UCMPL 2023 Highett Road VCA Monitoring Report

Ulan Coal Mines Pty Ltd

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Template 2.8.1

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Abbreviations

Abbreviation	Description
BC Act	NSW *Biodiversity Conservation Act 2016*
CTRSWMP	Central Tablelands Regional Strategic Weed Management Plan
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment
ELA	Eco Logical Australia
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ha	Hectares
LLS	Local Land Services
NPW Act	*National Parks and Wildlife Act 1974*
NSW	New South Wales
PCT	Plant Community Type
pfc	Projected foliage cover
UCMPL	Ulan Coal Mines Pty Ltd

Executive Summary

Eco Logical Australia (ELA) was engaged by Ulan Coal Mines Pty Ltd (UCMPL) to undertake floristic monitoring during 2023 of the Highett Road *Acacia ausfeldii* Management Area (the Conservation Area). The Conservation Area, located at Lot 66 DP 750773, was established to satisfy commitments to secure biodiversity offsets relating to the NSW Project Approval 08_0184 and the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approval EPBC No 2009/5252. The Conservation Area is to be managed to restore and protect the conservation values at the site. The Conservation Area comprises 19.15 ha of intact vegetation.

A Conservation Agreement was established between NSW Department of Planning, Industry and Environment administering the NSW *National Parks and Wildlife Act 1974* (NPW Act) and UCMPL, under Part 4, Division 12 of the NPW Act. The Highett Road *Acacia ausfeldii* Management Area Conservation Agreement (the Conservation Agreement) was signed on 5 May 2019. UCMPL received notification from the NSW Biodiversity Conservation Trust that the Conservation Area was registered on 11 December 2019.

Outlined in the Conservation Agreement (UCMPL 2019a) is a monitoring program (Annexure D) which must be undertaken for a minimum ten-year period, including full floristic assessments within four designated quadrats, establishment off photo monitoring points and a walk-through assessment to record opportunistic sightings of threatened species and priority weeds for management. This report is the third since the establishment and baseline monitoring of sites was undertaken in 2017.

Results of quadrat monitoring, photo-point monitoring and a walk-through assessment within the Conservation Area indicates that the conservation values recorded throughout the Conservation Area remain intact, with no damage or disturbance recorded. Projected foliage cover increased at two sites and decreased at two sites. There was an increase in native species richness at all sites with one exception. The changes observed within the 2023 monitoring period can be attributed to above average rainfall experienced within the region in 2020 and 2021, following drought conditions between 2017 and early 2020.

Overall, the Conservation Area remains ecologically stable with the condition of vegetation within the Conservation Area remaining consistent with previous monitoring and with Plant Community Type (PCT) descriptions provided in the Conservation Agreement (UCMPL 2019a).

1. Introduction

The Highett Road *Acacia ausfeldii* Management Area (the Conservation Area) is located approximately 3.5 km northwest of the village of Ulan, within the Mid-Western Regional Council Local Government Area in NSW. Figure 1 depicts the location of the Conservation Area within the region.

The Conservation Area is 19.15 ha in size and consists of two Plant Community Types (PCTs) (Table 1 and Figure 2) (UCMPL 2019a).

Table 1: PCTs within the Highett Road *Acacia ausfeldii* Management Area

PCT Number	PCT Name	Condition	Area (ha)
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	11.08
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	8.07
		Total	19.15

The Conservation Area contains habitat for 21 species of fauna listed as vulnerable and two species listed as endangered under the NSW *Biodiversity Conservation Act 2016* (BC Act), and three species listed as vulnerable and one endangered migratory species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Acacia ausfeldii (Ausfeld's Wattle), which is listed as vulnerable under the BC Act, has been recorded within the Conservation Area.

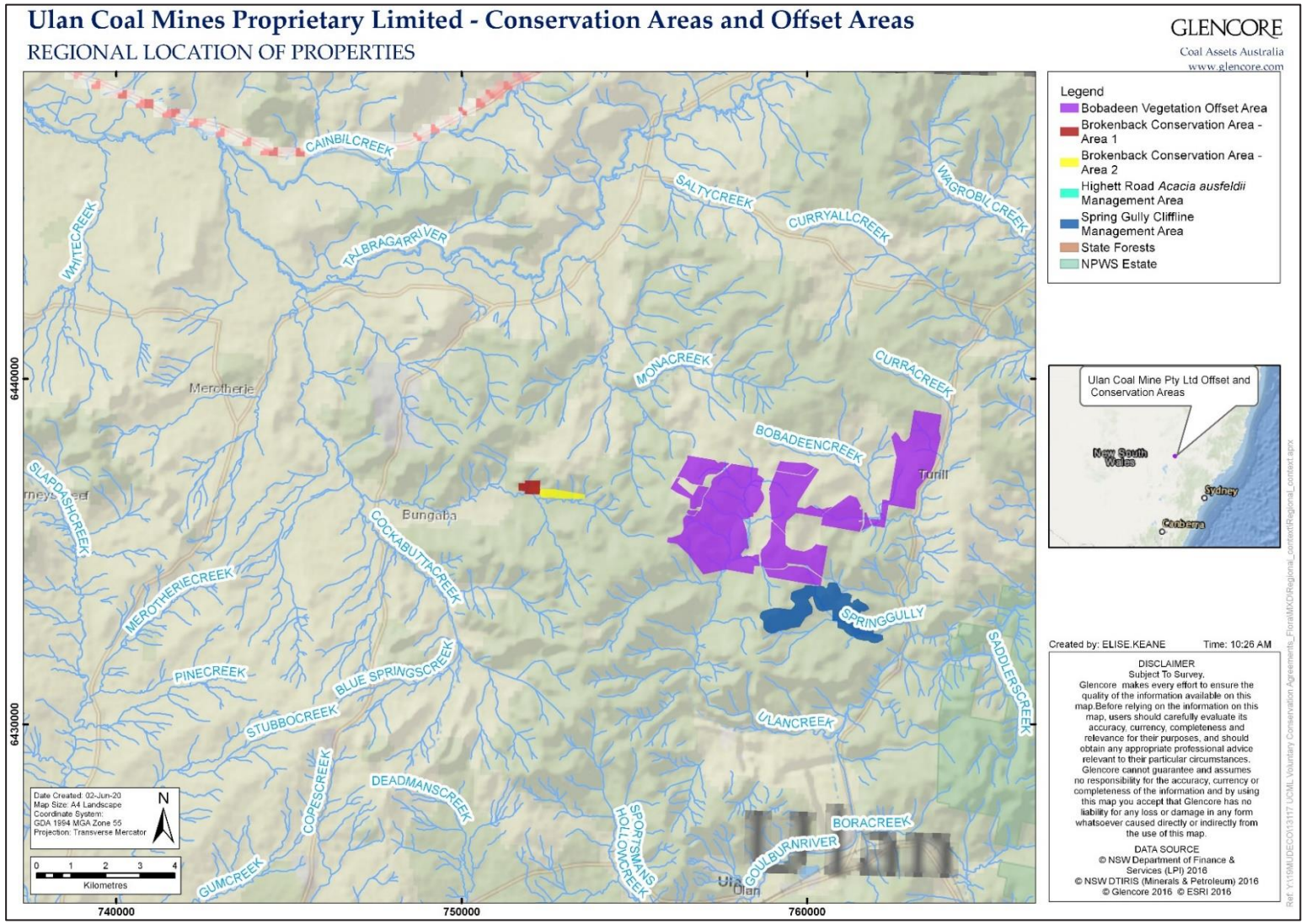

Figure 1: Regional location of Highett Road *Acacia ausfeldii* Management Area (UCMPL 2019a).

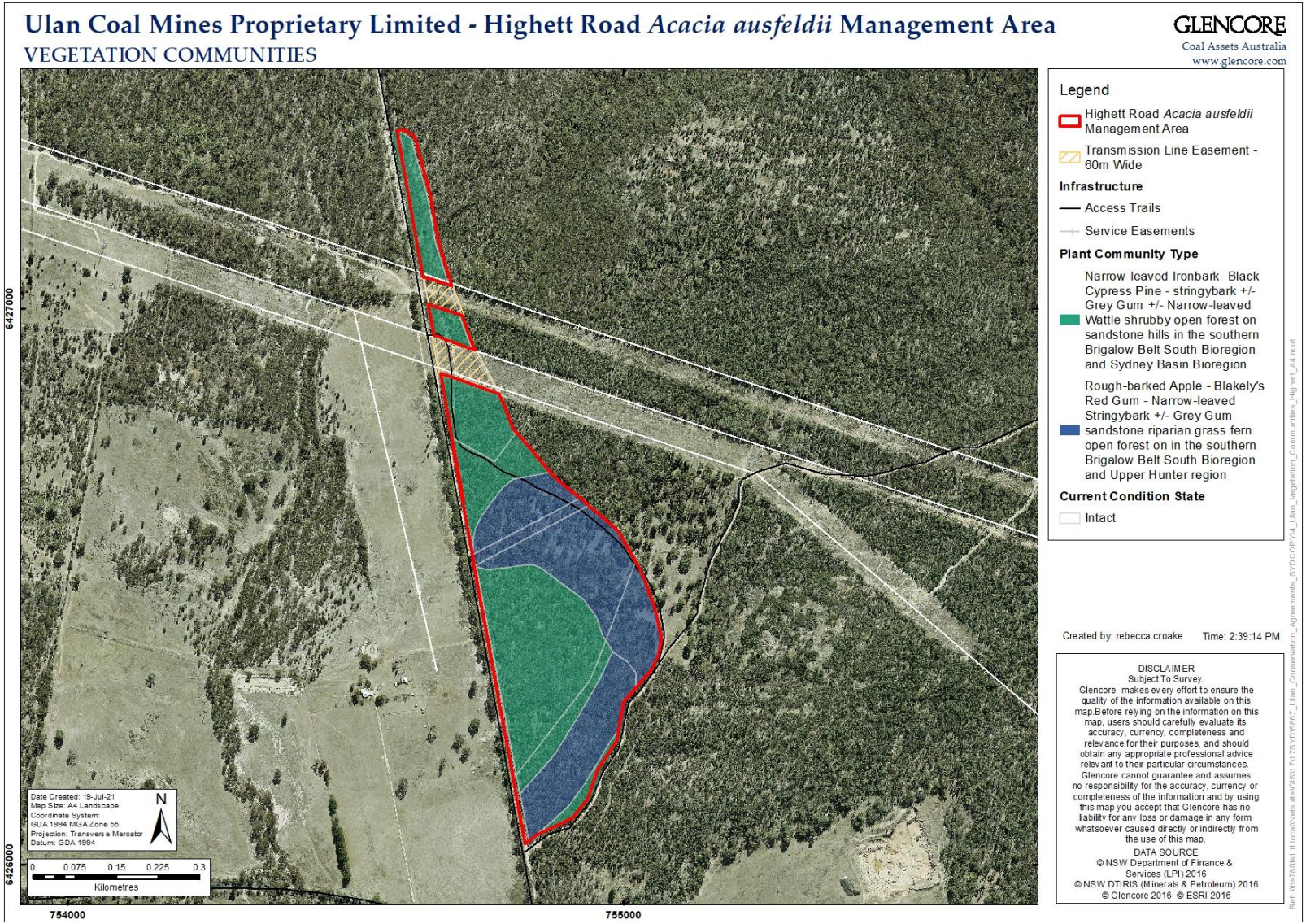

Figure 2: Highett Road *Acacia ausfeldii* Management Area vegetation communities (UCMPL 2019a)

2. Methodology

Monitoring, including floristic quadrat monitoring, photo-point monitoring and walk-through assessment, of the Conservation Area was undertaken in accordance with Section 7 and Annexure D of the Conservation Agreement (UCMPL 2019a) and the BioBanking Assessment Methodology (OEH 2014) on 5 June 2023 by ELA ecologists Rebecca Croake and Jack O'Sullivan.

Monitoring in 2023 is the fifth round of monitoring required by the Conservation Area as per the Conservation Agreement since the initial baseline monitoring which was undertaken in 2017. As per Annexure D, Section c) iii) of the Conservation Agreement (UCMPL 2019a), the results of the 2022 monitoring were compared to the 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 four monitoring locations as shown in Figure 3 below. Data collection at each monitoring plot was undertaken in accordance with the Bio Banking Assessment Methodology (OEH 2014) within a 20 x 20 m quadrat nested within a 20 x 50 m quadrat. This methodology is consistent with the method for floristic monitoring undertaken across UCMPL biodiversity and vegetation offset areas as part of the UCMPL Biodiversity Management Plan (BMP) (UCMPL 2019b). The following attributes were recorded:

- Floristic cover and abundance within the nested 20 x 20 m quadrat
  - Cover estimates for each species were recorded form 1 – 5% and thereafter in 5% increments
  - Abundance assessments 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 x 50 m quadrat
- Non-vascular ground cover percentage (little, 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 (<1m), 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 x 50 m quadrat.

Total native cover, which is not prescribed by the BioBanking Assessment Methodology (OEH 2014) but by the Conservation Agreement (UCMPL 2019) was calculated from the total of native overstorey cover, native midstorey 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 is 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 2019a).

As part of the UCMPL BMP (2019b), annual inspections are undertaken by UCMPL representatives within the Conservation Area.

2.2. Walk-through assessment

A walk-through assessment was undertaken within the Conservation Area to record opportunistic sightings including fire events or impacts of fire management, weeds (including compiling a list of exotic species and recorded 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.

All spatial information collected during the field survey was recorded using ArcGIS Field Maps equipped with GPS (accuracy ±5m depending upon access to satellites).

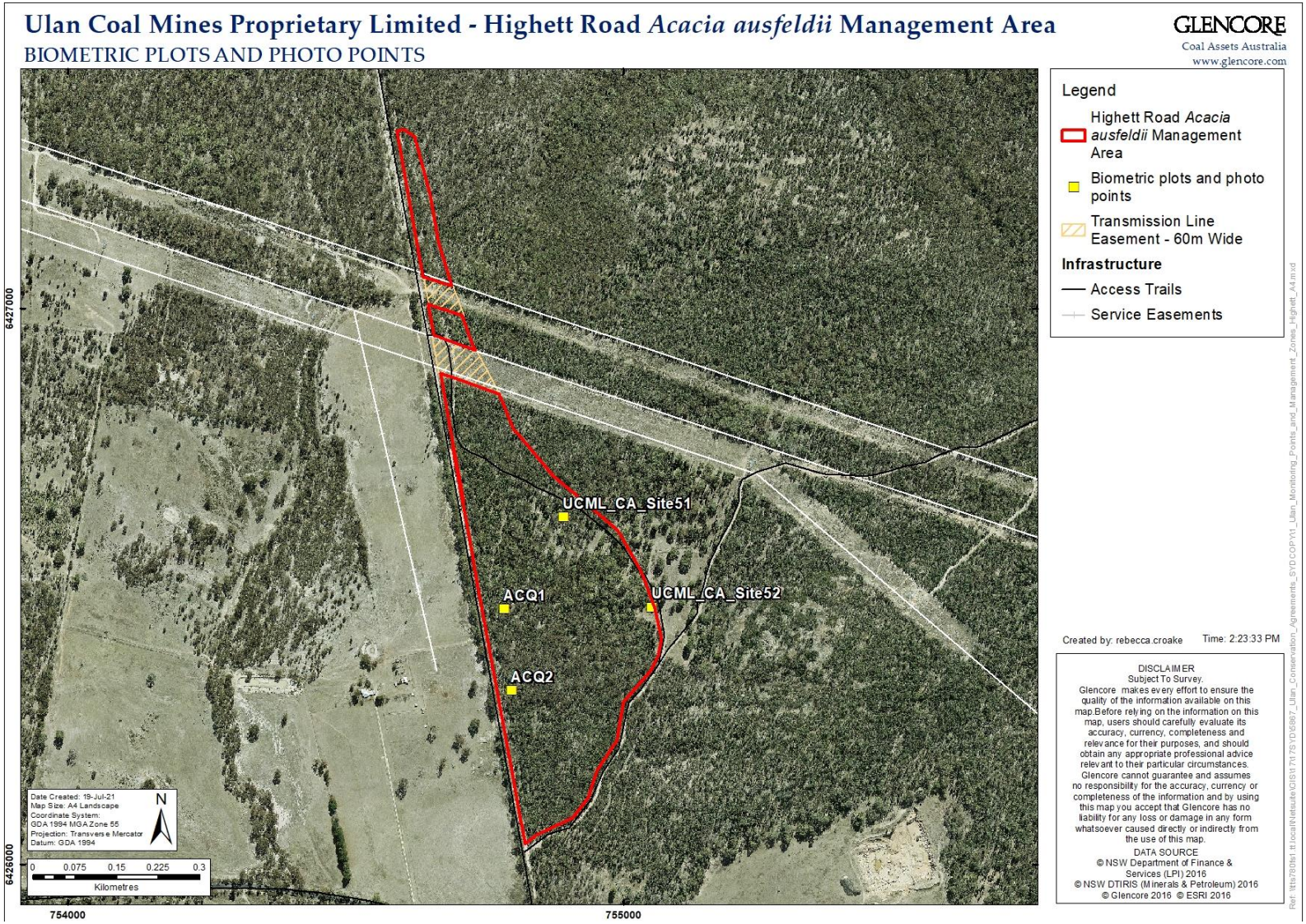

Figure 3: Highett Road Acacia ausfeldii Management Conservation Area biometric plots and photo points (UCMPL 2019a)

2.3. *Acacia ausfeldii* population monitoring

There is no specific requirement to monitor the *Acacia ausfeldii* population with the Conservation Area as per Annexure D of the Conservation Agreement. Following the caseation of health and condition monitoring (section 2.3.1) a detailed targeted survey to map the extent of *Acacia ausfeldii* was undertaken throughout the Conservation Area during 2022.

2.3.1. Historic Monitoring

Condition and health monitoring of the *Acacia ausfeldii* population within the Conservation Area was undertaken from 2011 to 2019, where targeted surveys of 100 tagged individuals and germination transect surveys were undertaken. Height, diameter at base and growth stage (seedling, sapling or mature shrub) of each *Acacia ausfeldii* individual was recorded along the transect, along with reproductive ratings and condition ratings (Table 2).

Table 2: Condition ratings used in *Acacia ausfeldii* population monitoring; 2011 to 2019.

Rating	1	2	3	4	5
Condition	Severe damage / dieback	Many dead stems	Some dead branches	Minor damage	Healthy
Reproductive	Nil	Sparse occasional flowers/fruit	Low – under 25% of potential	Moderate – 25 to 75% of potential	High- 75 to 100% of potential

Condition and health monitoring ceased during 2019, as natural and expected senescence of tagged individuals resulted in data which was no longer reflective of the population.

2.3.2. 2022 monitoring

A survey for *Acacia ausfeldii* was undertaken throughout the Conservation Area on 14 July 2022 by ELA ecologists. Parallel transects with a 20 m spacing were traversed throughout the Conservation Area in accordance with medium shrubs (1-6 m) and open vegetation detailed in DPIE's *Surveying threatened plants and their habitats – NSW survey guide for the Biodiversity Assessment Method* (2020). Plants were marked with a hand-held GPS.

The survey period for *Acacia ausfeldii* is generally between August to October when flowers or pods are present (DPE 2022). The presence of reproductive material allows for accurate identification. There are several species which are similar to *Acacia ausfeldii.* Flower buds were present at time of survey, which enabled accurate identification of *Acacia ausfeldii.*

2.3.3. 2023 monitoring

No population survey was undertaken for *Acacia ausfeldii* in 2023, however the health of the individual plants was assessed during the walk-through assessment of the Conservation Area.

3. Results

3.1. Site monitoring data sheets and photos

A total of 122 plant species, comprised of 97 native species and 24 exotic species and one (1) species which could not be identified as native or exotic due to absence of fertile material were recorded across the four monitoring plots within the Conservation Area. A summary of results is provided in Table 3 below.

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

Table 3: Quadrat monitoring results summary 2023

Photo Point / Quadrat no.	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 Brigalow Belt South Bioregion and Sydney Basin Bioregion (HU702)										
Benchmark values	**31**	**5**	**2**	**2**	**2**	**2**	**N/A**	**N/A**	**2**	**40**
ACQ1	57	25.5	9.5	24	10	2	100	0	0	98
ACQ2	50	12.5	3.3	38	26	0	100	0	0	48
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)										
Benchmark values	**31**	**10**	**5**	**0**	**10**	**5**	**N/A**	**N/A**	**1.5**	**10**
UCML_CA_Site51	56	11.7	4.6	28	28	4	100	0	0	6
UCML_CA_Site52	40	7	7.5	32	10	6	100	8	0	0

*pfc = projected foliage cover

3.2. Walk through assessment summary

Results from the walk-through assessment across the entire Conservation Area is provided in Table 4. A map depicting the management issues described in Table 4 is provided in Appendix C.

Table 4: Walk-through assessment results summary 2023

Category	Comment
Fire events or impacts of fire management	No fire events or fire management activities have occurred in the Conservation Area.
Weeds	Three weed species listed under the Local Land Services (LLS) Central Tablelands Regional Strategic Weed Management Plan (CTRSWMP) 2023 – 2027 (LLS 2023) were identified throughout the Conservation Area during monitoring in 2023 (Appendix C), including: • *Hypericum perforatum* (St. John's Wort) at UCML_CA_Site51 and UCML_CA_Site52. • *Opuntia stricta* var. *stricta* (Common Prickly Pear) at UCML_CA_Site52 and scattered throughout Conservation Area. • *Rubus fruticosa* spp. aggregate scattered in low abundances throughout Conservation Area. Exotic species present with the Conservation Area include: • *Cirsium vulgare* (Bull thistle) • *Cineraria lyratiformis* (African Marigold) • *Conyza bonariensis* (Flaxleaf Fleabane) • *Cyclospermum leptophyllum* (Marsh Parsley) • *Cyperus eragrostis* (Umbrella sedge) • *Gamochaeta calviceps* (Cudweed) • *Hypochaeris glabra* (Smooth cat's ear) • *Hypochaeris radicata* (Catsear) • *Juncus microcephalus* (South American rush) • *Oenothera stricta* (Chilean evening primrose) • *Orobanche minor* • *Plantago lanceolata* (Lamb's Tongues) • *Richardia stellaris* • *Rumex acetosella* (Sorrel) • *Salvia verbenaca* (Wild sage) • *Setaria parviflora* (Marsh bristlegrass) • *Sonchus oleraceus* (Sowthistle) • *Stellaria media* (Chickweed) • *Taraxacum officinale* (Dandelion) • *Trifolium* sp. (a clover species) • *Verbascum thapsus* (Great Mullein) • *Verbena bonariensis* (Purpletop) Exotic species cover within most areas was lower again during this monitoring period, with overall cover ranging from <1% at ACQ1, ACQ2 and UCML_CA_Site51 to 12% at UCML_CA_Site52. *H. glabra, H. perforatum and R. acetosella* were the most abundant species.
Pest animals	Feral pig (*Sus scrofa*) diggings, rabbit (*Oryctolagus cuniculus*) diggings, and feral goat (*Capra hircus*) scats were recorded in the Conservation Area (Appendix C).
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 in the Conservation Area during monitoring in 2023.

Category	Comment
Natural regeneration of disturbed areas	Natural regeneration of canopy species was recorded at all sites.
Threatened species observations	*Acacia ausfeldii* continued to be recorded within the Conservation Area as discussed in Section 3.4.3.

3.3. Completed management actions

Annual inspections of fencing, signage and security throughout the Conservation Area were undertaken by UCMPL personnel. No management actions were undertaking within the Conservation Area during 2023.

3.4. *Acacia ausfeldii* population monitoring

3.4.1. Historic monitoring

Data obtained during the final round of *Acacia ausfeldii* condition monitoring in 2019 (ELA 2020) indicates that *Acacia ausfeldii* over half of the tagged population died between in 2011 and 2019 (53 out of 100 individuals; Figure 4), which is consistent with the pattern of natural senescence of *Acacia ausfeldii* (ELA 2020).

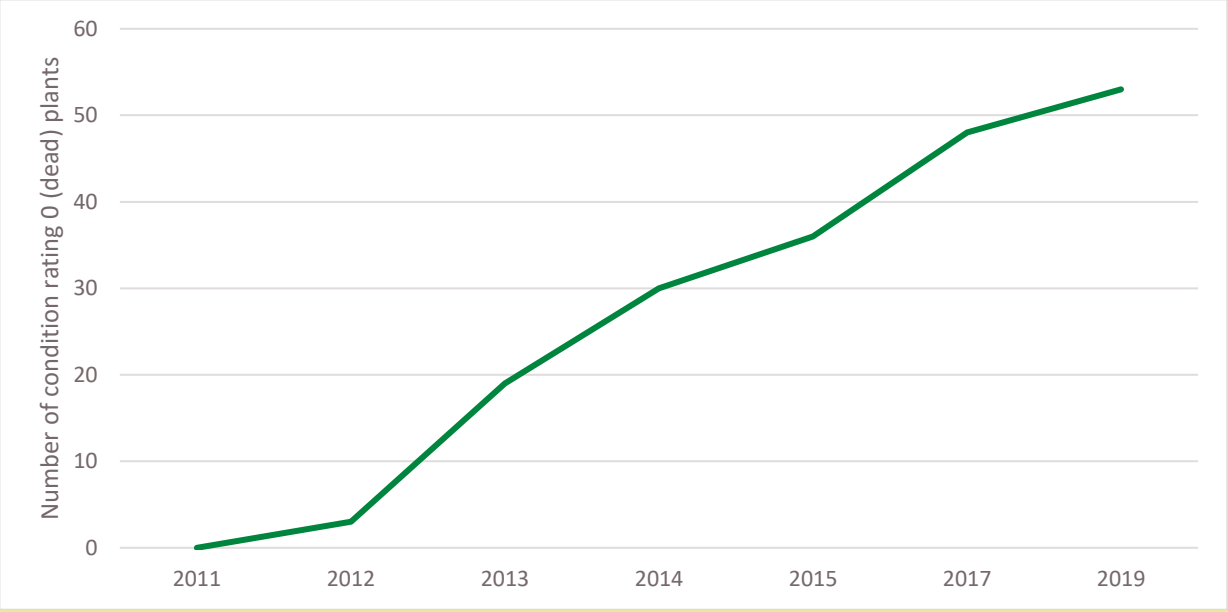

Figure 4: Number of condition rating 0 (dead) *Acacia ausfeldii* along condition transects from 2011 to 2019.

The assessment of tagged trees does not provide an indication of overall survival of this species and populations are expected to fluctuate. This species is likely to have a dormant soil seedbank which germinates in response to fire (DPE 2022). Literature indicates that strong germination of *Acacia ausfeldii* seeds occurs at temperature treatments of 100°C (Brown *et al* 2003).

Despite a distinct lack of fire, germination of *Acacia ausfeldii* was observed throughout the Conservation Area during 2021 (ELA 2021). This germination event coincides with recovery following 3 years of

intense drought conditions (2017 to early 2020) which resulted in extensive canopy and midstorey dieback within the Conservation Area and throughout the greater Ulan region. Ecosystem disturbance because of drought related dieback may have triggered this germination event.

3.4.2. 2022 monitoring

A total of 1,437 individuals of *Acacia ausfeldii* were recorded within the Conservation Area during 2022 (Figure 5 below). The population was estimated to be 5.98 ha and was deemed to be in good condition.

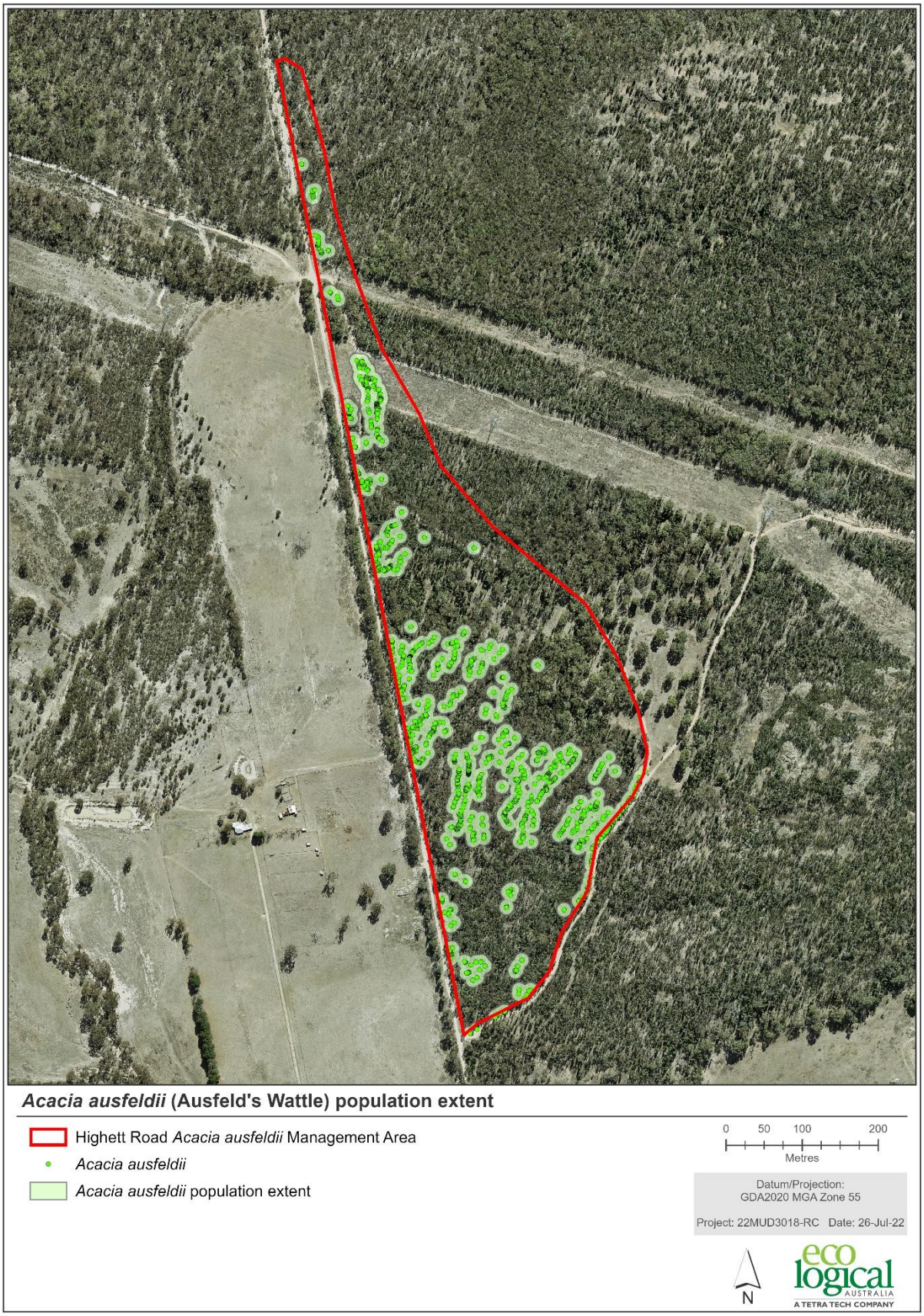

Figure 5: Acacia ausfeldii (Ausfeld's Wattle) population extent in 2022

3.4.3. 2023 monitoring

The health of individual *A. ausfeldii* plants was assessed opportunistically during the walk-through assessment of the Conservation Area. *A. ausfeldii* individuals from all different age classes (seedling, sapling, and mature plants) were observed (Figure 6 and Figure 7), as well as some plants that had naturally senesced. Buds were also observed on some individuals (Figure 8). Overall, the population throughout the Conservation Area appeared in healthy condition.

Figure 6: *Acacia ausfeldii* sapling observed in 2023.

Figure 7: Mature *Acacia ausfeldii* observed in 2023.

Figure 8: *Acacia ausfeldii* buds observed in 2023.

4. Discussion

4.1. Changes from previous monitoring

The results of 2017 through to 2023 for each monitoring transect are provided in Table 5. Discussion regarding change from the 2017 monitoring period on a site basis within each PCT is provided below. Due to the small sample size, statistically vigorous analysis to determine trends for each PCT, and the broader Conservation Area has not been undertaken. Attributes including native species richness, ground cover grasses 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 likely due to observer interpretation.

Overall, the Conservation Area remains ecologically stable with the condition of vegetation remaining similar to previous monitoring and with the PCT descriptions provided in the Conservation Agreement (UCMPL 2019a).

Table 5: Highett Road *Acacia ausfeldii* Management Area monitoring results 2017-2023

Photo Point /	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 Brigalow Belt South Bioregion and Sydney Basin Bioregion (HU702)											
Benchmark values		**31**	**5**	**2**	**2**	**2**	**2**	**N/A**	**N/A**	**2**	**40**
	A2017	41	11	1.5	8	6	12	66	0	0	200
	S2017	35	22	5	12	2	2	100	0	1	125
	2019	23	20	5.5	2	0	0	100	0	1	120
ACQ1	2020	43	19.5	0.1	4	0	6	100	2	0	200
	2021	34	19.5	2	30	0	26	100	4	0	200
	2022	47	25	1.5	40	2	26	100	0	0	200
	2023	57	25.5	9.5	24	10	2	100	0	0	200
	A2017	35	25.5	0	12	4	2	50	0	0	130
	S2017	29	25.5	2	6	4	4	100	0	0	130
	2019	11	11.5	2	2	0	0	100	0	0	120
ACQ2	2020	36	31.5	2	2	0	6	100	0	0	130
	2021	46	27.5	0.5	18	2	16	100	0	0	130
	2022	44	19	5.9	16	8	16	100	0	0	130
	2023	50	12.5	3.3	38	26	0	100	0	0	130
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)											
Benchmark values		**31**	**10**	**5**	**0**	**10**	**5**	**N/A**	**N/A**	**1.5**	**10**

Photo Point /	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_Site51	2017	39	12.5	0.5	14	0	2	100	4	0	0
	2020	42	12.5	0	8	0	6	100	0	0	10
	2021	41	14.5	0	22	0	10	100	4	0	10
	2022	52	18	0	26	12	14	100	2	0	15
	2023	56	11.7	4.6	28	28	4	100	0	0	6
UCML_CA_Site52	2017	29	4	0	34	0	4	100	4	1	0
	2020	33	6	0.5	18	0	12	100	2	1	1
	2021	42	6	3	20	2	22	100	8	1	1
	2022	43	2.5	2	52	8	10	100	12	1	1
	2023	7	7.5	32	10	6	100	8	0	0	7

A2017 = autumn 2017; S2017 = spring 2017

4.2. Condition of conservation values

The Conservation Area contains four main conservation values as identified in the Conservation Agreement (UCMPL 2019a):

- PCT479 and PCT481 in good condition as evidenced by relatively high SVS.
- The threatened flora species (*Acacia ausfeldii*), which is listed as Vulnerable under the BC Act. In 2022, the population of *Acacia ausfeldii* was estimated to cover approximately 5.98 ha and contain approximately 1,437 individuals.
- Approximately 19.1 ha of ecologically significant native vegetation and fauna habitat with good connectivity to surrounding remnant woodland areas.
- The Conservation Area may contain Aboriginal heritage values; however, no detailed studies have been undertaken.

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

4.2.1. PCT 479 - Narrow-leaved Ironbark – Black Cypress Pine – stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest

Both sites located in PCT 479 (ACQ1 and ACQ2) recorded an increase in native species richness in 2023 compared to previous monitoring. ACQ1 recorded similar overstorey pfc cover to previous monitoring, and a large increase in mid-storey cover (8%).

ACQ2 recorded a large decrease in overstorey cover again in 2023 (6.5%), continuing a decline in pfc cover since 2020. Despite this, overstorey cover is still well above the benchmark value for this PCT. Mid-storey cover also declined at this site. Native groundcover decreased slightly at ACQ1 and increased

substantially at ACQ2. The large increase in native groundcover attributes at ACQ2 is likely attributable to the ongoing decline in overstorey cover, allowing more growth in the understorey. No exotic cover was recorded at either site in 2023 along the transect, however several exotic species in low abundances and low levels of pfc were recorded in the 20 x 20 m quadrat.

LWD and number of HBTs is consistent with previous monitoring periods at both sites.

4.2.2. PCT 481 – Rough-barked Apple – Blakely's Red Gum – Narrow-leaved Stringybark +/- Grey Gum sandstone riparian grass fern open forest

Both sites located in PCT 481 (UCML_CA_Site51 And UCML_CA_Site52) recorded a slight increase in native species richness in 2023. Overstorey pfc decreased by 6.3% at UCML_CA_Site51 and increased by 4.5% at site UCML_CA_Site52 in 2023. This continues the fluctuating trend at both sites across monitoring years. This site continues to remain below the benchmark value. Both sites saw an increase in mid-storey cover in 2023. UCML_CA_Site51 recorded an increase in native ground shrub (16%) and a decrease in native ground other (10%). UCML_CA_Site52 recorded a large decrease in native ground grass (20%).

No exotic cover was recorded at either site in 2023 along the transect, however several exotic species were recorded in the 20 x 20 m quadrat. Number of HBTs and LWD have remained the same in 2023 at both sites.

4.3. Effectiveness of management actions

Weed management programs have resulted in the removal of *Opuntia stricta* listed under the CTRSWMP (LLS 2023) at site ACQ2; however, further weed management for *Opuntia stricta* should be undertaken throughout the rest of the Conservation Area.

5. Recommendations

ELA recommends that monitoring continues to be undertaken on a yearly basis as per the methodology outlined in Annexure D of the Highett Road *Acacia ausfeldii* Management Area Conservation Agreement (UCMPL 2019a).

Weed control measures should be implemented in accordance with site specific control procedures to control and prevent the spread of CTRSWMP (LLS 2023) listed weeds identified in Table 4 and Appendix C.

6. References

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NSW Office of Environment and Heritage (OEH) 2014. *Framework for Biodiversity Assessment – NSW Biodiversity Offsets Policy for Major Projects.*

Local Land Services (LLS) 2017. Central Tablelands Regional Strategic Weed Management Plan 2017 – 2022.

Local Land Services (LLS) 2023. *Central Tablelands Regional Strategic Management Plan* (CTRSWMP) *2023 – 2027*.

Ulan Coal Mines Pty Ltd (UCMPL) 2019a. Highett Road *Acacia ausfeldii* Management Area Conservation Agreement

Ulan Coal Mines Pty Ltd (UCMPL) 2019b. UCML Biodiversity Management Plan.

Appendix A Flora species list

Species	Native/exotic
Acacia ausfeldii	Native
Acacia decora	Native
Acacia implexa	Native
Acaena echinata	Native
Acianthus fornicatus	Native
Acrotriche rigida	Native
Amyema miquelii	Native
Amyema miquelli	Native
Angophora floribunda	Native
Anthosachne scabra	Native
Aristida ramosa	Native
Aristida vagans	Native
Astroloma humifusum	Native
Austrostipa scabra	Native
Bossiaea prostrata	Native
Bothriochloa macra	Native
Brachychiton populneus	Native
Brachyloma daphnoides	Native
Callitris endlicheri	Native
Calotis cuneifolia	Native
Calotis lappulacea	Native
Carex inversa	Native
Cassinia quinquefaria	Native
Cassinia sifton	Native
Cheilanthes sieberi	Native
Chrysocephalum apiculatum	Native
Chrysocephalum semipapposum	Native
Cineraria lyratiformis	Exotic
Cirsium vulgare	Exotic
Convolvulus erubescens	Native
Conyza bonariensis	Exotic
Cyclospermum leptophyllum	Exotic
Cyperus eragrostis	Exotic
Cyperus gracilis	Native
Dianella longifolia	Native
Dianella revoluta	Native
Dichelachne micrantha	Native
Dichondra repens	Native
Dichopogon fimbriatum	Native
Digitaria breviglumis	Native
Digitaria parviflora	Native
Echinopogon caespitosus	Native
Echinopogon ovatus	Native
Einadia hastata	Native
Einadia nutans	Native
Enneapogon nigricans	Native
Eragrostis brownii	Native
Eragrostis leptostachya	Native
Eremophila debilis	Native
Eriochilus cucullatus complex	Native
Eucalyptus blakelyi	Native
Eucalyptus crebra	Native
Eucalyptus macrorhyncha	Native
Eucalyptus melliodora	Native
Euchiton japonicus	Native
Exocarpos strictus	Native
Fimbristylis dichotoma	Native
Gahnia aspera	Native
Gamochaeta calviceps	Exotic
Geranium solanderi	Native
Glycine clandestina	Native
Glycine tabacina	Native
Gonocarpus elatus	Native
Goodenia hederacea	Native
Grona varians	Native
Hardenbergia violacea	Native
Hibbertia obtusifolia	Native

Species	Native/exotic
Hydrocotyle laxiflora	Native
Hypericum gramineum	Native
Hypericum perforatum	Exotic
Hypochaeris glabra	Exotic
Hypochaeris radicata	Exotic
Juncus microcephalus	Exotic
Lachnagrostis filiformis	Native
Laxmannia gracilis	Native
Leucopogon muticus	Native
Lissanthe strigosa	Native
Lomandra confertifolia	Native
Lomandra filiformis	Native
Lomandra multiflora	Native
Melichrus urceolatus	Native
Microlaena stipoides	Native
Oenothera stricta	Exotic
Opercularia diphylla	Native
Opuntia stricta	Exotic
Orobanche minor	Exotic
Panicum effusum	Native
Patersonia sericea	Native
Persoonia linearis	Native
Plantago lanceolata	Exotic
Podolepis neglecta	Native
Pomax umbellata	Native
Poranthera microphylla	Native
Pterostylis sp.	Native
Richardia stellaris	Exotic
Rumex acetosella	Exotic
Rytidosperma caespitosum	Native
Rytidosperma monticola	Native
Rytidosperma pallidum	Native
Rytidosperma sp.	Native
Salvia verbenaca	Exotic
Schoenus apogon	Native
Senecio sp.	Native/exotic

Species	Native/exotic
Setaria parviflora	Exotic
Solanum cinereum	Native
Solenogyne dominii	Native
Sonchus oleraceus	Exotic
Sporobolus creber	Native
Stackhousia viminea	Native
Stellaria media	Exotic
Styphelia triflora	Native
Taraxacum officinale	Exotic
Themeda triandra	Native
Thysanotus patersonii	Native
Trifolium sp.	Exotic
Verbascum thapsus	Exotic
Verbena bonariensis	Exotic
Veronica plebeia	Native
Vittadinia cuneata	Native
Vittadinia muelleri	Native
Wahlenbergia communis	Native
Wahlenbergia sp.	Native

Appendix B Monitoring data sheets and site photos

Table 6: ACQ1 monitoring data sheet 2023

Monitoring Data Sheet				
Monitoring Point Number	ACQ1		Date	5/06/2023
Vegetation Community	479 - Narrow-leaved Ironbark - Black Cypress Pine - stringybark shrubby open forest			
1. Site Photo(s)Taken	Figure 9 to Figure 12			
2. Floristic BioMetric attributes				
Native cover				71
Overstorey:				25.5
Midstorey:				9.5
Groundcover(grass):				24
Groundcover (shrub):				10
Groundcover (other):				2
Native species richness:				57
Proportion of canopy species regenerating				100%
Exotic cover				0
Number of trees with hollows				0
Total length of fallen logs				96
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Natural regeneration of *Angophora floribunda, Eucalyptus blakelyi, Eucalyptus crebra* and *Callitris endlicheri*	
Threatened species sightings			Nil	
Fire event/fuel			Nil	
Weeds	754772 6426460	N/A	Exotic species recorded at ACQ1 included: • *Cirsium vulgare* • *Conyza bonariensis* • *Cyclospermum leptophyllum* • *Hypochaeris radicata* • *Setaria parviflora* • *Sonchus oleraceus* Total exotic pfc was approximately 0.7%. *Hypochaeris radicata* was the most recorded species with 20 individuals.	
Pest animals			Nil	
Visitor impact/vehicles			Nil	
Rubbish dumping			Nil	

Figure 9: ACQ1 North

Figure 10: ACQ1 East

Figure 11: ACQ1 South

Figure 12: ACQ1 West

Table 7: ACQ2 monitoring data sheet 2023

Monitoring Data Sheet			
Monitoring Point Number	ACQ2	Date	5/06/2023
Vegetation Community	479 - Narrow-leaved Ironbark - Black Cypress Pine - stringybark shrubby open forest		
1. Site Photo(s)Taken	Figure 13 to Figure 16		
2. Floristic BioMetric attributes			
Native cover			79.8
Overstorey:			12.5
Midstorey:			3.3
Groundcover(grass):			38
Groundcover (shrub):			26
Groundcover (other):			0
Native species richness:			50
Proportion of canopy species regenerating			100%
Exotic cover			0
Number of trees with hollows			0
Total length of fallen logs			48
3. Opportunistic observations	GPS coordinates	Photo number	Observations
Natural regeneration of disturbed areas			Natural regeneration of *Angophora floribunda, Eucalyptus crebra* and *Callitris endlicheri*
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	754805 6426308	NA	Exotic species recorded at ACQ2 included: • *Cineraria lyratiformis* • *Cirsium vulgare* • *Conyza bonariensis* • *Hypochaeris glabra* • *Rumex acetosella* • *Verbascum thapsus* Total exotic pfc was 0.6%. *R. acetosella* was the most commonly recorded species with approximately 10 individuals recorded each.
Pest animals			Nil
Visitor impact/vehicles			Nil
Rubbish dumping			Nil

Figure 13: ACQ2 North

Figure 14: ACQ2 East

Figure 15: ACQ2 South

Figure 16: ACQ2 West

Table 8: UCML_CA_Site51 monitoring data sheet 2023

Monitoring Data Sheet				
Monitoring Point Number	UCML_CA_Site51		Date	5/06/2023
Vegetation Community	481 - Rough-barked Apple - Blakely's Red Gum - Narrow-leaved Stringybark open forest			
1. Site Photo(s)Taken	Figure 17 to Figure 20			
2. Floristic BioMetric attributes				
Native cover				76.3
Overstorey:				11.7
Midstorey:				4.6
Groundcover(grass):				28
Groundcover (shrub):				28
Groundcover (other):				4
Native species richness:				56
Proportion of canopy species regenerating				100%
Exotic cover				0
Number of trees with hollows				0
Total length of fallen logs				6
3. Opportunistic observations	GPS coordinates	Photo number	Observations	
Natural regeneration of disturbed areas			Natural regeneration of *Angophora floribunda, Eucalyptus dealbata, Eucalyptus macrorhyncha, Eucalyptus melliodora* and *Callitris endlicheri*	
Threatened species sightings			Nil	
Fire event/fuel			Nil	
Weeds	754892 6426624		One species (*Hypericum perforatum*) listed as a priority weed listed in the CTRSWMP was recorded at site UCML_CA_Site51. Low densities of exotic annual weed species including: • *Cyperus eragrostis* • *Conyza bonariensis* • *Hypochaeris radicata* • *Verbascum thapsus* Total exotic pfc was low with only 0.6% recorded. *H radiacta,* was the most commonly recorded exotic species with approximately 50 individuals.	
Pest animals			Nil	
Visitor impact/vehicles			Nil	
Rubbish dumping			Nil	

Figure 17: UCML_CA_Site51 North

Figure 18: UCML_CA_Site51 East

Figure 19: UCML_CA_Site51 South

Figure 20: UCML_CA_Site51 West

Table 9: UCML_CA_Site52 monitoring data sheet 2023

Monitoring Data Sheet			
Monitoring Point Number	UCML_CA_Site52	Date	5/06/2023
Vegetation Community	481 - Rough-barked Apple - Blakely's Red Gum - Narrow-leaved Stringybark open forest		
1. Site Photo(s)Taken	Figure 21 to Figure 24		
2. Floristic BioMetric attributes			
Native cover			62.5
Overstorey:			7
Midstorey:			7.5
Groundcover(grass):			32
Groundcover (shrub):			10
Groundcover (other):			6
Native species richness:			40
Proportion of canopy species regenerating			100%
Exotic cover			8
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			Natural regeneration of *Angophora floribunda, Eucalyptus blakelyi, Eucalyptus melliodora* and *Callitris endlicheri*.
Threatened species sightings			Nil
Fire event/fuel			Nil
Weeds	755051 6426462		Exotic species recorded at UCML_CA_Site52 include: • *Conyza bonariensis* • *Gamochaeta calviceps* • *Hypericum perforatum* (listed priority weed under the CTRSWMP) • *Hypochaeris glabra* • *Juncus microcephalus* • *Oenothera stricta* • *Opuntia stricta* • *Orobanche minor* • *Plantago lanceolata* • *Richardia stellaris* • *Rumex acetosella* • *Salvia verbenaca* • *Sonchus oleraceus* • *Stellaria media* • *Taraxacum officinale* • *Trifolium sp.*

Monitoring Data Sheet	
	• *Verbascum thapsus* • *Verbena bonariensis* Total exotic pfc returned a total of 4.6. *H. radicata* was the most commonly recorded exotic species with approximately 500 individuals.
Pest animals	Nil
Visitor impact/vehicles	Nil
Rubbish dumping	Nil

Figure 21: UCML_CA_Site52 North

Figure 22: UCML_CA_Site52 East

Figure 23: UCML_CA_Site52 South

Figure 24: UCML_CA_Site52 West

Appendix C Management issues and threatened species

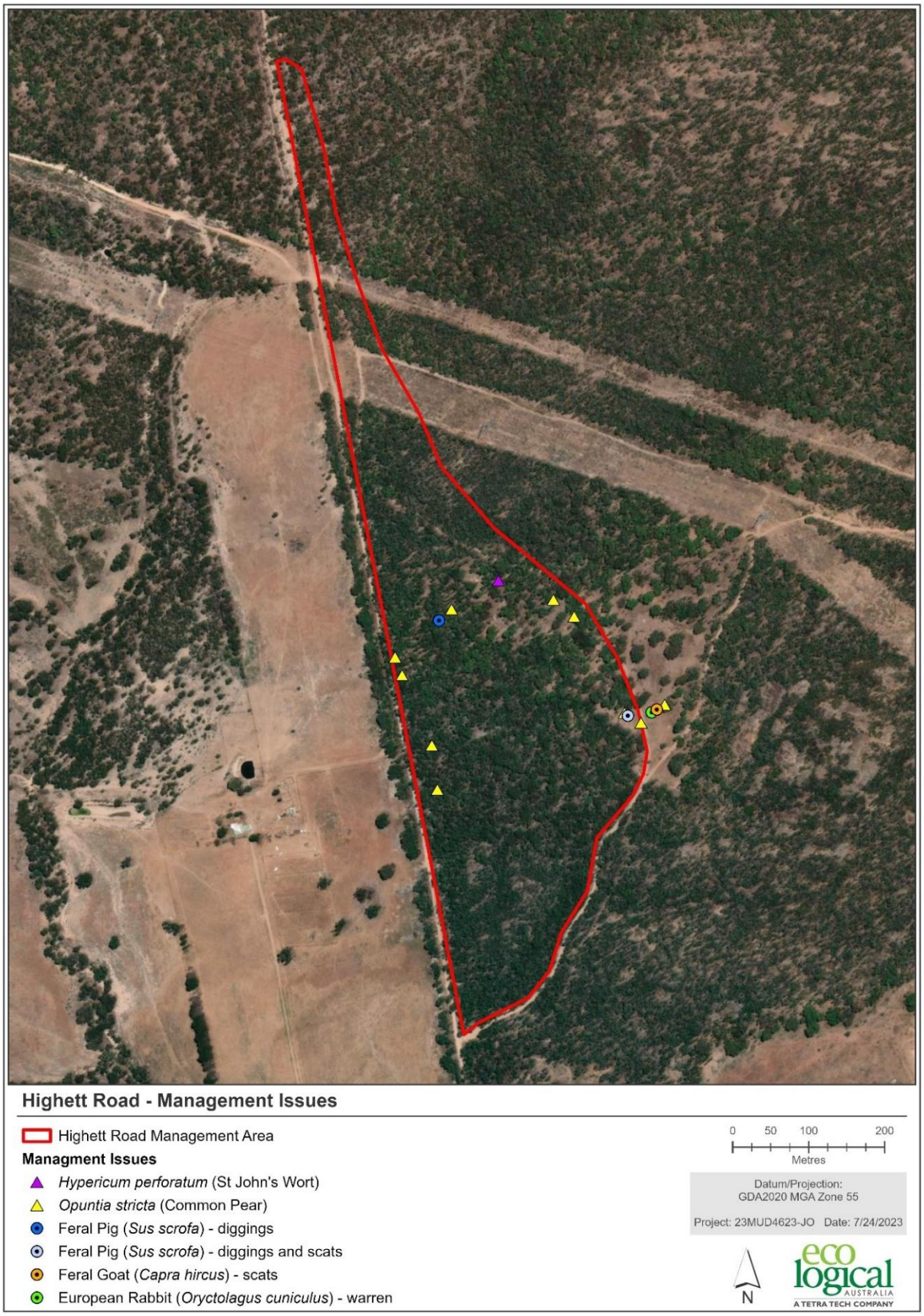

Figure 25: Highett Road – Management Issues

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