Appendix 4 – Myara North Targeted Flora Survey (AECOM, 2024)

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14 February 2024

Commercial-in-Confidence

Miranda Ludlow
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Alcoa of Australia

Dear Miranda

Myara North Targeted Flora Survey

1.0 Introduction

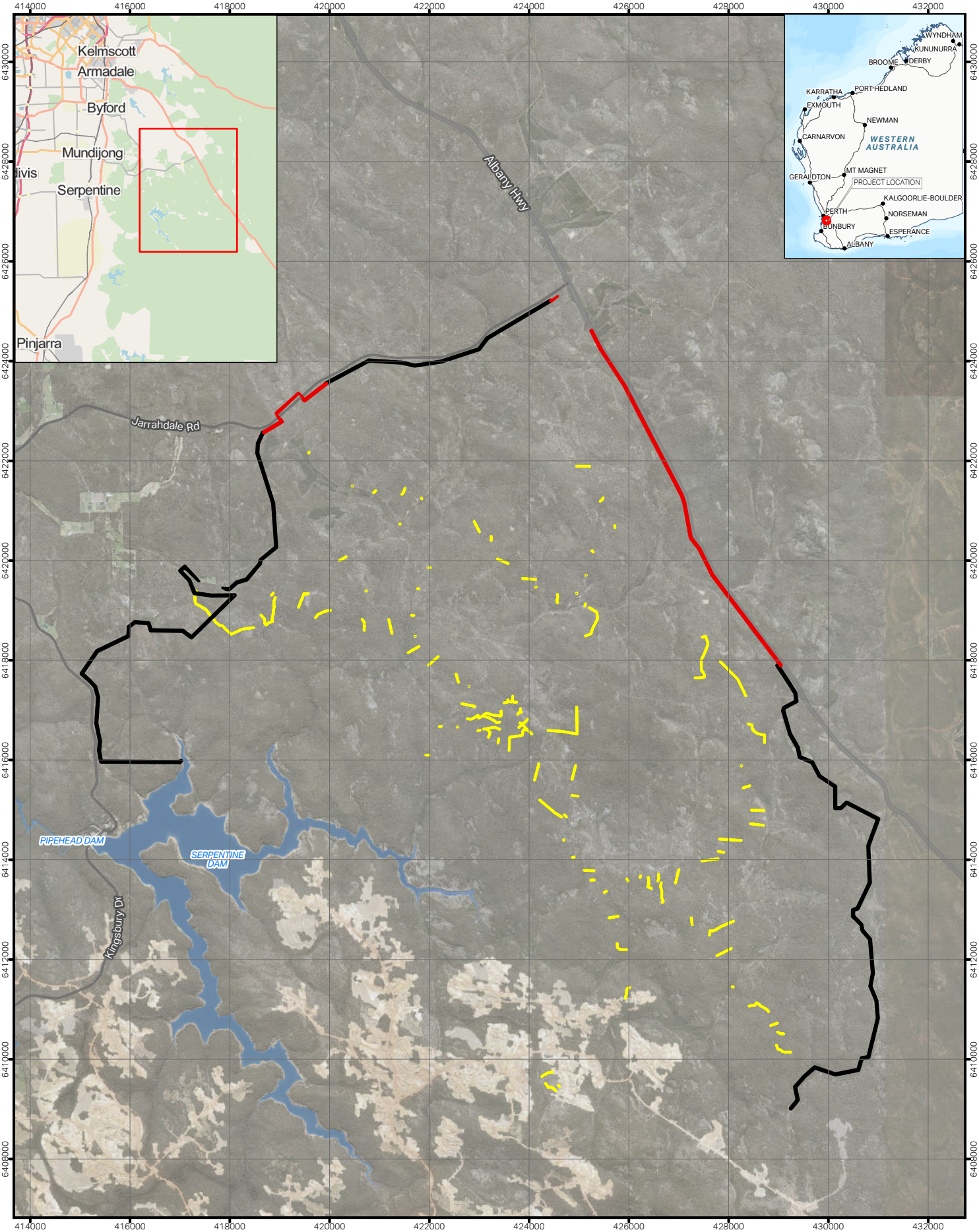
ALCOA of Australia (ALCOA) engaged AECOM Australia Pty Ltd (AECOM) to undertake a targeted flora survey for the Myara North Project. The survey area includes a Geotechnical Pre-clearance Survey Area as well as a Boundary Pre-clearance Survey Area (Figure 1).

This letter document briefly outlines the objective, methods, and results of the targeted flora survey.

2.0 Objective

The objective of the program was to determine the presence of significant flora species within 20 m of the survey area to support a preliminary or minor works approval for submission to the Environmental Protection Authority (EPA). The scope included:

- A desktop assessment including a review of available literature and results from previous surveys and associated desktop study results undertaken from the Myara Project.
- Targeted flora searches within a 20 m corridor along 39.46 km across the Geotechnical Pre-clearance survey area, and a portion of the Boundary survey area. This involved collection of all suspected significant flora to be verified by a WA Herbarium taxonomist.
- A targeted flora survey report documenting survey results to-date and associated spatial data package in IBSA format.



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km

GDA2020 MGA ZONE 50

LEGEND

- Boundary 1
- Boundary 2
- Geotech Pre-clearance Survey Area

Survey Area

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MYARA NORTH
TARGETED FLORA SURVEY

Figure

1

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3.0 Climate

The survey area is situated approximately 45 km southwest of Perth Central Business District (CBD). The climate is warm Mediterranean with mild wet winters and hot dry summers. Precipitation occurs predominantly during the winter months, with the possibility of some summer storms.

Rainfall data was obtained from Jarrahdale Station (station number 009023), located less than 1 km to the north-east of the survey area. Temperature data was obtained from Karnet station (station number 009111), located approximately 5.7 km south of the southern point of the survey area. The long-term rainfall and temperature data is compared against the December 2022 to November 2023 data in Figure 2 (BoM, 2024) to determine if climatic conditions posed a constraint to the survey.

The survey was undertaken from 28 to 30 November 2023 following a year of below average rainfall. In the twelve months preceding the survey, 889.2 mm was recorded, a reduction of 265.9 mm per annum compared to the long-term average. Rainfall was particularly low across the late winter, spring and summer months (August 2023 – November 2023).

Both minimum and maximum temperatures were higher than average across eight of the 12 preceding months, with both temperatures consistently above the mean for the three months immediately prior to the survey.

The notably warm and dry conditions leading up to the survey is a limitation for the survey, with lack of material for annual and cryptic species where flower/fruit material is essential for confident identification.

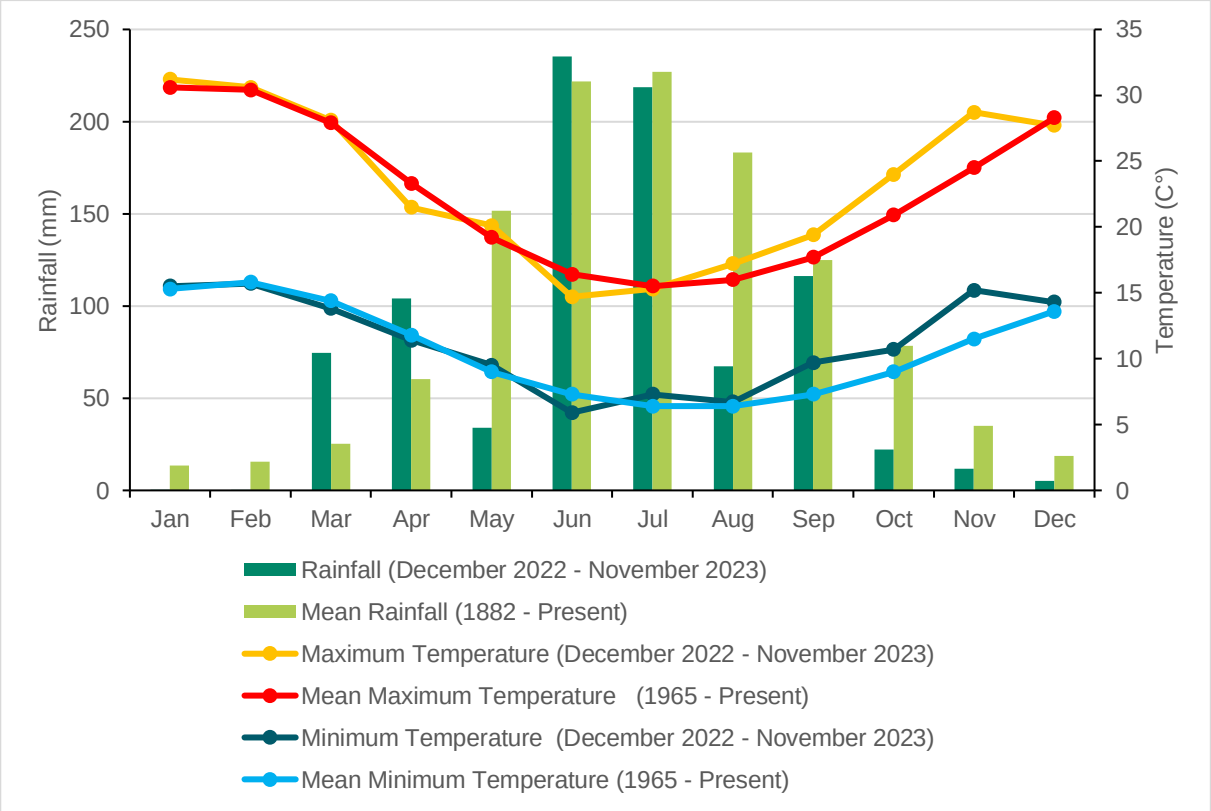


Figure 2 Long-term and current climatic data from Jarrahdale Station (station number 009023) (BoM, 2024).

4.0 Methods

4.1 Desktop Assessment

A comprehensive desktop assessment was undertaken prior to completing the field surveys. The objective was to define the existing environment and determine the significant species that may occur. The desktop assessment included:

- Department of Biodiversity, Conservation and Attractions (DBCA) Threatened Species and Communities database, including Threatened and Priority flora species with a 50 km buffer.
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) with a 20 km buffer from a central coordinate
- Previous surveys conducted for the Project (Western Environmental, 2023)
- Alcoa data (Alcoa, 2023a; 2023b).

The likelihood of occurrence for all significant flora was determined based on the categories the categories outlined in Table 1. The score is informed by:

- known occurrences of species in the vicinity scored as a 0 or 1, where 1 represents the presence of records within 5 km
- date of records scored as 0 or 1, where 1 represents records less than 20 years old
- habitat suitability scored between 0 and 2, where 0 represents no habitat present, 1 represents marginal habitat (i.e. some elements of preferred habitat are present), and 2 represents suitable habitat for that species.

Table 1 Likelihood categories for species

Likelihood of Occurrence	Score	Definition
Known	6	Species is known to occur in the survey area
High (Likely)	5	There are records within close proximity and suitable habitat for the species is known to be, or likely to be, present.
Moderate (Possible)	4 (if suitable habitat is known to be, or likely to be present) 3 (if suitable habitat may be present within the survey area)	There are records in close proximity of the survey area AND/OR recent records OR records within the LGA and suitable habitat for the species is known to be, or likely to be present OR There are records in close proximity of the survey area AND recent records AND records within the LGA, and suitable habitat for the species may be present (marginal habitat)
Low (Unlikely)	2,3	Not known to occur within the survey area but there are records in close proximity OR within the LGA OR suitable habitat for the species may be present (marginal habitat)
Negligible (Suitable Habitat not Present)	1,2,3	No suitable habitat is present within the survey area.

4.1.1 Targeted Flora Searches

Targeted searches were undertaken for all significant flora species considered to have a high likelihood of occurrence. All 'likely' species were compiled into a field guide which include photographs and describing morphological features that would assist in identifying the species. Linear traverses were conducted 20 m either side of the proposed Geotech locations, and up to 20 m inside of the proposed Boundary line.

Significant flora species were recorded using the Field Maps application on hand-held devices. A sample was collected for formal identification at the Western Australian Herbarium, as well as photographs and number of individuals recorded.

5.0 Results

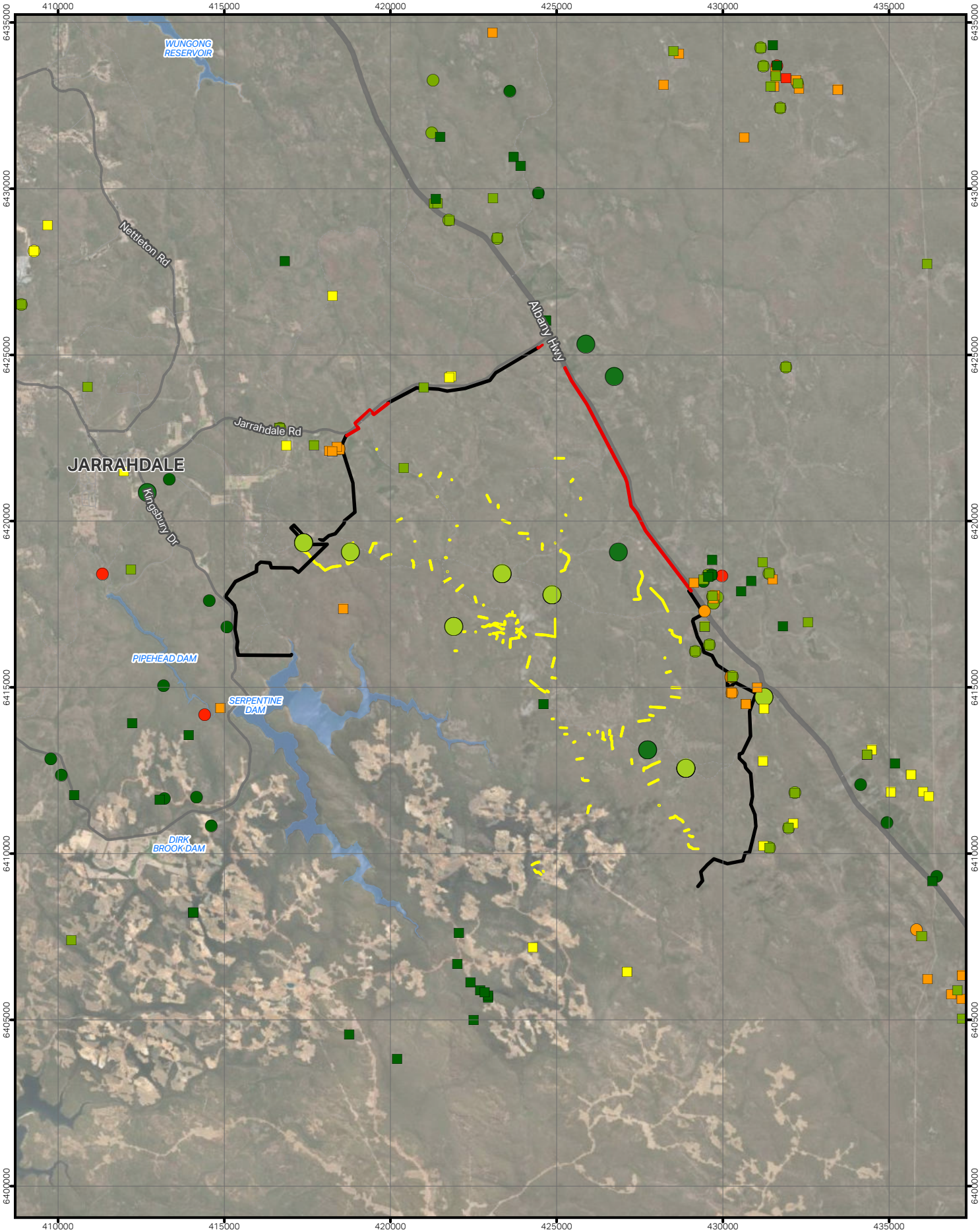
5.1 Desktop Results

A total of 66 significant vascular flora species were identified from the desktop assessment as potentially occurring within the survey area (Figure 3, Appendix A). This includes 12 species listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or the *Biodiversity Conservation Act 2016* (BC Act), and 54 Priority species listed by the Department of Biodiversity, Conservation and Attractions (DBCA). Based on the desktop assessment of specimen records and preferred habitat, it has been determined that 13 species have a high likelihood of occurrence. These species are described in Table 2 below. The comprehensive desktop assessment is presented in Appendix A.

Table 2 Significant species considered to have a 'high' likelihood of occurrence for Myara North

Taxon	Conservation Code (BC Act / DBCA)[1]	Habitat[2]
Acacia oncinophylla subsp. *oncinophylla*	P3	Granitic soils.
Andersonia sp. Audax (F. Hort, B. Hort & J. Hort 3179)	P3	Loam, clay, sand, gravel, granite outcrops, drainage lines (Alcoa, 2023).
Andersonia sp. Saxatilis (F. & J. Hort 3324)	CR	Gravelly clay, granite (Alcoa, 2023).
Bossiaea modesta	P2	Soils derived from granite. Damp areas close to stream.
Darwinia hortiorum	P1	Shallow granitic soils, loam or loam/clay associated with laterite. Granite outcrops, drainage lines (Alcoa, 2023).
Grevillea dissectifolia	P3	Grows in Eucalypt forest in moist situations or depressions in gravelly soils recorded as brown or yellow sand, loam or clay, sometimes in heavy laterite with exposed granite sheet or outcrops.
Grevillea pimeleoides	P4	Gravelly soils over granite. Rocky hillsides.
Hemigenia platyphylla	P4	Sandy & loamy soils. Granite rocks, slopes.
Paracaleana gracilicordata	P1	Growing on moss mats, granite. Outcrops.
Paracaleana granitica	P1	Growing on moss mats, granite. Outcrops.
Pimelea rara	P4	Lateritic soils.
Synaphea pandurata	P3	Yellow-grey, yellow-brown, yellow-red sands and sandy loams, dark brown loam, laterite gravel, granite. In undulating areas.
Tetratheca phoenix	P2	Brown gravelly loam over granite. Mid-upper slopes, often near large rock outcrops.

1. BC Act: CR Critically Endangered, DBCA: P Priority
2. Habitat descriptions derived from WAH (1998-) unless otherwise stated.



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km

GDA2020 MGA ZONE 50

LEGEND

- Boundary 1
- Boundary 2
- Geotech Pre-clearance Survey Area

Threatened and Priority Flora database (TPFL)
- Threatened
- P1
- P2
- P3
- P4

WA Herbarium database (WAHERB)
- Threatened
- P1
- P2
- P3
- P4

Myara Holyoakes MCPL Flora
- P3
- P4

Desktop Significant Flora

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MYARA NORTH TARGETED FLORA SURVEY

Figure 3

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5.2 Field Survey Results

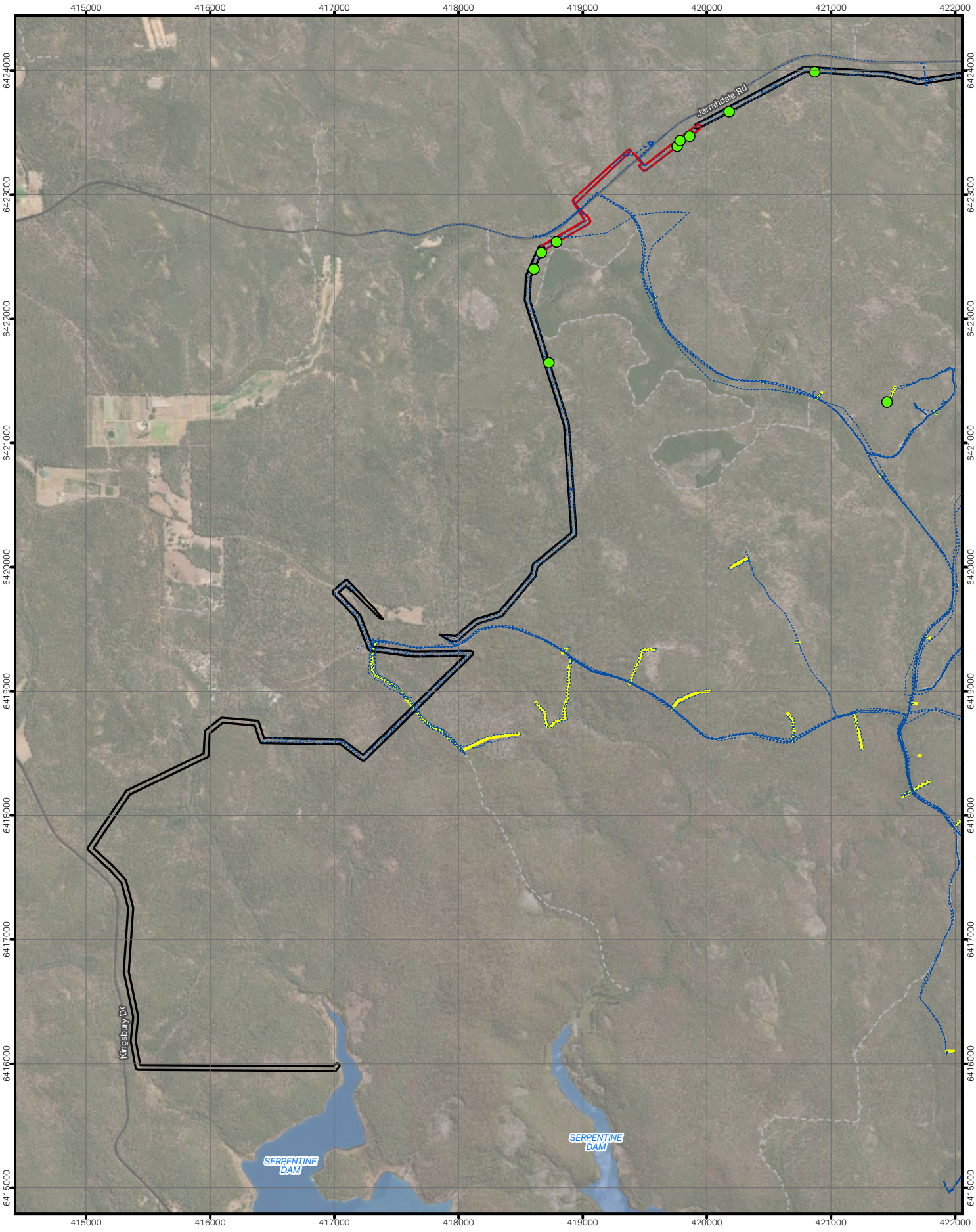
One significant flora species, *Thysanotus anceps* listed as Priority 3 by the DBCA was recorded. *T. anceps* is a perennial leafless herb, that grows on white or grey sand, lateritic gravel or laterite (WAH, 1998-) (Plate 1). A total of 13 individuals were recorded across the survey area, these locations are depicted on Figure 4. This species was considered to have a moderate likelihood of occurrence in the desktop assessment, primarily due to the nearest verified population occurring 11.74 km from the survey area.

Plate 1 *Thysanotus anceps* (P3) recorded in the survey area

Flora species considered to have a high likelihood of occurrence in the desktop assessment were reviewed following the field survey and a post-survey likelihood was provided. This likelihood reflects the habitat observed in the field survey, and the survey effort implemented. All 13 species have been downgraded to a low likelihood of occurrence as they represented perennial species, many of which are associated with unique landforms such as granite outcrops, that were not recorded during the survey.

Three limitations were recognised that may have influenced the survey results:

- the detectability of annual and cryptic species may be compromised during the Spring 2023 survey due to unusually warm and dry conditions experienced in the 12 months preceding the survey.
- access was restricted to areas outside of the active mining footprint, where pre-clearance areas branch off existing tracks. Eleven pre-clearance areas were unable to be surveyed due to lack of access (Figure 4).
- fire has passed through portions of the survey area within the 12 months preceding the survey. This was identified to impact two pre-clearance survey areas in their entirety. Due to the recency of the fire, these areas were not subjected to targeted searches.



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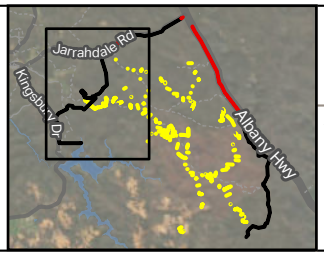
GDA2020 MGA ZONE 50

LEGEND

- Boundary 1
- Boundary 2
- Geotech Pre-clearance Survey Area
- Tracklogs
- Significant Flora
  - *Thysanotus anceps* (P3)



Survey Effort and Significant Flora Locations

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MYARA NORTH TARGETED FLORA SURVEY

Figure 4.1

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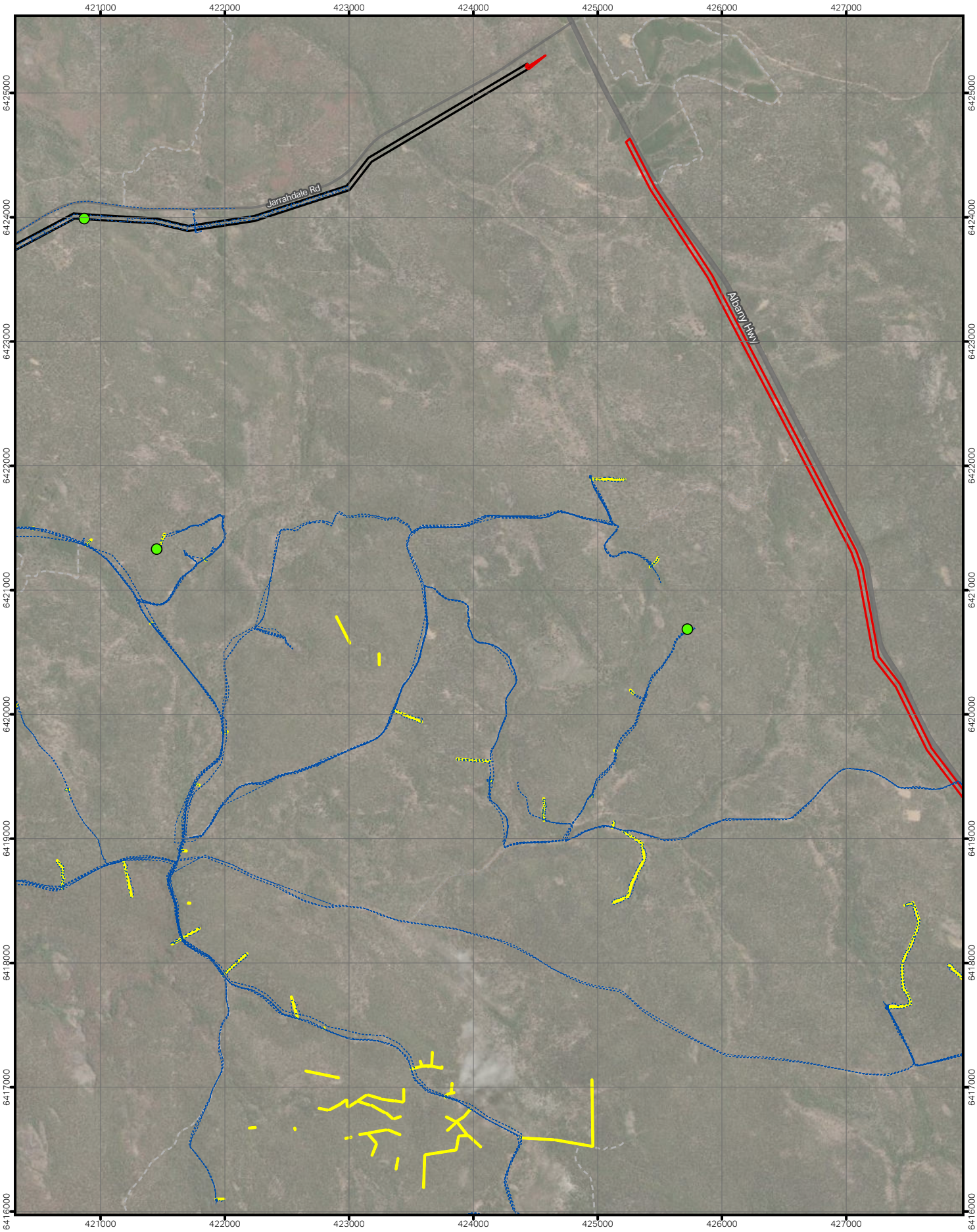

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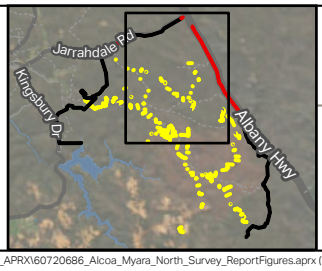
LEGEND

- Boundary 1
- Boundary 2
- Geotech Pre-clearance Survey Area
- Tracklogs
- Significant Flora
- *Thysanotus anceps* (P3)



Survey Effort and Significant Flora Locations

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MYARA NORTH TARGETED FLORA SURVEY

Figure 4.2

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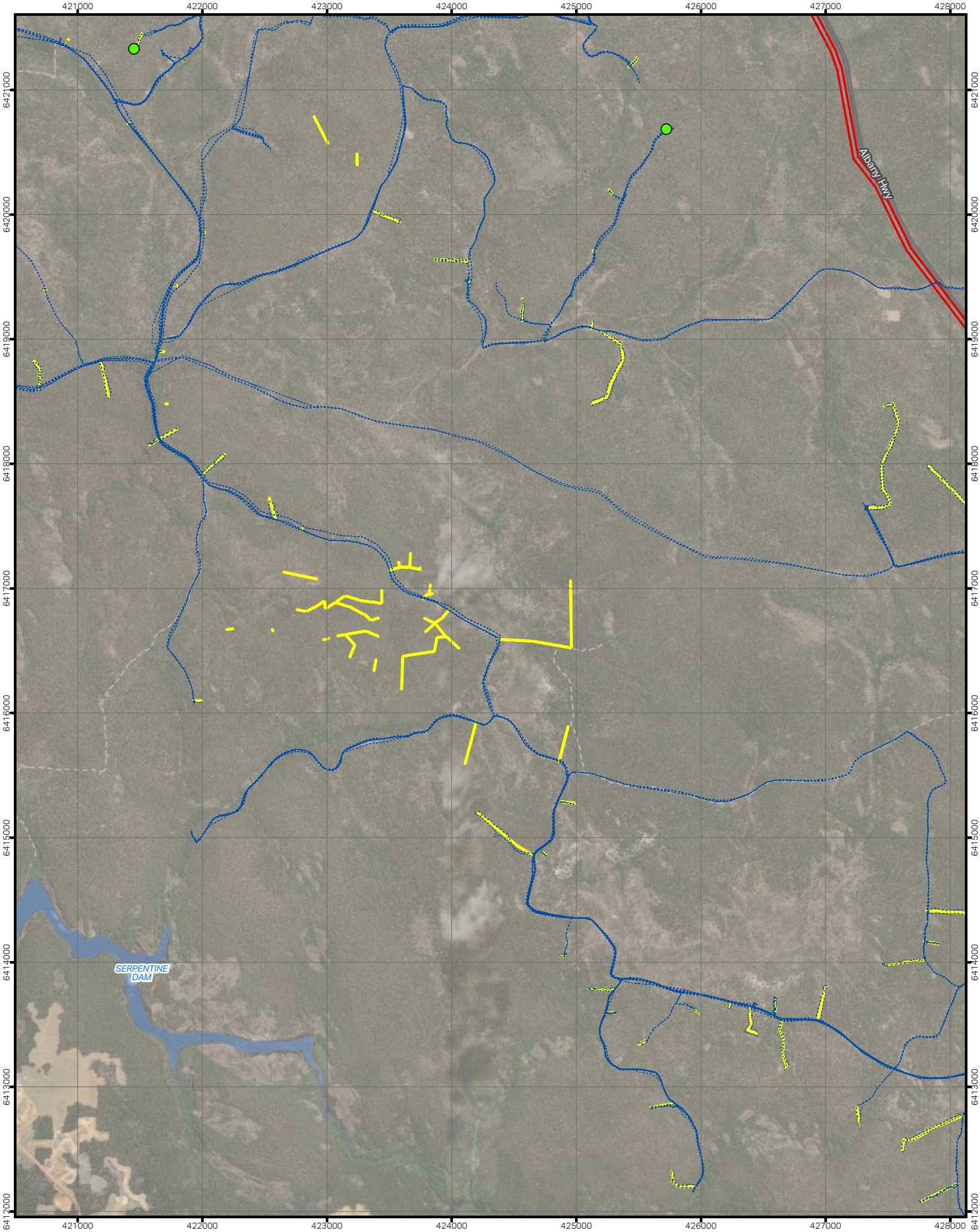

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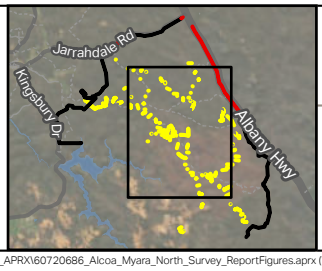
LEGEND

- Boundary 2
- Geotech Pre-clearance Survey Area
- Tracklogs
- Significant Flora
  - *Thysanotus anceps* (P3)



Survey Effort and Significant Flora Locations

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MYARA NORTH TARGETED FLORA SURVEY

Figure 4.3

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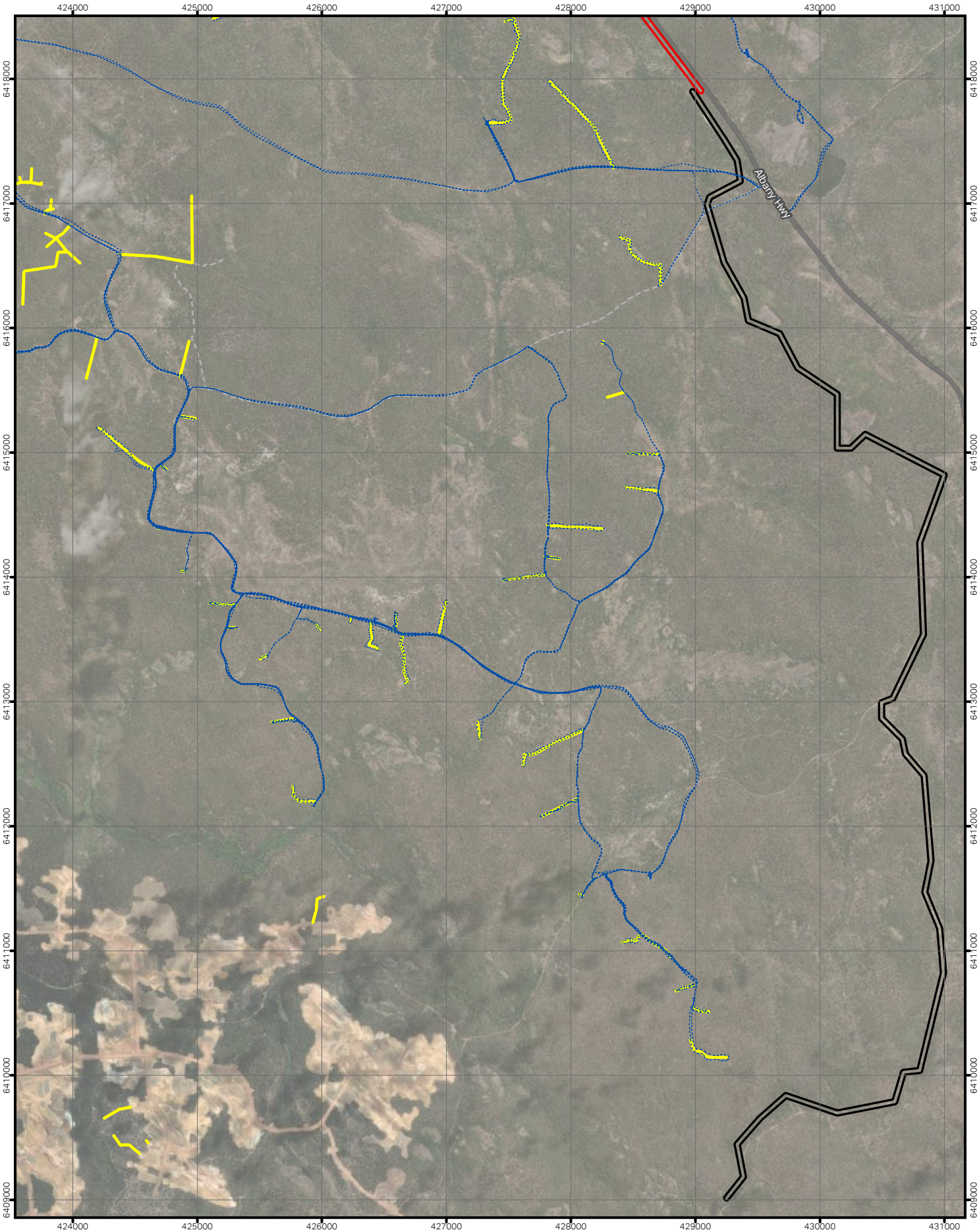

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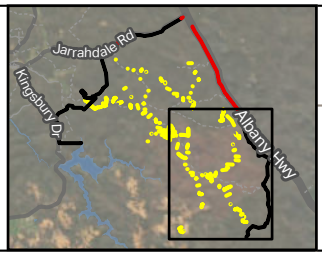
LEGEND

- Boundary 1
- Boundary 2
- Geotech Pre-clearance Survey Area
- Tracklogs



Survey Effort and Significant Flora Locations

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MYARA NORTH TARGETED FLORA SURVEY

Figure

4.4

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Yours faithfully

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Appendix A

Desktop Assessment

Taxon	Habitat[1]	Cons. Code		Distance (km)		Date		Alcoa (2023b) Distance (km)	PMST	Likelihood Assessment					Total Score	Pre-survey Likelihood	Post-survey Likelihood	Comments
		EPBC	BC Act / DBCA	WA HERB	TPFL	WA HERB	TPFL			Recorded in survey area	Known occurrence <5km	Recent Record <20 years	Known within LGA	Habitat suitability (0,1,2)				
Acacia cuneifolia	Sand, clay or loam over granite. Granite outcrops & hills, rocky watercourses.		P4	11.91	11.91	2005	2005			0	0	1	0	2	3	Moderate	Moderate	
Acacia drummondii subsp. *affinis*	Lateritic gravelly soils.		P3	13.49	13.49	2008	1900	10.21		0	0	1	0	2	3	Moderate	Moderate	
Acacia horridula	Gravelly soils over granite, sand. Rocky hillsides.		P3	5.15	1.56	1996	1996	3.85		0	1	0	1	2	4	Moderate	Moderate	
Acacia oncinophylla subsp. *oncinophylla*	Granitic soils.		P3	2.99	2.99	2013	1976			0	1	1	1	2	5	High	Low	Suitable habitat, perennial shrub not recorded.
Andersonia sp. Audax (F. Hort, B. Hort & J. Hort 3179)	Loam, clay, sand, gravel, granite outcrops, drainage lines (Alcoa, 2023a).		P3	0.11	0.11	2009	2008			0	1	1	1	2	5	High	Low	No outcrops detected. No suitable habitat. Perennial shrub not recorded.
Andersonia sp. Saxatilis (F. & J. Hort 3324)	Gravelly clay, granite (Alcoa, 2023a).		CR	1.42	1.40	2010	2010			0	1	1	1	2	5	High	Low	Suitable habitat, perennial shrub not recorded.
Anthocercis gracilis	The species (also known as the slender tailflower), grows on steep granite slopes along the Darling Scarp in shallow, humus-rich sandy or loamy soils along the Darling Scarp (DEWHA, 2008a).	V	VU	12.16	12.16	2002	1900			0	0	0	1	2	3	Moderate	Moderate	
Anthotium sp. Darling Range (F. Hort & B. Hort 2431)	Yellow, grey or brown clayey sand, loam. Slopes, low plains, drainage lines of swampy flats.		P1	11.62	11.62	2017	1900			0	0	1	0	2	3	Moderate	Moderate	
Banksia recurvistylis	This banksia grows in or near heath or heath patched in shallow lateritic soil near granite outcrops. It is only known from five populations in the Monadnocks Conservation Park and Wandering Conservation Park and is associated with the Jarrah-Marri forest. Characteristic associated species include *Allocasuarina humilis, Andersonia* spp., *Grevillea bipinnatifida* , *Hakea undulata* , *H. trifurcata* , *H. petiolaris* , *Isopogon dubius* , *Verticordia* spp. and *Xanthorrhoea preissii* (Thiele, 2009).		P2	1.97	1.97	2009	1900			0	1	1	0	1	3	Low	Low	
Bossiaea modesta	Soils derived from granite. Damp areas close to stream.		P2	2.87	2.87	2015	1998			0	1	1	1	2	5	High	Low	Suitable habitat, perennial shrub not recorded.
Byblis gigantea	Sandy-peat swamps. Seasonally wet areas.		P3	12.79	12.79	2008	2004			0	0	1	0	2	3	Moderate	Moderate	
Caladenia speciosa	The species grows in deep Bassendean and Karrakatta sands (typically white, grey or black sand), in Banksia woodland with scattered Jarrah, or in Tuart woodland. Flowers best after fire a (WAH 1998–, Hopper & Brown, 2001).		P4	1.66	1.66	2003	2005			0	1	1	0	0	2	Negligible	Negligible	
Calectasia grandiflora	White, grey or yellow sand, sandy clay, gravel, laterite, granite. Swampy areas, rock outcrops, flats, slopes, ridges.		P2	13.92	13.92	1982	1900			0	0	0	1	2	3	Moderate	Negligible	Restricted to the Swan Coastal Plain.
Calothamnus graniticus subsp. *leptophyllus*	Clay over granite, lateritic soils. Hillsides.		P4	31.97	31.97	2008	1900			0	0	1	0	2	3	Moderate	Moderate	
Calytrix simplex subsp. *simplex*	Flats and slopes on laterite, grey clay loam soil, red-brown gravelly loam. Swamp (Alcoa, 2023a).		P1	12.93	12.93	2004	1900			0	0	1	0	2	3	Moderate	Moderate	
Chordifex gracilior	Peaty sand. Swamps.		P3		28.53		1996			0	0	0	0	1	1	Negligible	Negligible	
Chorizema ulotropis	Moist to dry soils, white sand with gravel, laterite, granite. Outcrops, winter damp to dry areas, flats.		P4	7.72	7.72	2002	1900			0	0	0	0	2	2	Low	Low	
Conospermum scaposum	White-grey sand, sandy clay. Low swampy areas, road verges.		P3					8.56		0	0	1	1	1	3	Moderate	Moderate	
Cyanothamnus tenuis	Laterite stony soils and granite. Darling Scarp between Dwellingup and Wannamal in the Jarrah Forest and SCP.		P4	4.14	4.14	2002	2002			0	1	0	0	2	3	Moderate	Moderate	
Darwinia hortiorum	Shallow granitic soils, loam or loam/clay associated with laterite. Granite outcrops, drainage lines (Alcoa, 2023a).		P1	3.27	3.27	2009	2016			0	1	1	0	2	4	High	Low	No outcrops detected. No suitable habitat. Perennial shrub not recorded.
Darwinia thymoides subsp. St Ronans (J.J. Alford & G.J. Keighery 64)	Low shrub, sandy or gravely clay-loam soils. Slopes or flats. Granite outcrops.		P4	29.58	29.58	1970	1900			0	0	0	0	2	2	Low	Low	
Diuris micrantha	This species is found in small populations, on dark, grey to blackish, sandy clay-loam substrates in winter-wet depressions or swamps. The species is distributed from east of Kwinana and south towards the Frankland area. The bases of the flowering plants are often covered with shallow water (DEWHA, 2008b).	V	VU						May	0	0	0	0	0	0	Negligible	Negligible	
Diuris purdiei	Grey-black sand, moist. Winter-wet swamps.		P4	14.56	14.56	1900	1900		May	0	0	0	1	1	2	Low	Low	Perennial herb.
Drakaea elastica	The species (also known as the glossy/warty-leafed Hammer Orchid), grows on bare patches of sand within otherwise dense vegetation in low-lying areas alongside winter-wet swamps, typically in banksia (*Banksia menziesii, B. attenuata* and *B. ilicifolia*) woodland or spearwood *(Kunzea glabrescens*) thicket vegetation. *D. elastica* often occurs with other orchid species such as *Drakaea glyptodon* , *D. livida* and *Paracaleana nigrita* . The increased rates of survival in sites with relatively little direct sun exposure indicate a requirement for shady canopy cover to be present (DEC, 2009).	E	CR		14.60		2013			0	0	1	1	0	2	Negligible	Negligible	
Drosera occidentalis	Sandy & clayey soils. Swamps & wet depressions.		P4	7.12	5.26	1990	1990			0	0	0	1	2	3	Moderate	Moderate	
Grevillea crowleyae	Gravel. In gravel pit.		P2	5.74	5.74	1992	1900			0	0	0	1	2	3	Moderate	Moderate	
Grevillea flexuosa	The species grows on sands of granite ridgetop plateaus and associated breakaways or lateritic sands and gravel on hilltops, slopes and in gullies. It grows in heath vegetation, among medium trees, low trees, or tall (sclerophyll) shrubland (DEWHA, 2008c).	V	VU		1.93		2000			0	1	0	0	2	3	Moderate	Moderate	
Grevillea dissectifolia	Grows in Eucalypt forest in moist situations or depressions in gravelly soils recorded as brown or yellow sand, loam or clay, sometimes in heavy laterite with exposed granite sheet or outcrops		P3	3.26	3.24	2015	2003			0	1	1	0	2	4	High	Low	No outcrops detected. No suitable habitat. Perennial shrub not recorded.
Grevillea ornithopoda	Loam, loam over clay, sand, clay. Edge of riverbank and creek (Alcoa, 2023a).		P2	2.71	2.71	2017	1900			0	1	1	1	1	4	Moderate	Moderate	
Grevillea pimeleoides	Gravelly soils over granite. Rocky hillsides.		P4	1.92	1.92	2008	1997			0	1	1	1	2	5	High	Low	Suitable habitat, perennial shrub not recorded.
Hakea oldfieldii	Red clay or sand over laterite. Seasonally wet flats.		P3	23.43	23.43	2001	1900			0	0	0	0	2	2	Low	Low	
Halgania corymbosa	Gravelly soils, soils over granite.		P3	12.93	12.93	1992	1900			0	0	0	1	2	3	Moderate	Moderate	
Hemigenia microphylla	Sandy clay, peaty clay, granite. Winter wet depressions.		P3	28.76	28.76	2001	2001	31.59		0	0	0	0	2	2	Low	Low	

Taxon	Habitat[1]	Cons. Code		Distance (km)		Date		Alcoa (2023b) Distance (km)	PMST	Likelihood Assessment					Total Score	Pre-survey Likelihood	Post-survey Likelihood	Comments
		EPBC	BC Act / DBCA	WA HERB	TPFL	WA HERB	TPFL			Recorded in survey area	Known occurrence <5km	Recent Record <20 years	Known within LGA	Habitat suitability (0,1,2)				
Hemigenia platyphylla	Sandy & loamy soils. Granite rocks, slopes.		P4	0.13	0.13	2007	1900			0	1	1	1	2	5	High	Low	Suitable habitat, collection taken at known DBCA location, not identified as the Priority species (ACC/10606/E)
Hibbertia acrotoma	Steep hillsides and slopes, brown loam, granite (Alcoa, 2023a).		P1	12.16	12.16	2002	1900			0	0	0	1	2	3	Moderate	Moderate	
Hibbertia hortiorum	Slopes, broad sandy gravels (Alcoa, 2023a).		P1	10.32	10.32	2016	1900			0	0	1	0	2	3	Moderate	Moderate	
Hibbertia polyancistra	Shallow soil over granite (Alcoa, 2023a).		P1	11.07	11.07	2005	1900			0	0	1	0	2	3	Moderate	Moderate	
Isopogon autumnalis	Sandy soils, often in Banksia woodlands.		P3	13.94	13.94	2003	1900			0	0	1	1	1	3	Moderate	Moderate	
Johnsonia pubescens subsp. *cygnorum*	Grey-white-yellow sand. Flats, seasonally-wet sites.		P2	13.75	13.62	1983	1983			0	0	0	1	0	1	Negligible	Negligible	No suitable habitat. Associated with the SCP.
Lasiopetalum glutinosum subsp. *glutinosum*	Open woodland dominated by *Eucalyptus marginata, Corymbia calophylla, Banksia menziesii* and *B. attenuata* and in open, low scrub over heath, on steep slopes of lateritic gravel, clay or sandy loam near granite outcrops and creeklines (Shepherd and Wilkins, 2015).		P3	11.05	11.05	2002	1900			0	0	0	1	2	3	Moderate	Moderate	
Lasiopetalum membranaceum	Sand over limestone.		P3	31.86	31.86	1942	1900			0	0	0	0	0	0	Negligible	Negligible	No suitable habitat. Associated with the coast on the SCP.
Lasiopetalum pterocarpum	Dark red-brown loam or clayey sand over granite. On sloping banks near creeklines.	E	CR	9.21	5.64	2016	2016			0	0	1	1	2	4	Moderate	Moderate	
Lepyrodia heleocharoides	Moist peaty sand. Dry or seasonally inundated heath or woodland, swamps.		P3	11.98	11.98	2003	1900			0	0	1	1	2	4	Moderate	Moderate	
Meionectes tenuifolia	Grey sand, clay. Winter-wet flats (Alcoa, 2023a).		P3	11.72	11.72	2002	2002			0	0	0	1	2	3	Moderate	Moderate	
Millotia tenuifolia var. *laevis*	Granite or laterite soils.		P2	11.87	11.87	2005	2005			0	0	1	1	2	4	Moderate	Moderate	
Paracaleana gracilicordata	Growing on moss mats, granite. Outcrops.		P1	1.11	1.11	2017	2004			0	1	1	1	2	5	High	Low	No outcrops detected. No suitable habitat.
Paracaleana granitica	Growing on moss mats, granite. Outcrops.		P1	0.80	0.80	2011	1986			0	1	1	1	2	5	High	Low	No outcrops detected. No suitable habitat.
Parsonsia diaphanophleba	Alluvial soils. Along rivers.		P4	13.29	13.29	2015	1996			0	0	1	1	1	3	Moderate	Moderate	
Petrophile filifolia subsp. *laxa*	White gritty sand, brown, red, yellow, white or grey sand, brown-yellow sandy clay. Winter-wet sites, flats, slopes, swamps, drainage lines.		P3	12.38	12.38	2007	2005			0	0	1	0	2	3	Moderate	Moderate	
Pimelea rara	Lateritic soils.		P4	1.54	1.35	2004	2000			0	1	1	1	2	5	High	Low	Suitable habitat. Multiple collections taken, not identified as the Priority species (ACC/10606/E).
Pithocarpa corymbulosa	Gravelly or sandy loam. Amongst granite outcrops.		P3	11.04	11.04	2005	2005			0	0	1	1	2	4	Moderate	Moderate	
Senecio leucoglossus	Gravelly lateritic or granitic soils. Granite outcrops, slopes.		P4	6.45	6.45	2004	1900	52.24		0	0	1	1	2	4	Moderate	Moderate	
Stackhousia sp. Red-blotched corolla (A. Markey 911)	Brown loamy sand, clayey sand over laterite, white sandy clay over granite, grey clay (Alcoa, 2023a).		P3	2.32	2.32	1993	1900			0	1	0	1	2	4	Moderate	Moderate	
Stylidium ireneae	Sandy loam. Valleys near creek lines, woodland, often with Agonis.		P4	7.45	7.45	2009	1900			0	0	1	0	2	3	Moderate	Moderate	
Stylidium scabridum	Sand. Open woodland or heath.		P4					9.82		0	0	1	1	1	3	Moderate	Moderate	
Synaphea odocoileops	Brown-orange loam and sandy clay, granite. Swamps, winter wet areas.		P1		13.68		1998			0	0	0	1	1	2	Low	Negligible	Associated with the SCP.
Synaphea pandurata	Yellow-grey, yellow-brown, yellow-red sands and sandy loams, dark brown loam, laterite gravel, granite. In undulating areas.		P3	3.21	3.21	2009	1900			0	1	1	0	2	4	High	Low	Suitable habitat, perennial shrub not recorded.
Synaphea sp. Fairbridge Farm (D. Papenfus 696)	Sandy with lateritic pebbles. Near winter-wet flats, in low woodland with weedy grasses.	CE	CR	12.97	12.97	2003	2014			0	0	1	1	0	2	Negligible	Negligible	No suitable habitat. Associated with the SCP.
Synaphea sp. Pinjarra Plain (A.S. George 17182)	Grey sandy loam or clay, grey-brown clayey sand, brown clayey loam, laterite. Flats, seasonally wet areas, railroad reserves often with wet depressions or drains.	E	EN	13.52	13.50	2012	2014			0	0	1	1	0	2	Negligible	Negligible	No suitable habitat. Associated with the SCP.
Synaphea sp. Serpentine (G.R. Brand 103)	The species occurs predominantly on flat terrain on grey-brown sandy loams to clay in seasonally wet areas within a warm Mediterranean climate. This includes within heath of *Pericalymma ellipticum, Xanthorrhoea preissii, Kunzea micrantha, Adenanthos meisneri*. Open Woodland to Very Open Woodland of *Corymbia calophylla* over Very Open Shrubland of *Xanthorrhoea preissii, Kingia australis, Adenanthos meisneri* over very open herbland of Tricoryne elatior and sedgeland of *Mesomelaena tetragona, Tetraria octandra* (TSSC, 2018).	CE	CR	12.97	12.97	2009	2014			0	0	1	1	0	2	Negligible	Negligible	No suitable habitat. Associated with the SCP.
Morelotia australiensis	Flats, well-drained areas. Sand, sandy loam (Alcoa, 2023a).	V	VU	12.75	11.94	2011	2014			0	0	1	1	0	2	Negligible	Negligible	No suitable habitat. Associated primarily with the SCP.
Tetratheca phoenix	Brown gravelly loam over granite. Mid-upper slopes, often near large rock outcrops.		P2	2.21	2.21	2016	1900			0	1	1	0	2	4	High	Low	No outcrops detected. No suitable habitat. Perennial shrub not recorded.
Thysanotus anceps	White or grey sand, lateritic gravel, laterite.		P3	11.74	11.74	2003	2003	28.70		0	0	1	1	2	4	Moderate	Known	13 Individuals recorded.
Goodenia verreauxii	Flats, white/grey or yellow sand (Alcoa, 2023a).		P4	13.43	13.43	2009	1900			0	0	1	0	0	1	Negligible	Negligible	
Verticordia fimbrilepis subsp. *fimbrilepis*	This species (also known as the shy feather flower), occurs within Shire Council Road Reserves, Conservation Reserves. The species grows in low-lying shallow grey sand and yellowish-white sandy loam over gravel, sometimes with clay. It is found in low heath and scrubland, as well as open *Eucalyptus wandoo* (Wandoo) woodland. Associated species include *Adenanthos cygnorum* subsp. *cygnorum*, *Banksia grandis, Banksia drummondii, Banksia nivea, Hakea trifurcata, Allocasuarina* sp. *Desmocladus fasciculatus, Callistemon phoeniceus, Verticordia densiflora*, *Verticordia huegelii*, among others (DAWE, 2021).	E	EN	13.24	13.24	2017	2009			0	0	1	0	0	1	Negligible	Negligible	
Verticordia plumosa var. *ananeotes*	Sandy loam. Seasonally inundated plains.	E	CR	13.91	13.91	1900	1900			0	0	0	1	1	2	Low	Low	

1. Habitat derived from WAH (1998-) unless otherwise stated.