	5	N/A	N/A	0.8	46
	2017	39	21	8	14	6	6	100	0	2	16.5
	2020	44	22	6	12	8	18	75	0	2	16.5
BOBC3	2021	40	24	5	42	6	8	100	8	1	15
	2022	33	16.1	9.1	44	12	18	67	0	1	15
	2023	57	11.5	3.5	44	6	8	100	2	1	15
	2017	29	45	1.5	0	0	2	100	0	0	151
	2020	16	33	4	0	0	2	75	0	0	150
UCML_CA_Site13	2021	21	26.5	13	6	10	10	100	4	0	150
	2022	27	25.5	7.3	6	18	16	100	0	0	150
	2023	37	31	12.5	2	2	2	67	0	0	165

Photo Point / Quadrat No.	Year	Native species richness	Overstorey cover %pfc	Mid-storey cover %pfc	Ground cover – grasses %pfc	Ground cover – shrubs %pfc	Ground cover – other %pfc	Proportion overstorey regen.	Exotic cover	Number of Trees with Hollows	Total length of fallen logs
479 Narrow-leaved Ironbark- Black Cypress Pine – stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern BBS Bioregion and Sydney Basin Bioregion (HU702)											
Benchmark values		31	5	2	2	2	2	N/A	N/A	2	40
BOB22	2017	21	2	1	84	0	4	67	0	0	0
	2018	23	0	1	28	0	2	100	0	0	0
	2019	15	0	0	28	0	2	100	0	0	0
	2020	41	4	0	30	2	32	100	2	0	0
	2021	36	4.5	2	60	2	16	67	4	0	0
	2022	32	0.2	1.3	72	8	16	100	0	0	0
	2023	24	1	5.5	66	10	0	100	0	0	0
BOBE3	2017	17	26.5	9	2	2	0	100	0	0	123
	2020	21	14.4	1.1	2	2	4	50	0	0	133
	2021	26	15	3.5	16	0	48	100	0	0	150
	2022	36	10.5	7.5	16	12	8	75	0	0	150
	2023	34	24	21	14	2	2	100	0	0	155
481 Rough-barked Apple – Blakely’s Red Gum – Narrow-leaved Stringybark +/- Grey Gum sandstone riparian grass fern open forest on in the southern BBS Bioregion and Upper Hunter region (HU713)											
Benchmark values		31	10	5	0	10	5	N/A	N/A	1.5	10
BOB10B	2017	21	0	0	62	0	2	100	20	0	0
	2020	30	0	0	24	0	10	80	10	0	0
	2021	23	0	3.5	34	2	18	0	2	0	0
	2022	28	0	3.2	58	6	0	75	18	0	0
	2023	34	1.5	21	30	0	2	100	4	0	0
BOBC1	2017	36	13.5	6	22	6	4	100	0	2	22
	2019	32	22.5	0	8	0	2	100	0	2	30
	2020	50	18.5	0.1	10	2	10	100	0	3	22
	2021	42	23	2.5	44	10	18	100	6	1	20
	2022	33	11.2	7.7	36	16	22	67	0	1	20
	2023	57	13	1.5	32	2	24	60	4	2	20
1310 White Box – Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, BBS Bioregion (HU654)											
Benchmark values		23	10	5	5	2	5	N/A	N/A	2	50
BOB4B	2017	27	19.5	0	16	0	2	100	0	0	24
	2020	39	21.5	0	4	0	4	100	0	2	24
	2021	50	18.5	0	20	2	16	0	0	3	24

Photo Point / Quadrat No.	Year	Native species richness	Overstorey cover %pfc	Mid-storey cover %pfc	Ground cover – grasses %pfc	Ground cover – shrubs %pfc	Ground cover – other %pfc	Proportion overstorey regen.	Exotic cover	Number of Trees with Hollows	Total length of fallen logs
	2022	44	17.52	1	22	14	4	100	10	3	24
	2023	37	16.1	1.7	22	22	2	100	4	3	24
BOB12	2017	25	0	0	50	0	0	0	28	0	0
	2020	28	0	0	6	0	32	100	42	0	0
	2021	24	0	4	64	8	0	100	10	0	0
	2022	37	3.5	3	56	0	8	100	24	0	0
	2023	25	0	0.2	26	0	2	100	68	0	0
	1675 Scribbly Gum – Narrow-leaved Ironbark – <i>Bossiaea rhombifolia</i> heathy open forest on sandstone ranges of the Sydney Basin (HU889)										
Benchmark values		35	15	8	1	15	20	N/A	N/A	0.2	30
UCML_CA_Site6	2017	44	20	2.5	10	8	2	100	0	0	42
	2020	32	20	15	6	0	4	75	0	0	50
	2021	39	16	4	42	12	16	50	0	0	50
	2022	39	13	14.5	40	6	8	25	0	1	50
	2023	45	15	9.2	14	38	14	100	2	1	50
UCML_CA_Site7	2017	48	20	0	8	10	8	100	0	0	57
	2020	35	15.5	2	4	6	0	100	0	0	60
	2021	39	22	1.2	6	6	54	100	0	0	60
	2022	32	15	1.6	22	8	28	50	2	0	60
	2023	42	23	4	16	12	16	100	0	1	74
1709 Broom Bush – <i>Allocasuarina gymnanthera</i> heathy woodland on sandstone outcrops of the Sydney Basin (HU923)											
Benchmark values		25	20	10	5	5	5	N/A	N/A	0.8	66
UCML_CA_Site10	2017	33	18.5	2	2	4	2	100	0	0	20
	2020	29	22	0	2	2	0	100	0	0	20
	2021	48	25.5	0	2	6	8	100	0	0	20
	2022	46	3	16.5	6	12	6	100	0	0	35
	2023	56	2.7	6.6	6	26	8	100	0	0	35
UCML_CA_Site11	2017	31	17	0	0	2	4	100	0	0	13.5
	2020	23	16.5	0	0	0	6	100	0	0	14
	2021	35	20.9	0	0	0	8	100	0	0	14
	2022	43	8	11.5	6	4	8	100	0	0	14
	2023	48	2.5	10	8	14	14	100	0	0	14

4.1.1. PCT 281 Rough-Barked Apple – red gum – Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and BBS Bioregion (HU714)

Native species richness at the PCT 281 site (BOBE6) has fluctuated across monitoring periods; however, remains above benchmark. Native overstorey cover remains consistent with 2022 results. Whilst the native overstorey cover is low along the 50m transect (0.5%), floristic plot data collected at this site indicates that *Eucalyptus albens* (White Box) and *Eucalyptus melliodora* (Yellow Box) provide 26% overstorey pfc. This anomaly is reflective of the orientation of this monitoring site, which is parallel to planting rows.

The revegetation works consisting of *Eucalyptus blakelyi* (Blakely's Red Gum) and *Eucalyptus melliodora* continue to be successful, with healthy individuals continuing to grow which has resulted in slight increases to overstorey cover compared to the previous years.

Native midstorey cover was generally absent from this monitoring site until 2022 and has increased slightly since then. The slight increase is likely attributable to regenerating *Cassinia sifton*.

Native ground cover – grasses remains high however, native grass cover saw a slight drop compared to 2022 due to a drier than average autumn period.

HBTs continue to be absent from BOBE6 due to historical clearing in this area and immature canopy species revegetation. LWD remains consistent with previous years.

4.1.2. PCT 403 Dapper Mugga Ironbark - Western Grey Box - Blakely's Red Gum - Black Cypress Pine grass shrub hill woodland (southern BBS Bioregion (HU698)

Two (2) sites are located within this PCT, UCML_CA_Site9 and UCML_CA_Site53.

UCML_CA_Site9 is located in a formerly cleared area which has undergone revegetation works. From 2017 to 2023 native ground cover (grass and other) has fluctuated in response to climatic conditions (drier and wetter years). The overall native ground cover was the same as 2022, however there was less native ground grass cover and greater native ground other cover. The decline in grass cover may have enabled higher growth of native forb species. Exotic species have consistently decreased since monitoring commenced.

Revegetation works have been successful at this site (UCML_CA_Site9), with *Eucalyptus fibrosa* (Broad-leaved Ironbark) and *Eucalyptus moluccana* (Grey Box) and multiple Acacia species present. Overstorey cover was slightly lower in 2023. No evidence of defoliation from pests or diseases was observed, so lower overstorey cover may be due to drier climatic conditions experienced during 2023 compared to the previous 3 years.

UCML_CA_Site53 is in intact vegetation and recorded largely consistent results over the monitoring periods. There was a large increase in mid-storey cover, and a decrease in ground shrub cover. This is likely due to the growth and maturation of *Cassinia sifton* regeneration (shrub growth over 1m) from the previous year. Exotic species were again absent in 2023.

HBTs and LWD remain consistent with previous years.

4.1.3. PCT 478 Red Ironbark - Black Cypress Pine - stringybark +/- Narrow-leaved Wattle shrubby open forest on sandstone in the Gulgong - Mendooran region, southern Brigalow Belt South Bioregion (HU707)

Two (2) sites are located within this PCT, BOBC3 and UCML_CA_Site13, with both sites located within intact vegetation.

BOBC3 recorded a drop in overstorey and mid-storey cover in 2023, a continuing trend that started in 2022. The reduction in overstorey cover is >50% since the 2021 monitoring period. However, a large increase in recorded LWD may indicate that part of this reduction in overstorey canopy may be attributed to the falling of trees. Groundcover remained consistent compared to previous years. Exotic cover was recorded in 2023 for the second time after first being recorded in 2021.

UCML_CA_Site13 recorded an increase in overstorey and mid-storey cover in 2023, however these are consistent with values recorded for these metrics over previous monitoring years. There was a large decrease in groundcover in 2023, however this is likely due to a drier than average autumn period preceding the survey time. Exotic cover was again absent in 2023, after being recorded in 2021. Fallen logs was consistent with previous years.

Numbers of HBTs at each site has remained consistent over the previous monitoring years.

4.1.4. PCT 479 Narrow-leaved Ironbark- Black Cypress Pine - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion (HU702)

Two (2) sites are located within this PCT, BOB22 and BOBE3.

BOB22 is located within a naturally regenerating area featuring scattered remnant trees, and regenerating *Cassinia sifton*. Slight increases to overstorey cover and mid-storey cover were recorded in 2023 compared to 2022, however saw a slight decline in overall groundcover, likely due to drier conditions compared to the previous wet years. Exotic cover was again absent in 2023. HBTs and total fallen logs were consistent with previous monitoring years. HBTs and total fallen logs were consistent with previous monitoring years.

BOBE3 recorded increases in overstorey and mid-storey cover (increased by 13.5% for both). The increase in mid-storey cover may be a result of the higher native ground cover shrub (i.e. shrubs <1 m in height) recorded during 2022 maturing to shrubs >1 m in height.

There was a decrease in ground cover for grass, shrubs and other, a trend that has continued from 2022 and is likely a result of drier climatic conditions experienced in 2023. Exotic cover continues to be absent, consistent with previous monitoring years.

4.1.5. PCT 481 Rough-barked Apple - Blakely's Red Gum - Narrow-leaved Stringybark +/- Grey Gum sandstone riparian grass fern open forest on in the southern Brigalow Belt South Bioregion and Upper Hunter region (HU713)

Two (2) sites are located within this PCT, BOB10B and BOBC1.

BOB10B is located in a formerly cleared area which has undergone revegetation works. There were decreases recorded in native grass and shrub cover, and a slight increase in native other cover. This overall decrease in groundcover is likely a result of drier conditions compared to previous years of above

average rainfall. Litter cover increased at this site compared to 2022, which may also be attributable to drier climatic conditions. There was a large decrease (14%) in exotic cover compared to 2022.

Revegetation works have been successful at this site (BOB10B), with *Eucalyptus blakelyi*, *Eucalyptus moluccana*, and multiple *Acacia* species present. Overstorey cover was recorded for the first time in 2023, with some plantings exceeding 6 m in height. Mid-storey cover also saw a large increase, likely due to the success and continuing growth of the revegetation works.

BOBC1 is located in intact vegetation and recorded results in 2023 largely consistent with the previous monitoring year. There were decreases in mid-storey cover and ground shrub cover, which may be due to the competition and dominance of native grass species. Exotic cover was again recorded in 2023, after being first recorded in 2021.

4.1.6. PCT 1310 White Box - Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, BBS Bioregion (HU654)

Two (2) sites are located within this PCT, BOB4B and BOB12.

BOB4B is in intact vegetation and recorded consistent results between the 2022 and 2023 monitoring periods. There was a slight decrease in overstorey canopy cover and a slight increase in mid-storey cover. Native ground cover shrub increased, and native ground cover other decreased, continuing trajectories over previous monitoring years. Exotic cover was present, however it declined to 4%, down from 10% in 2022. The number of HBTs and length of LWD remains consistent with previous years.

BOB12 is in a formerly cleared area that has undergone revegetation works. A large decrease in the three native groundcover attributes was recorded, along with a large increase in exotic ground cover, which increased by 44%. *Hypericum perforatum* contributed the highest amount of any exotic species to the exotic ground cover. HBTs and LWD remain absent as observed in previous years, which is consistent with the history of this area.

4.1.7. PCT 1675 Scribbly Gum - Narrow-leaved Ironbark - *Bossiaea rhombifolia* heathy open forest on sandstone ranges of the Sydney Basin (HU889)

Two (2) sites are located within this PCT, UCML_CA_Site6 and UCML_CA_Site7, with both sites located within intact vegetation.

UCML_CA_Site6 recorded an increase in overstorey cover in 2023. There was a large decrease in native groundcover grasses. There were also large increases in native ground shrub and native ground other. Exotic cover was also recorded for the first time at this site, although it was very low (2%). HBTs and length of LWD remained consistent to previous years.

UCML_CA_Site7 recorded increases to both overstorey and mid-storey cover. There was also an overall decrease in groundcover, largely due to declines in native groundcover grass and groundcover other attributes. There was no exotic cover recorded in 2023. A HBT was recorded for the first time at this site, and an increase in 14m for LWD was also recorded, both a result of a recent branch fall.

4.1.8. PCT 1709 Broom Bush - *Allocasuarina gymnanthera* heathy woodland on sandstone outcrops of the Sydney Basin (HU923)

Two (2) sites are located within this PCT, UCML_CA_Site10 and UCML_CA_Site11, with both sites located within intact vegetation.

Both sites recorded decrease in overstorey and mid-storey cover, as well as increases in overall native groundcover. The natural senescence of *Allocasuarina gymnanthera* is like likely cause of declining cover in the overstorey and mid-storey, which may then enable greater growth and cover for the groundcover species. Previous monitoring years (2017-2021) have had high overstorey and low mid-storey, however the large change to these attributes is due to the natural plant senescence which is currently occurring within the *Allocasuarina gymnanthera*.

LWD remains consistent with previous years at both sites, with senescing *Allocasuarina gymnanthera* not expected to add to these values as they are typically <10 cm diameter. HBTs remain absent from both sites.

4.2. Condition of conservation values

The Bobadeen Vegetation Offset Area contains four main conservation values as outlined in the Conservation Agreement (UCMPL 2019):

- Eight (8) PCTs: PCT 281, PCT 403, PCT 478, PCT 479, PCT 481, PCT 1310, PCT 1675 and PCT 1709
- Contains habitat for 30 Vulnerable and three (3) Endangered species listed under the BC Act. Ten (10) of these species are also listed under the EPBC Act. The following species listed as vulnerable under the BC Act were recorded within the Bobadeen Vegetation Offset Area since 2021: Gang-gang Cockatoo (*Callocephalon fimbriatum*), Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*), Little Lorikeet (*Glossopsitta pusilla*), Speckled Warbler (*Chthonicola sagittata*), along with White-throated Needletail (*Hirundapus caudacutus*), listed as vulnerable under the EPBC Act.
- Approximately 579.49 ha of EEC / CEEC as well as fauna habitat which has good connectivity to surrounding remnant woodland areas and contributes to flora and fauna species conservation outcomes in the Hunter-Central Rivers Catchment Management Authority.
- The Bobadeen Vegetation Offset Area adjoins Bobadeen Grinding Groove Conservation Area; therefore, it is likely that the Bobadeen Vegetation Offset Area contains cultural heritage values.

These conservation values remain intact, with no damage or disturbance to these conservation values recorded throughout the Offset Area.

4.3. Effectiveness of management actions

While pest animals continue to be recorded within the Offset Area, no observable impacts on revegetation or naturally regenerating areas from pest animals has been observed. A wild dog aerial baiting program was implemented by the Central Tablelands LLS during 2023. The aerial baiting line did not directly occur over the Offset Area, nor has there ever been any wild dogs recorded within the Offset Area; however, given the nomadic ecology of wild dogs the baiting efforts may help reduce impact from these animals within the Offset Area in the future. Additionally, the implementation of feral pig control programs will help to reduce pressure on native species within the Offset Area.

With the exception of the presence of *Chrysanthemoides monilifera* (Boneseed) depicted in Appendix C, the occurrence of priority weed species throughout the remainder of the Offset Area remains very low, with the implementation of ongoing weed management strategies contributing to the persistence of the biodiversity values within the Offset Area.

In accordance with the *Biosecurity (Boneseed) Control Order 2007* the owner or occupier of land in the Boneseed Control Zone (which is the whole of NSW), must:

- a. Notify the local control authority for the area if the Boneseed is part of a new infestation on the land.
- b. Immediately destroy all Boneseed on the land.
- c. Ensure that subsequent generations of Boneseed are destroyed.
- d. Ensure the land is kept free of Boneseed.

5. Recommendations

ELA recommends that monitoring continues to be undertaken on a yearly basis as per the methodology outlined in Annexure D of the Bobadeen Vegetation Offset Area Conservation Agreement (UCMPL 2019).

Weed control measures in accordance with site specific control procedures should be implemented to control and prevent the spread of CTRSWMP (LLS 2023) listed weeds identified in Table 3 and Appendix C. This is particularly relevant to the spread of *Chrysanthemoides monilifera* and *Hypericum perforatum*. throughout the Offset Area. The coordinates of listed weeds recorded in 2023 and mapped in Appendix C has been provided to UCMPL.

Ongoing pest animal control measures in accordance with site specific control procedures should continue to be implemented to target pest animal species that may degrade the Offset Area if left undamaged. Focus should be placed on targeting feral pig populations, as diggings can impact native ground cover and species.

6. References

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Appendix A Flora species list

Table 5: Flora species list

Scientific name	Native / exotic	Scientific name	Native / exotic
<i>Acacia buxifolia</i>	Native	<i>Austrostipa</i> sp.	Native
<i>Acacia gladiiformis</i>	Native	<i>Bidens</i> sp.	Exotic
<i>Acacia implexa</i>	Native	<i>Bidens subalternans</i>	Exotic
<i>Acacia leucolobia</i>	Native	<i>Billardiera scandens</i>	Native
<i>Acacia linearifolia</i>	Native	<i>Boronia</i> sp.	Native
<i>Acacia paradoxa</i>	Native	<i>Bossiaea obcordata</i>	Native
<i>Acacia</i> sp.	Native	<i>Bossiaea rhombifolia</i>	Native
<i>Acacia ulicifolia</i>	Native	<i>Bothriochloa macra</i>	Native
<i>Acaena ovina</i>	Native	<i>Bothriochloa</i> sp.	Native
<i>Acetosella vulgaris</i>	Exotic	<i>Brachychiton populneus</i>	Native
<i>Acrotriche rigida</i>	Native	<i>Callitris endlicheri</i>	Native
<i>Actinotus helianthi</i>	Native	<i>Calotis cuneifolia</i>	Native
<i>Ajuga australis</i>	Native	<i>Calotis lappulacea</i>	Native
<i>Allocasuarina gymnanthera</i>	Native	<i>Calytrix tetragona</i>	Native
<i>Alternanthera nana</i>	Native	<i>Carex appressa</i>	Native
<i>Alternanthera</i> sp.	Native/exotic	<i>Carex inversa</i>	Native
<i>Amyema miquelii</i>	Native	<i>Carthamus lanatus</i>	Exotic
<i>Amyema miquelli</i>	Native	<i>Cassinia quinquefaria</i>	Native
<i>Amyema quandang</i> var. <i>quandang</i>	Native	<i>Cassinia sifton</i>	Native
<i>Angophora floribunda</i>	Native	<i>Centaurum glomeratum</i>	Exotic
<i>Anogramma leptophylla</i>	Native	<i>Cheilanthes austrotenuifolia</i>	Native
<i>Aristida leichhardtiana</i>	Native	<i>Cheilanthes sieberi</i>	Native
<i>Aristida ramosa</i>	Native	<i>Chloris truncata</i>	Native
<i>Aristida vagans</i>	Native	<i>Chondrilla juncea</i>	Exotic
<i>Arundinella nepalensis</i>	Native	<i>Cineraria lyratiformis</i>	Exotic
<i>Asperula conferta</i>	Native	<i>Cirsium vulgare</i>	Exotic
<i>Astroloma humifusum</i>	Native	<i>Cleistochloa rigida</i>	Native
<i>Austrodanthonia</i> sp.	Native	<i>Convolvulus erubescens</i>	Native
<i>Austrostipa aristiglumis</i>	Native	<i>Conyza bonariensis</i>	Exotic
<i>Austrostipa pubescens</i>	Native	<i>Conyza</i> sp.	Exotic
<i>Austrostipa scabra</i>	Native	<i>Correa reflexa</i> var. <i>reflexa</i>	Native
<i>Austrostipa scabra</i> subsp. <i>Falcata</i>	Native	<i>Cyclosporum leptophyllum</i>	Exotic
		<i>Cymbonotus lawsonianus</i>	Native

Scientific name	Native / exotic
<i>Cynodon dactylon</i>	Native
<i>Cynoglossum australe</i>	Native
<i>Cyperus gracilis</i>	Native
<i>Cyperus sp.</i>	Native/exotic
<i>Dampiera purpurea</i>	Native
<i>Desmodium varians</i>	Native
<i>Dianella longifolia</i>	Native
<i>Dianella revoluta</i>	Native
<i>Dichanthium sericeum</i>	Native
<i>Dichelachne micrantha</i>	Native
<i>Dichelachne sp.</i>	Native
<i>Dichondra repens</i>	Native
<i>Digitaria ammophila</i>	Native
<i>Digitaria breviglumis</i>	Native
<i>Digitaria brownii</i>	Native
<i>Digitaria diffusa</i>	Native
<i>Digitaria parviflora</i>	Native
<i>Digitaria sp.</i>	Native/exotic
<i>Dodonaea viscosa</i>	Native
<i>Dodonaea triangularis</i>	Native
<i>Dysphania pumilio</i>	Native
<i>Echinopogon caespitosus</i>	Native
<i>Echinopogon ovatus</i>	Native
<i>Echium vulgare</i>	Exotic
<i>Einadia nutans</i>	Native
<i>Eleusine tristachya</i>	Exotic
<i>Elymus scaber</i>	Native
<i>Entolasia sp.</i>	Native
<i>Eragrostis brownii</i>	Native
<i>Eragrostis cilianensis</i>	Native
<i>Eragrostis leptostachya</i>	Native
<i>Eragrostis sp.</i>	Native/exotic
<i>Eucalyptus albens</i>	Native
<i>Eucalyptus blakelyi</i>	Native
<i>Eucalyptus crebra</i>	Native
<i>Eucalyptus dwyeri</i>	Native

Scientific name	Native / exotic
<i>Eucalyptus fibrosa</i>	Native
<i>Eucalyptus melliodora</i>	Native
<i>Eucalyptus moluccana</i>	Native
<i>Eucalyptus rossii</i>	Native
<i>Eucalyptus sideroxylon</i>	Native
<i>Eucalyptus sparsifolia</i>	Native
<i>Euchiton sp.</i>	Native
<i>Euchiton sphaericus</i>	Native
<i>Eulalia aurea</i>	Native
<i>Euphorbia drummondii</i>	Native
<i>Exocarpos strictus</i>	Native
<i>Fimbristylis dichotoma</i>	Native
<i>Gahnia aspera</i>	Native
<i>Gahnia sieberiana</i>	Native
<i>Gamochaeta calviceps</i>	Exotic
<i>Gamochaeta sp.</i>	Exotic
<i>Geranium solanderi</i>	Native
<i>Glycine clandestina</i>	Native
<i>Glycine tabacina</i>	Native
<i>Gomphocarpus fruticosus</i>	Exotic
<i>Gompholobium sp.</i>	Native
<i>Gonocarpus elatus</i>	Native
<i>Gonocarpus tetragynus</i>	Native
<i>Goodenia hederacea</i>	Native
<i>Goodenia hederacea subsp. hederacea</i>	Native
<i>Goodenia paniculata</i>	Native
<i>Grevillea ramosissima</i>	Native
<i>Grevillea sericea</i>	Native
<i>Haloragis heterophylla</i>	Native
<i>Hardenbergia violacea</i>	Native
<i>Harmogia densifolia</i>	Native
<i>Hibbertia obtusifolia</i>	Native
<i>Hibbertia riparia</i>	Native
<i>Hibbertia sp.</i>	Native
<i>Hybanthus monopetalus</i>	Native
<i>Hydrocotyle laxiflora</i>	Native

Scientific name	Native / exotic
<i>Hypericum gramineum</i>	Native
<i>Hypericum perforatum</i>	Exotic
<i>Hypochaeris glabra</i>	Exotic
<i>Hypochaeris radicata</i>	Exotic
<i>Hypoxis hygrometrica</i>	Native
<i>Indigofera australis</i>	Native
<i>Isotoma axillaris</i>	Native
<i>Juncus</i> sp.	Native/exotic
<i>Juncus</i> sp. 2	Native
<i>Juncus usitatus</i>	Native
<i>Laxmannia gracilis</i>	Native
<i>Lepidosperma</i> sp.	Native
<i>Leptospermum parvifolium</i>	Native
<i>Leucopogon muticus</i>	Native
<i>Leucopogon</i> sp.	Native
<i>Lissanthe strigosa</i>	Native
<i>Lomandra confertifolia</i>	Native
<i>Lomandra filiformis</i>	Native
<i>Lomandra glauca</i>	Native
<i>Lomandra multiflora</i>	Native
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Native
<i>Macrozamia secunda</i>	Native
<i>Marrubium vulgare</i>	Exotic
<i>Melichrus erubescens</i>	Native
<i>Melichrus urceolatus</i>	Native
<i>Mentha diemenica</i>	Native
<i>Mentha satureioides</i>	Native
<i>Microlaena stipoides</i>	Native
<i>Modiola caroliniana</i>	Exotic
<i>Monotoca scoparia</i>	Native
<i>Myoporum montanum</i>	Native
<i>Olearia elliptica</i>	Native
<i>Oncinocalyx betchei</i>	Native
<i>Opercularia hispida</i>	Native
<i>Oxalis perennans</i>	Native
<i>Panicum decompositum</i>	Native

Scientific name	Native / exotic
<i>Panicum effusum</i>	Native
<i>Paronychia brasiliiana</i>	Exotic
<i>Paspalidium</i> sp.	Native
<i>Paspalum dilatatum</i>	Exotic
<i>Patersonia sericea</i>	Native
<i>Persoonia linearis</i>	Native
<i>Petrorhagia nanteuilii</i>	Exotic
<i>Phyllanthus hirtellus</i>	Native
<i>Phyllanthus occidentalis</i>	Native
<i>Phyllanthus</i> sp.	Native
<i>Phytolacca octandra</i>	Exotic
<i>Pimelea linifolia</i>	Native
<i>Pimelia</i> sp.	Native
<i>Plantago debilis</i>	Native
<i>Platysace ericoides</i>	Native
<i>Poa sieberiana</i>	Native
<i>Podolepis</i> sp.	Native
<i>Podolobium ilicifolium</i>	Native
<i>Pomax umbellata</i>	Native
<i>Poranthera microphylla</i>	Native
<i>Prostanthera</i> sp.	Native
<i>Pterostylis mutica</i>	Native
<i>Pterostylis</i> sp.	Native
<i>Pultenaea microphylla</i>	Native
<i>Richardia stellaris</i>	Exotic
<i>Rumex brownii</i>	Native
<i>Rytidosperma caespitosum</i>	Native
<i>Rytidosperma</i> sp.	Native
<i>Salvia verbenaca</i>	Exotic
<i>Sannantha cunninghamii</i>	Native
<i>Schkuhria pinnata</i>	Exotic
<i>Schoenus apogon</i>	Native
<i>Schoenus ericetorum</i>	Native
<i>Senecio pinnatifolius</i>	Native
<i>Senecio quadridentatus</i>	Native
<i>Setaria parviflora</i>	Exotic

Scientific name	Native / exotic
<i>Setaria pumila</i>	Exotic
<i>Sida corrugata</i>	Native
<i>Sida sp.</i>	Native/exotic
<i>Solanum aviculare</i>	Native
<i>Solanum campanulatum</i>	Native
<i>Solanum cinereum</i>	Native
<i>Solanum nigrum</i>	Exotic
<i>Solanum prinophyllum</i>	Native
<i>Solenogyne bellioides</i>	Native
<i>Solenogyne sp.</i>	Native
<i>Sonchus asper</i>	Exotic
<i>Sonchus oleraceus</i>	Exotic
<i>Sporobolus creber</i>	Native
<i>Sporobolus elongatus</i>	Native
<i>Stellaria pungens</i>	Native
<i>Stuartina muelleri</i>	Native
<i>Stypandra glauca</i>	Native

Scientific name	Native / exotic
<i>Styphelia triflora</i>	Native
<i>Swainsona galegifolia</i>	Native
<i>Taraxacum officinale</i>	Exotic
<i>Themeda australis</i>	Native
<i>Themeda triandra</i>	Native
<i>Trifolium repens</i>	Exotic
<i>Trifolium sp.</i>	Exotic
<i>Verbascum virgatum</i>	Exotic
<i>Verbena bonariensis</i>	Exotic
<i>Veronica plebeia</i>	Native
<i>Vittadinia cuneata</i>	Native
<i>Vittadinia sp.</i>	Native
<i>Vittadinia muelleri</i>	Native
<i>Wahlenbergia communis</i>	Native
<i>Wahlenbergia sp.</i>	Native
<i>Xanthorrhoea johnsonii</i>	Native
<i>Xerochrysum bracteatum</i>	Native

Appendix B Site photos and monitoring data sheets

Table 6: BOB10B monitoring data sheet 2023

Monitoring Data Sheet			
Monitoring Point Number	BOB10B	Date	15/06/2023
Vegetation Community	481 - Rough-barked Apple - Blakely's Red Gum - Narrow-leaved Stringybark open forest		
1. Site Photo(s) Taken	Figure 6 to Figure 9		
2. Floristic BioMetric attributes			
Native cover			54.5
Overstorey:			1.5
Mid-storey:			21
Groundcover(grass):			30
Groundcover (shrub):			0
Groundcover (other):			2
Native species richness:			34
Proportion of canopy species regenerating			100%
Exotic cover			4
Number of trees with hollows			0
Total length of fallen logs			0
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	759178 6435220	N/A	One species (<i>Hypericum perforatum</i>) listed as a priority weed listed in the CTRSUMP. Low densities of exotic annual weed species including: <ul style="list-style-type: none"> <i>Cineraria lyratiformis</i> (approx. 0.1% pfc, 10 abundance) <i>Conyza bonariensis</i> (approx. 0.1% pfc, 20 abundance) <i>Gamochoeta</i> sp. (approx. 0.1% pfc, 20 abundance) <i>Hypochaeris radicata</i> (approx. 0.1% pfc, 10 abundance) <i>Richardia stellaris</i> (approx. 0.1% pfc, 5 abundance) <i>Setaria parviflora</i> (approx. 1% pfc, 50 abundance)

Monitoring Data Sheet	
	<ul style="list-style-type: none"> • <i>Sisymbrium sp.</i> (approx. 0.1% pfc, 1 abundance) • <i>Taraxacum officinale</i> (approx. 0.1% pfc, 10 abundance) • <i>Trifolium sp.</i> (approx. 0.1% pfc, 5 abundance)
Pest animals	Nil
Visitor impact/vehicles	Nil
Rubbish dumping	Nil



Figure 6: BOB10B North



Figure 7: BOB10B East



Figure 8: BOB10B South



Figure 9: BOB10B West

Table 7: BOB12 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	BOB12	Date	15/06/2023
Vegetation Community	1310 - White Box - Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, BBS Bioregion		
1. Site Photo(s) Taken	Figure 10 to Figure 13		
2. Floristic BioMetric attributes			
Native cover			28.2
Overstorey:			0
Mid-storey:			0.2
Groundcover(grass):			26
Groundcover (shrub):			0
Groundcover (other):			2
Native species richness:			25
Proportion of canopy species regenerating			100%
Exotic cover			68
Number of trees with hollows			0
Total length of fallen logs			0
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	756715 6437456	N/A	One species (<i>Hypericum perforatum</i>) listed as priority weed listed in the CTRS WMP. This species has approx. 45% pfc, and 1000 abundance. Low densities of exotic annual weed species including: <ul style="list-style-type: none"> • <i>Cineraria lyratiformis</i> (approx. 0.1% pfc, 10 abundance) • <i>Cirsium vulgare</i> (approx. 0.1% pfc, 10 abundance) • <i>Conyza</i> sp. (approx. 0.1% pfc, 5 abundance) • <i>Hypochaeris glabra</i> (approx. 0.1% pfc, 5 abundance) • <i>Marrubium vulgare</i> (approx. 0.1% pfc, 5 abundance) • <i>Modiola caroliniana</i> (approx. 0.2% pfc, 50 abundance)

Monitoring Data Sheet	
	<ul style="list-style-type: none"> • <i>Salvia verbenaca</i> (approx. 0.1% pfc, 5 abundance) • <i>Sonchus asper</i> (approx. 0.1% pfc, 5 abundance)
Pest animals	Nil
Visitor impact/vehicles	Nil
Rubbish dumping	Nil



Figure 10: BOB12 North



Figure 11: BOB12 East



Figure 12: BOB12 South



Figure 13: BOB12 West

Table 8: BOB22 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	BOB22	Date	19/06/2023
Vegetation Community	479 - Narrow-leaved Ironbark - Black Cypress Pine - stringybark shrubby open forest		
1. Site Photo(s)Taken	Figure 14 to Figure 17		
2. Floristic BioMetric attributes			
Native cover			82.5
Overstorey:			1
Mid-storey:			5.5
Groundcover(grass):			66
Groundcover (shrub):			10
Groundcover (other):			0
Native species richness:			24
Proportion of canopy species regenerating			100%
Exotic cover			0
Number of trees with hollows			0
Total length of fallen logs			0
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	759686, 6437142	N/A	Low densities of exotic annual weed species including: <ul style="list-style-type: none"> • <i>Conyza bonariensis</i> (approx. 0.1% pfc, 10 abundance) • <i>Gamochaeta calviceps</i> (approx. 0.1% pfc, 10 abundance) • <i>Hypochaeris glabra</i> (approx. 0.1% pfc, 10 abundance) • <i>Modiola caroliniana</i> (approx. 0.1% pfc, 5 abundance) • <i>Setaria pumila</i> (approx. 5% pfc, 500 abundance) • <i>Trifolium repens</i> (approx. 0.1% pfc, 5 abundance)
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil



Figure 14: BOB22 North



Figure 15: BOB22 East



Figure 16: BOB22 South



Figure 17: BOB22 West

Table 9: BOB4B monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	BOB4B	Date	15/06/2023
Vegetation Community	1310 - White Box - Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, BBS Bioregion		
1. Site Photo(s)Taken	Figure 18 to Figure 21		
2. Floristic BioMetric attributes			
Native cover			63.8
Overstorey:			16.1
Mid-storey:			1.7
Groundcover(grass):			22
Groundcover (shrub):			22
Groundcover (other):			2
Native species richness:			37
Proportion of canopy species regenerating			100%
Exotic cover			4
Number of trees with hollows			3
Total length of fallen logs			15
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	756421, 6435620	N/A	Two species (<i>Hypericum perforatum</i> and <i>Chrysanthemoides monilifera</i>) listed as a priority weed listed in the CTRSWMP. Low densities of exotic annual weed species including: <ul style="list-style-type: none"> • <i>Centaureum glomeratum</i> (approx. 0.1% pfc, 5 abundance) • <i>Cirsium vulgare</i> (approx. 0.1% pfc, 5 abundance) • <i>Conyza bonariensis</i> (approx. 0.1% pfc, 5 abundance) • <i>Cyclosporum leptophyllum</i> (approx. 0.1% pfc, 5 abundance) • <i>Gamochoeta calviceps</i> (approx. 0.1% pf, 10 abundance) • <i>Hypochaeris glabra</i> (approx. 0.1% pfc, 10 abundance)

Monitoring Data Sheet

Pest animals Nil

Visitor impact/vehicles Nil

Rubbish dumping Nil



Figure 18: BOB4B North



Figure 19: BOB4B East



Figure 20: BOB4B South

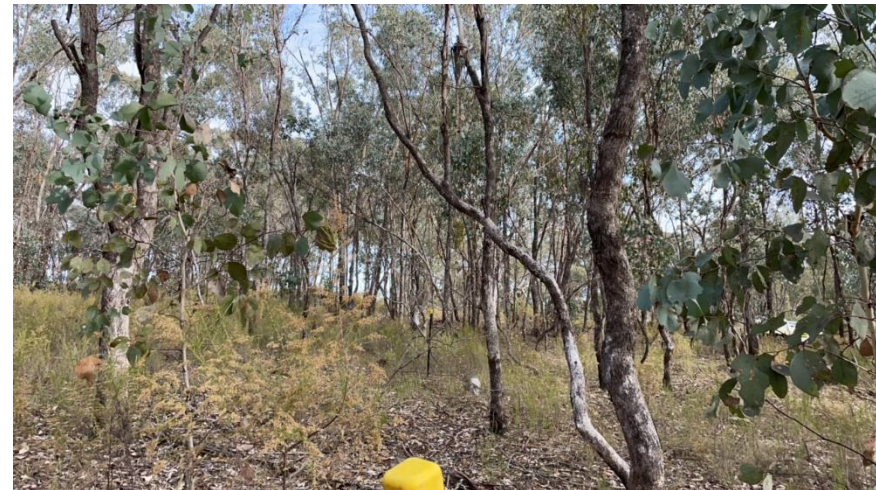


Figure 21: BOB4B West

Table 10: BOBC1 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	BOBC1	Date	1/06/2023
Vegetation Community	481 - Rough-barked Apple - Blakely's Red Gum - Narrow-leaved Stringybark open forest		
1. Site Photo(s) Taken	Figure 22 to Figure 25		
2. Floristic BioMetric attributes			
Native cover			72.5
Overstorey:			13
Mid-storey:			1.5
Groundcover(grass):			32
Groundcover (shrub):			2
Groundcover (other):			24
Native species richness:			57
Proportion of canopy species regenerating			60%
Exotic cover			4
Number of trees with hollows			2
Total length of fallen logs			37
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	760977 6435920	N/A	Low densities of exotic annual weed species including: <ul style="list-style-type: none"> <i>Centaurum glomeratum</i> (approx. 0.1% pfc, 1 abundance) <i>Conyza bonariensis</i> (approx. 0.1% pfc, 20 abundance) <i>Cyclosporum leptophyllum</i> (approx. 0.1% pfc, 5 abundance) <i>Facelis retusa</i> (approx. 0.1% pfc, 5 abundance) <i>Gamochoeta calviceps</i> (approx. 0.1% pfc, 5 abundance) <i>Hypochaeris glabra</i> (approx. 0.1% pfc, 10 abundance) <i>Lysimachia arvensis</i> (approx. 0.1% pfc, 5 abundance) <i>Paronychia brasiliiana</i> (approx. 0.1% pfc, 5 abundance) <i>Paspalum dilatatum</i> (approx. 0.1% pfc, 5 abundance)

Monitoring Data Sheet	
	<ul style="list-style-type: none"> • <i>Setaria pumila</i> (approx. 0.1% pfc, 5 abundance) • <i>Solanum nigrum</i> (approx. 0.1% pfc, 2 abundance)
Pest animals	Pig (<i>Sus scrofa</i>) diggings covering around 1/3 of plot
Visitor impact/vehicles	Nil
Rubbish dumping	Nil



Figure 22: BOBC1 North



Figure 23: BOBC1 East



Figure 24: BOBC1 South



Figure 25: BOBC1 West

Table 11: BOBC3 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	BOBC3	Date	1/06/2023
Vegetation Community	478 - Red Ironbark - Black Cypress Pine - stringybark shrubby open forest		
1. Site Photo(s)Taken	Figure 26 to Figure 29		
2. Floristic BioMetric attributes			
Native cover			73
Overstorey:			11.5
Mid-storey:			3.5
Groundcover(grass):			44
Groundcover (shrub):			6
Groundcover (other):			8
Native species richness:			57
Proportion of canopy species regenerating			100%
Exotic cover			2
Number of trees with hollows			1
Total length of fallen logs			48
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			
Fire event/fuel			Nil
Weeds	760801, 6436025	N/A	Low densities of exotic annual weed species including: <ul style="list-style-type: none"> • <i>Cirsium vulgare</i> (approx. 0.1% pfc, 5 abundance) • <i>Conyza bonariensis</i> (approx. 0.1% pfc, 10 abundance) • <i>Hypochaeris glabra</i> (approx. 0.1% pfc, 5 abundance) • <i>Stellaria media</i> (approx. 0.1% pfc, 5 abundance)
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil



Figure 26: BOBC3 North



Figure 27: BOBC3 East



Figure 28: BOBC3 South



Figure 29: BOBC3 West

Table 12: BOBE3 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	BOBE3	Date	1/06/2023
Vegetation Community	479 - Narrow-leaved Ironbark - Black Cypress Pine - stringybark shrubby open forest		
1. Site Photo(s)Taken	Figure 30 to Figure 33		
2. Floristic BioMetric attributes			
Native cover			63
Overstorey:			24
Mid-storey:			21
Groundcover(grass):			14
Groundcover (shrub):			2
Groundcover (other):			2
Native species richness:			34
Proportion of canopy species regenerating			100%
Exotic cover			0
Number of trees with hollows			0
Total length of fallen logs			155
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	763721, 6438701	N/A	Low densities of exotic annual weed species including: <ul style="list-style-type: none"> <i>Conyza bonariensis</i> (approx. 0.1% pfc, 2 abundance) <i>Gamochaeta calviceps</i> (approx. 0.1% pfc, 2 abundance) <i>Taraxacum officinale</i> (approx. 0.1% pfc, 10 abundance)
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil



Figure 30: BOBE3 North



Figure 31: BOBE3 East



Figure 32: BOBE3 South



Figure 33: BOBE3 West

Table 13: BOBE6 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	BOBE6	Date	31/05/2023
Vegetation Community	281 - Rough-barked Apple - Red Gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern SNW South Western Bioregion and BBS Bioregion		
1. Site Photo(s)Taken	Figure 34 to Figure 37		
2. Floristic BioMetric attributes			
Native cover			78
Overstorey:			0.5
Mid-storey:			7.5
Groundcover(grass):			68
Groundcover (shrub):			0
Groundcover (other):			2
Native species richness:			28
Proportion of canopy species regenerating			0
Exotic cover			4
Number of trees with hollows			0
Total length of fallen logs			0
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	763512 6438078		One species (<i>Hypericum perforatum</i>) listed as a priority weed listed in the CTRSWMP. Low densities of exotic annual weed species including: <ul style="list-style-type: none"> <i>Aster subulatus</i> (approx. 0.1% pfc, 2 abundance) <i>Bromus hordeaceus</i> (approx. 2% pfc, 100 abundance) <i>Cirsium vulgare</i> (approx. 0.1% pfc, 10 abundance) <i>Conyza bonariensis</i> (approx. 2% pfc, 100 abundance) <i>Gamochaeta calviceps</i> (approx. 0.2% pfc, 20 abundance) <i>Hypochaeris radicata</i> (approx. 0.3% pfc, 100 abundance) <i>Paspalum dilatatum</i> (approx. 5% pfc, 1000 abundance) <i>Plantago lanceolata</i> (approx. 0.1% pfc, 10 abundance) <i>Setaria parviflora</i> (approx. 5% pfc, 100 abundance) <i>Verbena bonariensis</i> (approx. 0.1% pfc, 5 abundance)
Pest animals			Nil
Visitor impact/vehicles			Nil

Monitoring Data Sheet

Rubbish dumping

Nil



Figure 34: BOBE6 North



Figure 35: BOBE6 East



Figure 36: BOBE6 South



Figure 37: BOBE6 West

Table 14: UCML_CA_Site10 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	UCML_CA_Site10	Date	15/06/2023
Vegetation Community	1709 - Broom Bush - <i>Allocasuarina gymnanthera</i> heathy woodland on sandstone outcrops of the Sydney Basin		
1. Site Photo(s)Taken	Figure 38 to Figure 41		
2. Floristic BioMetric attributes			
Native cover			49.3
Overstorey:			2.7
Mid-storey:			6.6
Groundcover(grass):			6
Groundcover (shrub):			26
Groundcover (other):			8
Native species richness:			56
Proportion of canopy species regenerating			100%
Exotic cover			0
Number of trees with hollows			0
Total length of fallen logs			3
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds			One species (<i>Chrysanthemoides monilifera</i>) listed as a priority weed listed in the CTRSWMP. (approx. 0.1% pfc, 2 abundance).
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil



Figure 38: UCML_CA_Site10 North



Figure 39: UCML_CA_Site10 East



Figure 40: UCML_CA_Site10 South



Figure 41: UCML_CA_Site10 West

Table 15: UCML_CA_Site11 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	UCML_CA_Site11	Date	7/06/2023
Vegetation Community	1709 - Broom Bush - <i>Allocasuarina gymnanthera</i> heathy woodland on sandstone outcrops of the Sydney Basin		
1. Site Photo(s)Taken	Figure 42 to Figure 45		
2. Floristic BioMetric attributes			
Native cover			48.5
Overstorey:			2.5
Mid-storey:			10
Groundcover(grass):			8
Groundcover (shrub):			14
Groundcover (other):			14
Native species richness:			48
Proportion of canopy species regenerating			100%
Exotic cover			0
Number of trees with hollows			0
Total length of fallen logs			8
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas	756444, 6435293		
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds			Low densities of exotic annual weed species including: <ul style="list-style-type: none"> <i>Bromus hordeaceus</i> (approx. 0.1% pfc, 1 abundance) <i>Hypochaeris glabra</i> (approx. 0.1% pfc, 5 abundance)
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil



Figure 42: UCML_CA_Site11 North



Figure 43: UCML_CA_Site11 East



Figure 44: UCML_CA_Site11 South

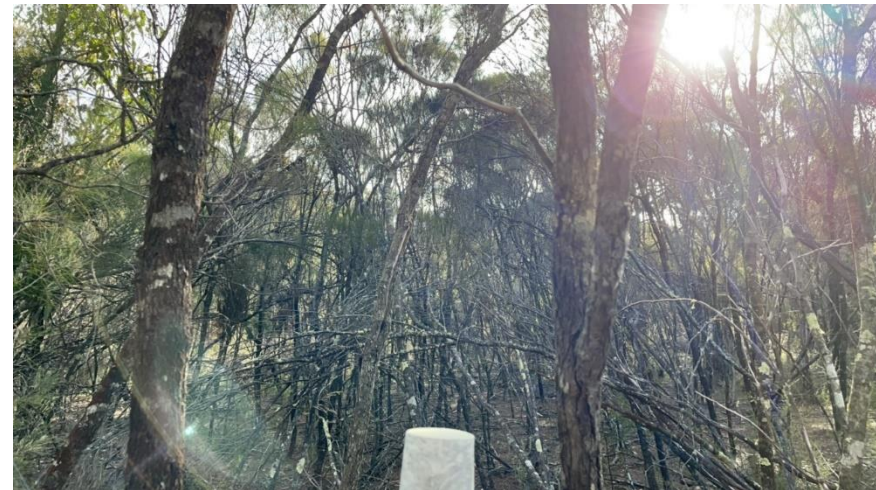


Figure 45: UCML_CA_Site11 West

Table 16: UCML_CA_Site13 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	UCML_CA_Site13	Date	31/05/2023
Vegetation Community	478 - Red Ironbark - Black Cypress Pine - stringybark shrubby open forest		
1. Site Photo(s)Taken	Figure 46 to Figure 49		
2. Floristic BioMetric attributes			
Native cover			49.5
Overstorey:			31
Mid-storey:			12.5
Groundcover(grass):			2
Groundcover (shrub):			2
Groundcover (other):			2
Native species richness:			37
Proportion of canopy species regenerating			67%
Exotic cover			0
Number of trees with hollows			0
Total length of fallen logs			165
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	761178, 6436251	N/A	Low densities of exotic annual weed species including: <ul style="list-style-type: none"> • <i>Cirsium vulgare</i> (approx. 0.1% pfc, 1 abundance) • <i>Conyza</i> (approx. 0.1% pfc, 10 abundance) • <i>Hypochaeris radicata</i> (approx. 0.1% pfc, 10 abundance)
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil



Figure 46: UCML_CA_Site13 North



Figure 47: UCML_CA_Site13 East



Figure 48: UCML_CA_Site13 South



Figure 49: UCML_CA_Site13 West

Table 17: UCML_CA_Site53 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	UCML_CA_Site53	Date	19/06/2023
Vegetation Community	403 - Dapper Mugga Ironbark - Western Grey Box - Blakely's Red Gum - Black Cypress Pine grass shrub hill woodland (southern BBS Bioregion)		
1. Site Photo(s)Taken	Figure 50 to Figure 53		
2. Floristic BioMetric attributes			
Native cover			85
Overstorey:			20.2
Mid-storey:			10.8
Groundcover(grass):			20
Groundcover (shrub):			18
Groundcover (other):			16
Native species richness:			30
Proportion of canopy species regenerating			80%
Exotic cover			0
Number of trees with hollows			2
Total length of fallen logs			77
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	759731, 6436898		Nil
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil



Figure 50: UCML_CA_Site53 North



Figure 51: UCML_CA_Site53 East



Figure 52: UCML_CA_Site53 South



Figure 53: UCML_CA_Site53 West

Table 18: UCML_CA_Site6 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	UCML_CA_Site6	Date	15/06/2023
Vegetation Community	1675 - Scribbly Gum - Narrow-leaved Ironbark - <i>Bossiaea rhombifolia</i> heathy open forest		
1. Site Photo(s)Taken	Figure 54 to Figure 57		
2. Floristic BioMetric attributes			
Native cover			90.2
Overstorey:			15
Mid-storey:			9.2
Groundcover(grass):			14
Groundcover (shrub):			38
Groundcover (other):			14
Native species richness:			45
Proportion of canopy species regenerating			100%
Exotic cover			2
Number of trees with hollows			1
Total length of fallen logs			45
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	757309 6434495		Low densities of exotic annual species including: <ul style="list-style-type: none"> <i>Hypochoeris glabra</i> (approx. 0.1% pfc, 5 abundance)
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil



Figure 54: UCML_CA_Site6 North



Figure 55: UCML_CA_Site6 East



Figure 56: UCML_CA_Site6 South



Figure 57: UCML_CA_Site6 West

Table 19: UCML_CA_Site7 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	UCML_CA_Site7	Date	15/06/2023
Vegetation Community	1675 - Scribbly Gum - Narrow-leaved Ironbark - <i>Bossiaea rhombifolia</i> heathy open forest		
1. Site Photo(s)Taken	Figure 58 to Figure 61		
2. Floristic BioMetric attributes			
Native cover			71
Overstorey:			23
Mid-storey:			4
Groundcover(grass):			16
Groundcover (shrub):			12
Groundcover (other):			16
Native species richness:			42
Proportion of canopy species regenerating			100%
Exotic cover			0
Number of trees with hollows			1
Total length of fallen logs			74
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds			Nil
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil



Figure 58: UCML_CA_Site7 North



Figure 59: UCML_CA_Site7 East



Figure 60: UCML_CA_Site7 South



Figure 61: UCML_CA_Site7 West

Table 20: UCML_CA_Site9 monitoring data sheet

Monitoring Data Sheet			
Monitoring Point Number	UCML_CA_Site9	Date	15/06/2023
Vegetation Community	403 - Dapper Mugga Ironbark - Western Grey Box - Blakely's Red Gum - Black Cypress Pine grass shrub hill woodland (southern BBS Bioregion)		
1. Site Photo(s) Taken	Figure 62 to Figure 65		
2. Floristic BioMetric attributes			
Native cover			65.5
Overstorey:			1
Mid-storey:			2.5
Groundcover(grass):			44
Groundcover (shrub):			2
Groundcover (other):			16
Native species richness:			38
Proportion of canopy species regenerating			100%
Exotic cover			2
Number of trees with hollows			0
Total length of fallen logs			0
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Nil
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	759369, 6437498	N/A	One species (<i>Hypericum perforatum</i>) listed as a priority weed listed in the CTRSWMP (approx. 1% pfc, 50 abundance) Low densities of exotic annual weed species including: <ul style="list-style-type: none"> • <i>Centaurum glomeratum</i> (approx. 0.1% pfc, 5 abundance) • <i>Conyza bonaerensis</i> (approx. 0.1% pfc, 10 abundance) • <i>Echium plantagineum</i> (approx. 0.1% pfc, 10 abundance) • <i>Gamochaeta calviceps</i> (approx. 0.5% pfc, 100 abundance) • <i>Hypochaeris glabra</i> (approx. 0.2% pfc, 20 abundance) • <i>Modiola caroliniana</i> (approx. 0.1% pfc, 5 abundance) • <i>Ornithopus compressus</i> (approx. 0.1% pfc, 5 abundance) • <i>Paspalum dilatatum</i> (approx. 1% pfc, 100 abundance) • <i>Richardia stellaris</i> (approx. 0.1% pfc, 5 abundance)

Monitoring Data Sheet

- *Rumex acetosella* (approx. 0.1% pfc, 5 abundance)
- *Setaria parviflora* (approx. 0.2% pfc, 10 abundance)
- *Sonchus asper* (approx. 0.1% pfc, 10 abundance)
- *Stellaria media* (approx. 0.1% pfc, 10 abundance)
- *Taraxacum officinale* (approx. 0.1% pfc, 20 abundance)
- *Trifolium* sp. (approx. 0.1% pfc, 20 abundance)

Pest animals Nil

Visitor impact/vehicles Nil

Rubbish dumping Nil



Figure 62: UCML_CA_Site9 North



Figure 63: UCML_CA_Site9 East



Figure 64: UCML_CA_Site9 South



Figure 65: UCML_CA_Site9 West

Appendix C Management Issues

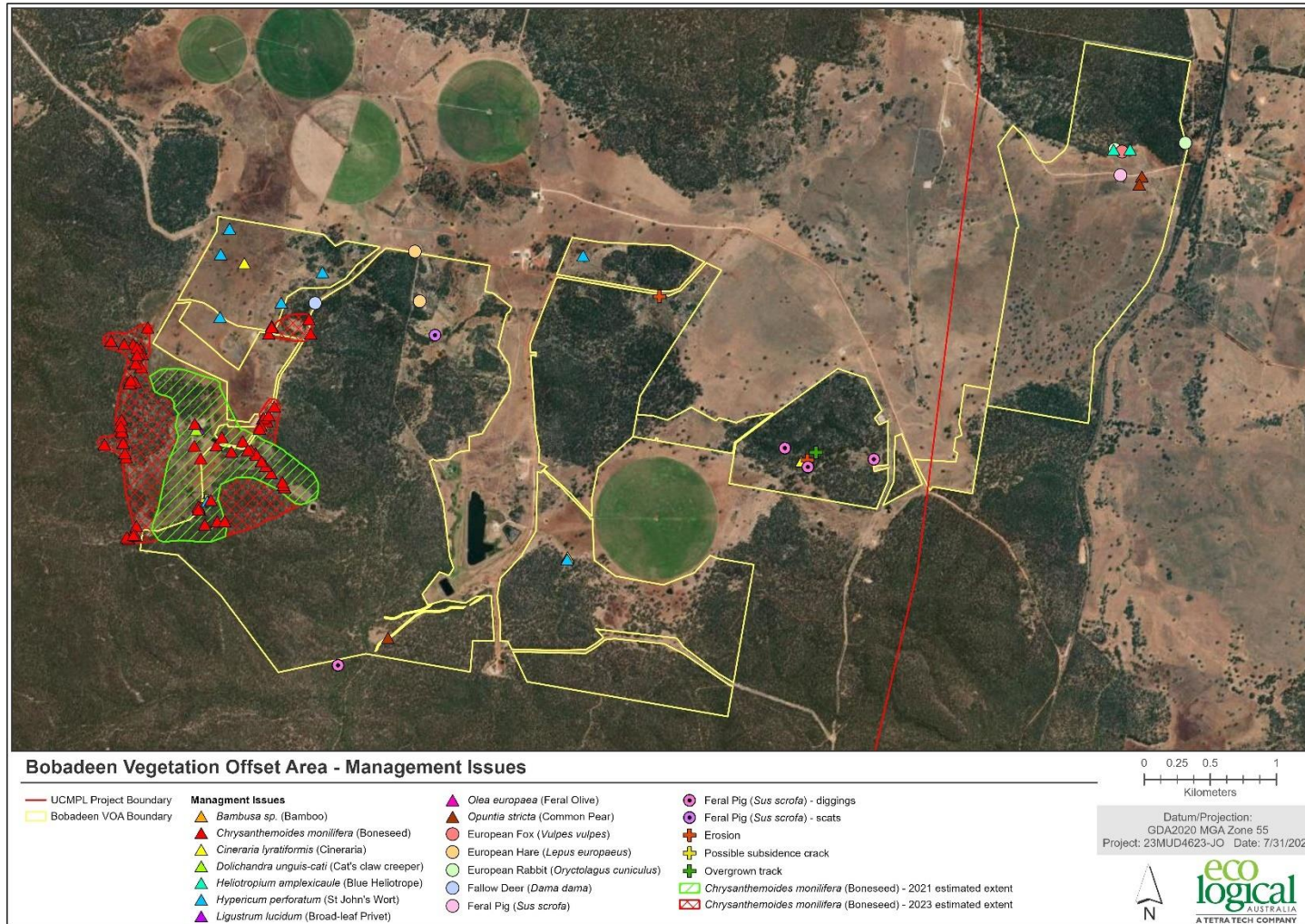


Figure 66: Bobadeen Vegetation Offset Area – Management Issues 2023

Appendix D Wild dog baiting program extent

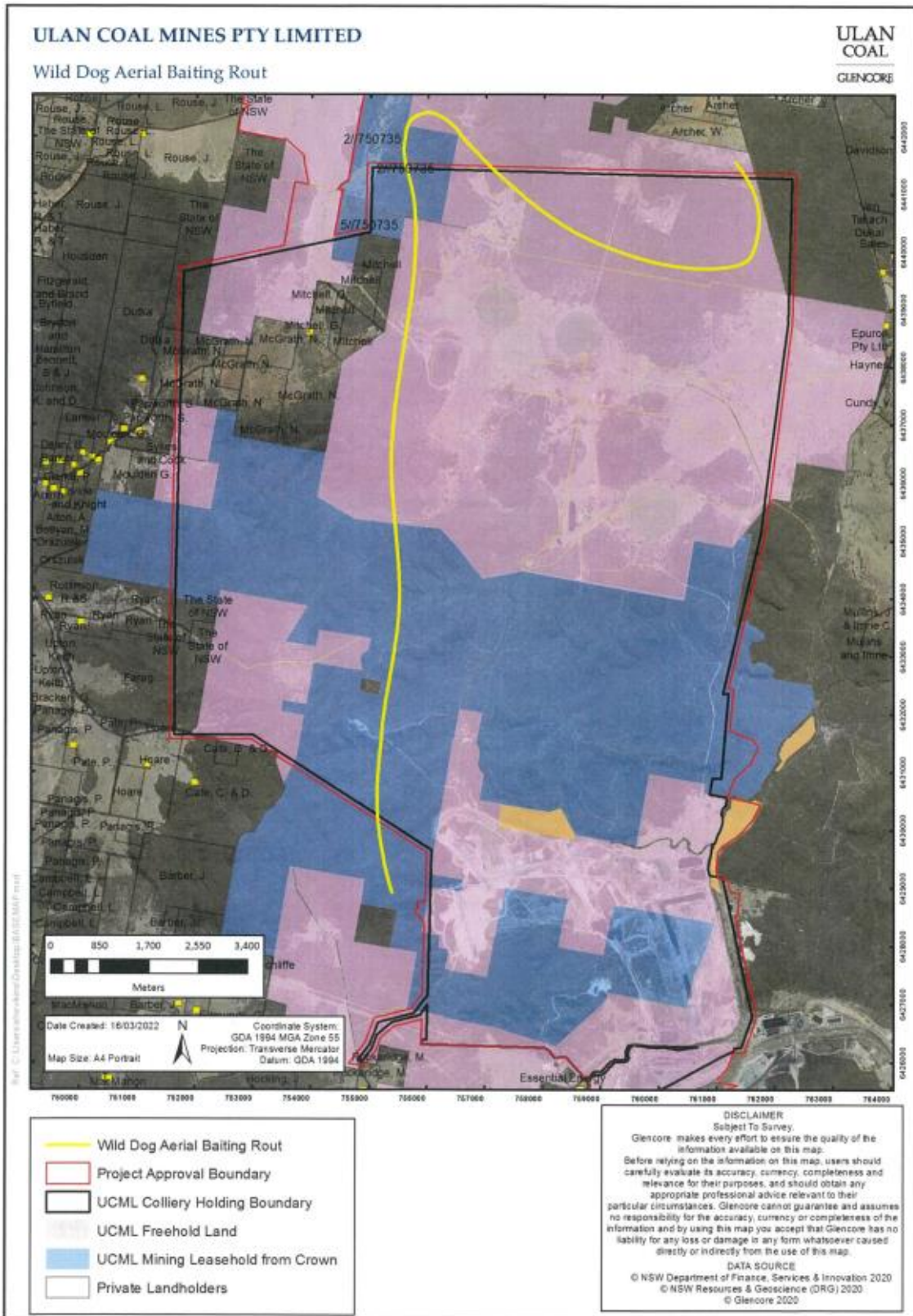


Figure 67: Wild Dog Aerial Baiting Route

Appendix E Planting survival assessment results 2022

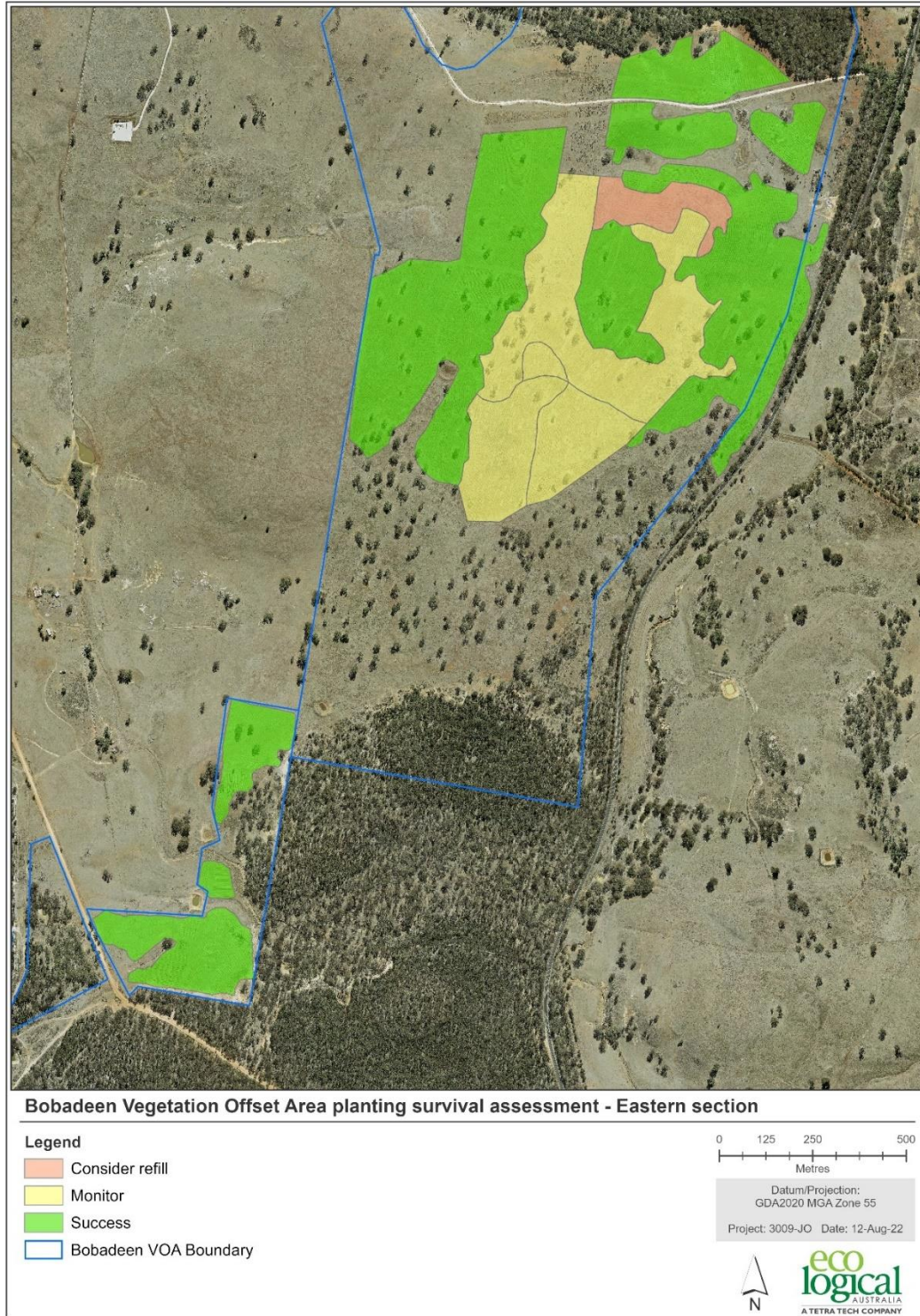


Figure 68: Bobadeen Vegetation Offset Area planting survival assessment 2022 – Eastern section

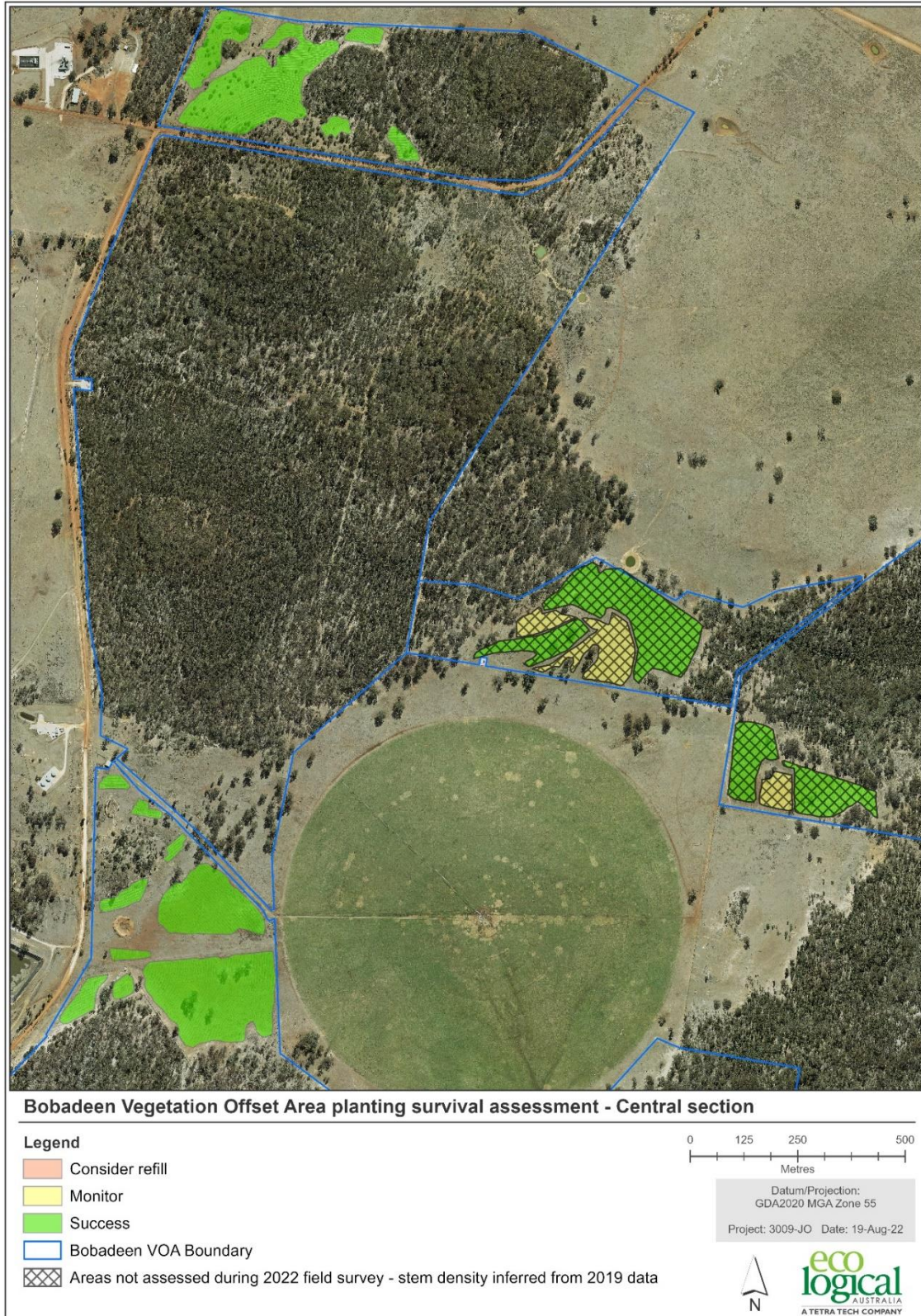


Figure 69: Bobadeen Vegetation Offset Area planting survival assessment 2022 – Central section

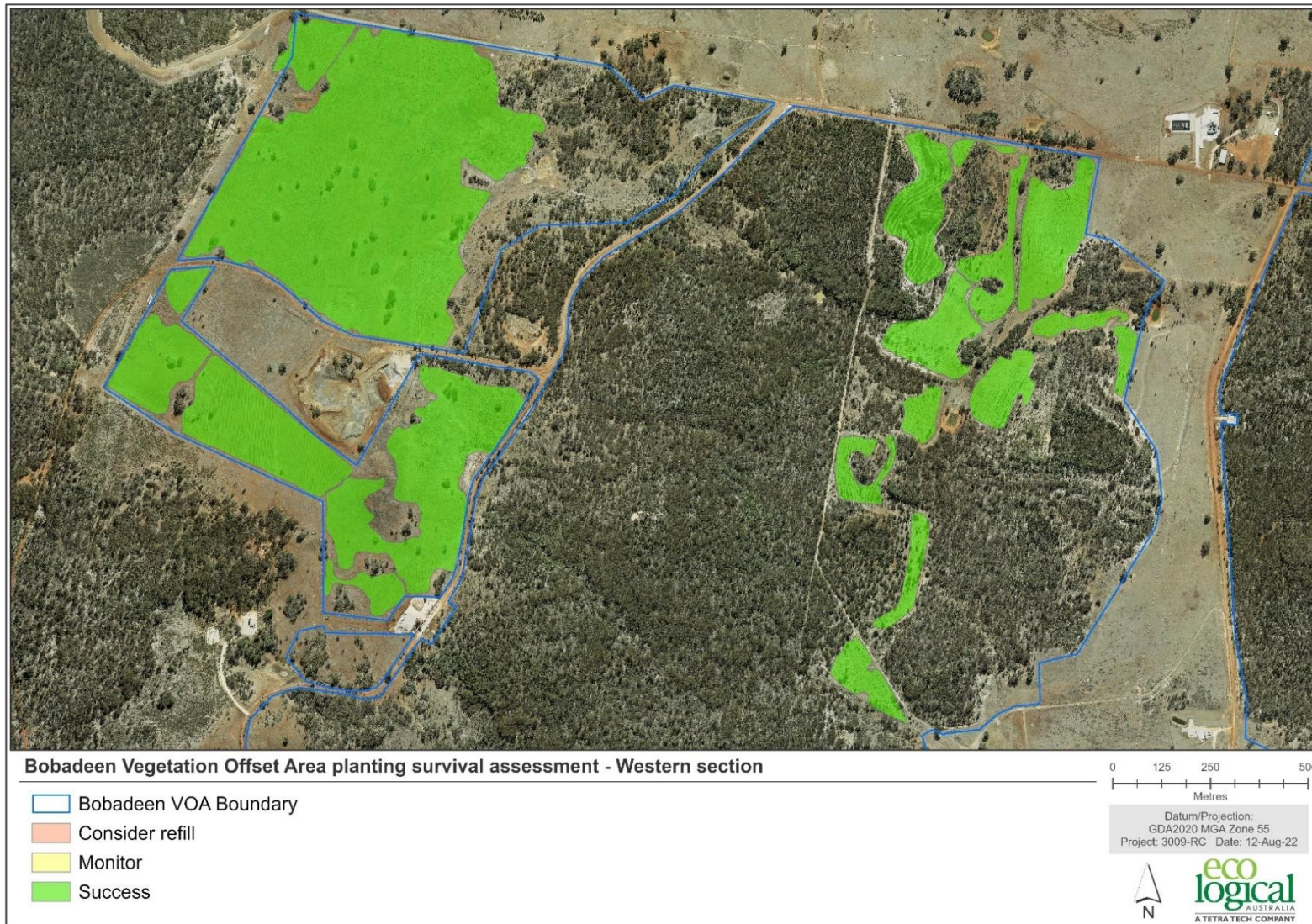


Figure 70: Bobadeen Vegetation Offset Area planting survival assessment 2022– Western section

