

18 October 2024

Claire McGuire  
Environment Manager  
Warriedar Mining Pty Ltd  
Level 2, 18 Richardson Street  
West Perth, WA 6005

**Re: Arid Bronze Azure Butterfly survey for the Eureka project area**

Dear Claire

Terrestrial Ecosystems is pleased to provide the outcomes of a targeted survey for the Arid Bronze Azure Butterfly for the Eureka project area (i.e. project area: Figure 1).

Arid Bronze Azure Butterfly

The Arid Bronze Azure Butterfly (ABAB) is associated with colonies of the ant *Camponotus terebrans* in mallee vegetation on sandy soil, often near flood plains, and the ant typically digs its nest at the base of eucalypts (Threatened Species Scientific Committee 2014). Butterfly larvae hatching from eggs laid near an ant nest entrance (often near the bases of various mallee eucalypts) are carried, by the ants, into their nest. Details of *C. terebrans* biology and of any form of herbivory by the larvae are unknown; however, it is likely that the larvae are myrmecophilous. These butterflies fly close to the ground and have been observed flying over agricultural lands near presumed breeding colonies (Williams and Williams 2008). The goldfields population was originally known from Lake Douglas, about 12kms south-west of Kalgoorlie (Field 1999), however, this population is reported to have become extinct (Williams et al. 2008, Williams and Williams 2008, Williams et al. 2018). There is an extant population in the Barbalin Nature Reserve (~11km west of Mukinbudin) in the Avon Wheatbelt (Threatened Species Scientific Committee 2014) and a more recently discovered population 40–60km north of Kalgoorlie (M. Byrne, DBCA pers comm.). There is also an additional extant population 100km from Barbalin Nature Reserve but the DBCA have not provided its location nor direction from Barbalin Nature Reserve. There are some more recently discovered populations ~50km north of Kalgoorlie and ~20km north of Kalgoorlie near the Gidji Roaster.

*Camponotus terebrans* is typically only found in areas with smooth bark Eucalypts including Gimlet (*Eucalyptus salubris*) and Lake Grace Gum (*Eucalyptus loxophleba* ssp. *gratae*), but also Wheatbelt Wandoo (*E. capillosa capillosa*) and Salmon Gum (*E. salmonophloia*). At Lake Douglas, the host tree was *Eucalyptus concinna* (Field 1999, Threatened Species Scientific Committee 2014). The ants typically form a crescent shaped nest at the base of eucalypts. These tree species are present in the project area.

Williams and Williams (2008; p.8) commented that ‘Over 30 surveys have been conducted in the region by DEC staff and experienced volunteers between 1992 and 2008’ and ‘include extensive surveys between Payne’s Find and Kalgoorlie, including most of the major conservation reserves. The surveys have covered extensive parts of the region in which *O. s. petrina* might occur, but have not detected any individuals or additional populations of the butterfly’ (Williams and Williams 2008; p.8). The fact that further populations have not been located, despite the species being conspicuous, demonstrates the rarity of this butterfly and the significance of the Barbalin site.’ (Williams and Williams 2008; p.9).

Due to the presence of smooth-barked Eucalypt trees and proximity to the extinct population at Lake Douglas and a recently discovered population north of Kalgoorlie a targeted survey was undertaken. Due to the obligate association of the ABAB with the host ant, surveys to detect this species need to consider both species. The habitat critical for the ABAB is the optimal habitat for the host ant. If the ant does not occur in a survey area, then ABAB will be absent. However, ant presence does not guarantee the ABAB is present, given that only the larger colonies will support a butterfly population. A large ant colony is a strong indicator of potential presence of the Arid Bronze Azure Butterfly.

Terrestrial Ecosystems visited the Barbalin Nature Reserve in September 2024 to confirm that the host ants were active.

### Targeted ant survey

Ant surveys can be conducted at any time of year, although lower ant activity in winter may result in lower activity levels and may reduce chances of detection, which increases the risks of regulators not approving of the methods. The optimal time to conduct ant surveys is when the ABAB is active from mid-September to late October, however the ABAB is still active in lower numbers between late October and late April. The field survey was completed on 18 September 2024 by Dr Scott Thompson and Isaac Cable. The field survey was therefore completed during an appropriate season.

Using Formulae 1 and 2, the number of mature trees required to adequately sample the area and their approximate spacing was calculated (Department of Biodiversity Conservation and Attractions 2020).

Formula 1.      Number of sample trees =  $10 \times \sqrt{\text{(site area in hectares)}}$

Formula 2.      Spacing of tree sampling =  $\sqrt{[(\text{site area in hectares} \times 10,000) / \text{No. sample trees}]}$

The ant survey comprised of the following technique:

- After selecting a sample tree, we used a pick to disturb the soil/bark/detritus at the base of the tree to a depth of ~10cm; and
- Observed for about 20-30 seconds to see if any host ants appear.

There is ~515ha of Eucalypt woodland in the project area. Terrestrial Ecosystems therefore calculated that 227 trees with an approximate spacing of 150m between trees needed to be sampled. Terrestrial Ecosystems sampled 251 trees at a spacing of 150m and included all habitat areas with smooth-barked eucalypt trees and mallee (Figure 2).

The following details were recorded for each tree:

- Tree type (smooth-bark or rough bark);
- GPS location;
- Tree diameter at ~1.5m height; and
- Ant and leafhopper presence/absence.

All of the tree data are shown in Appendix 1 and images in Appendix 3.

The targeted ant survey was undertaken in accordance with the DBCA guidelines (2020) for the survey of Arid Bronze Azure Butterfly in Western Australia.

### *Results*

Although ants were present in the project area, no *Camponotus terebrans* were recorded.

### Butterfly survey

Due to their dependence on the host ant, adult ABABs will always be found close to the breeding areas. As such, areas within and around places that have high densities of the ants are a priority for surveys. Male ABABs are territorial and they often establish small territories in open areas or along tracks so any tracks near the ant occurrences should be included in the survey area.

Surveys to detect the ABABs follow the standard butterfly walk transect method. Once the route of the transects is determined, it is investigated at a steady pace by one or more observers. Any ABABs seen to each side and ahead of the observers are recorded.

ABABs are only active in fine, warm weather and prefer sunny days with temperatures >23°C and light winds. The optimal time of day to observe them is between 10am and 3pm. Before commencing each transect survey the following details were recorded:

- site name;

- date of survey;
- number and identify of observers;
- weather conditions – air temperature, wind speed and direction, estimate of cloudiness (% cloud cover); and
- the start and end time of transect which can be used to quantify survey effort.

At the completion of the survey the temperature, wind speed and direction and cloud cover were recorded again. These data are provided in Appendix 2.

The length of butterfly search transect is determined using Formula 3.

Formula 3.      Transect length =  $0.7 \times \sqrt{(\text{ant habitat area in hectares})}$  km.

Terrestrial Ecosystems calculated that 15.9km of butterfly search transect was required to adequately survey the project area. Terrestrial Ecosystems completed 79.1km of transect searching in the project area, but it is acknowledged that some of this track survey was along the same transect multiple times. The entire project area was surveyed (Figure 2).

The butterfly survey was undertaken in accordance with the DBCA guidelines (2020) for the survey of Arid Bronze Azure Butterfly in Western Australia.

### *Results*

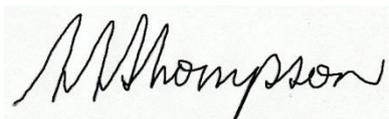
No Arid Bronze Azure Butterflies were recorded.

### Conclusion

There was no evidence to indicate that the Arid Bronze Azure Butterfly or its host ant are present in the Eureka project area.

Please do not hesitate in contacting the undersigned (0407 385 239), if you require any further information regarding this report.

Yours sincerely



Dr Scott Thompson  
Partner and Principal Zoologist

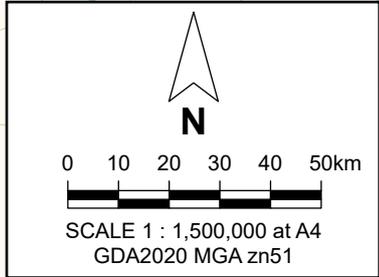
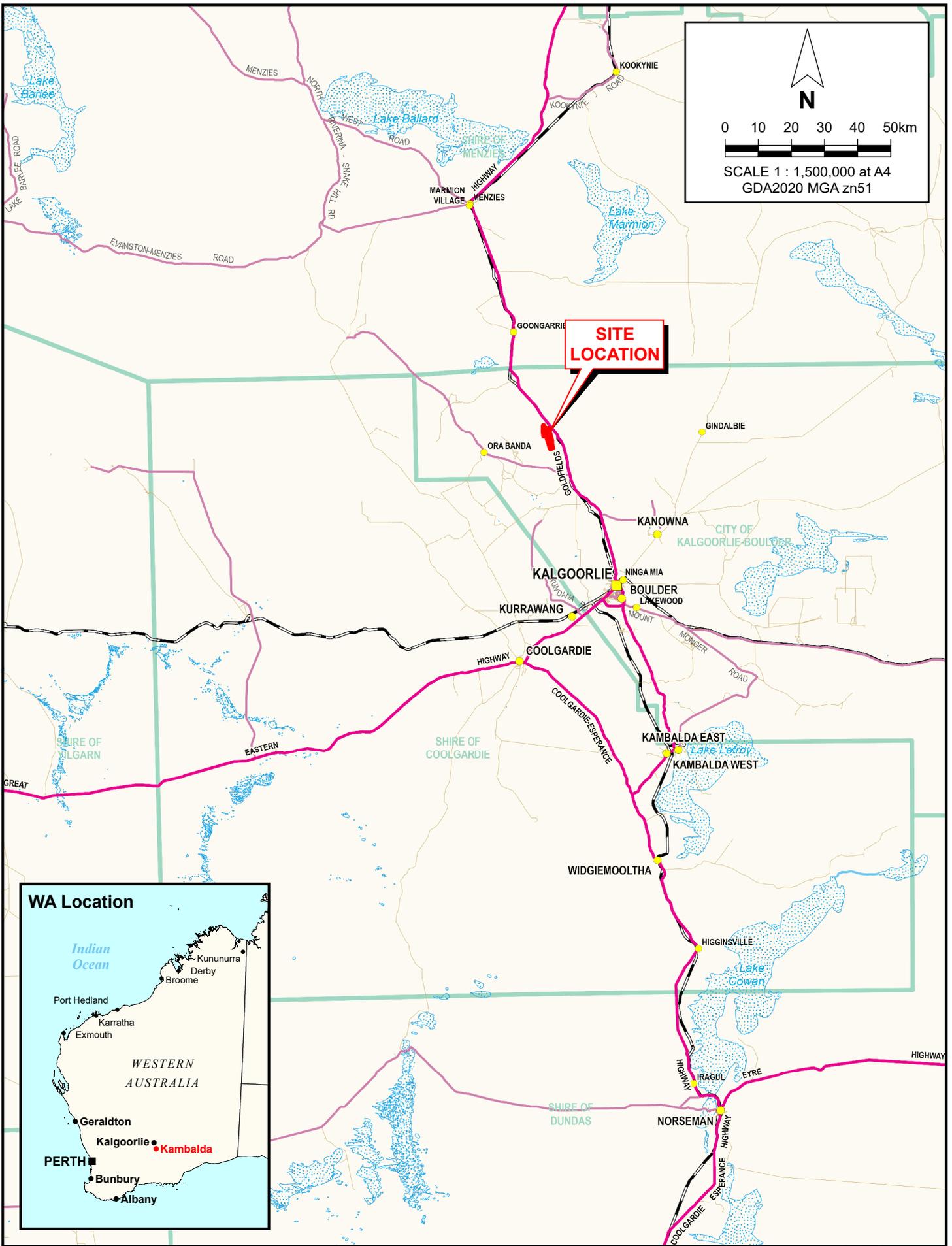
### **References**

- Department of Biodiversity Conservation and Attractions. 2020. Guideline for the survey of arid bronze azure butterfly (ABAB) in Western Australia. Perth.
- Field, R. P. 1999. A new species of *Ogyris* Angus (Lepidoptera: Lycaenidae) from southern arid Australia. *Memoirs of Museum Victoria* **57**:251-251.
- Threatened Species Scientific Committee. 2014. Conservation Advice *Ogyris subterrestris petrina* Arid bronze azure (a butterfly). Canberra.
- Williams, A., T. Gamblin, J. Richardson, M. Williams, and P. Blechynden. 2008. The critically endangered Arid Bronze Azure butterfly (*Ogyris subterrestris petrina*): progress report and recommendations for future actions. Perth.
- Williams, A. A. E., M. Williams, and R. A. Coppen. 2018. Conservation of the Arid Bronze Azure Butterfly (*Ogyris subterrestris petrina*) and host sugar ant (*Camponotus terebrans*). Survey results from *Camponotus terebrans* sites GIM 01, GIM 03, GIM 09, GIM 10, GIM 11, GIM 13, GIM 14, GIM 51, GIM 63, GIM 66, and GIM 68 south of Southern Cross (2014), and from *C. terebrans* site east of Merredin., Perth.
- Williams, M. R., and A. A. E. Williams. 2008. Threats to the critically endangered Arid Bronze Azure butterfly (*Ogyris subterrestris petrina*) by proposed vegetation clearing. Perth.

## Disclaimer

This document is prepared in accordance with and subject to an agreement between Terrestrial Ecosystems and the client, Maximus Resources. It has been prepared and is restricted to those issues that have been raised by the client in its engagement of Terrestrial Ecosystems and prepared using the standard of skill and care ordinarily exercised by environmental scientists in the preparation of such reports.

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**TERRESTRIAL ECOSYSTEMS**

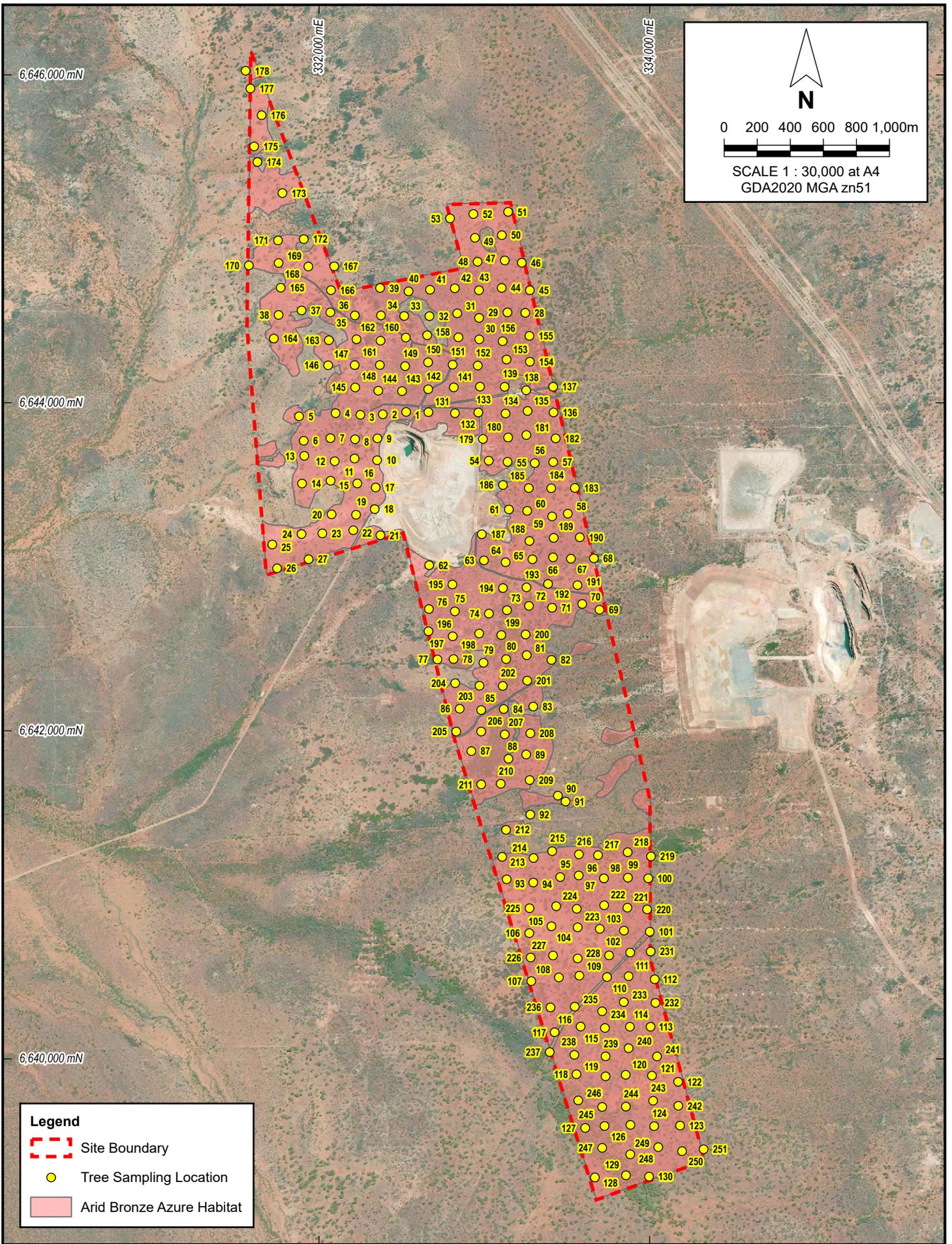
Drawn: S. Thompson      Date: 15 Oct 2024

Warriedar Mining Pty Ltd  
 ARID BRONZE AZURE BUTTERFLY SURVEY  
 EUREKA PROJECT AREA

**REGIONAL LOCATION**

**Figure 1**

Job: 2024-0109



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**Legend**

- Site Boundary
- Tree Sampling Location
- Arid Bronze Azure Habitat

**TERRESTRIAL  
ECOSYSTEMS**

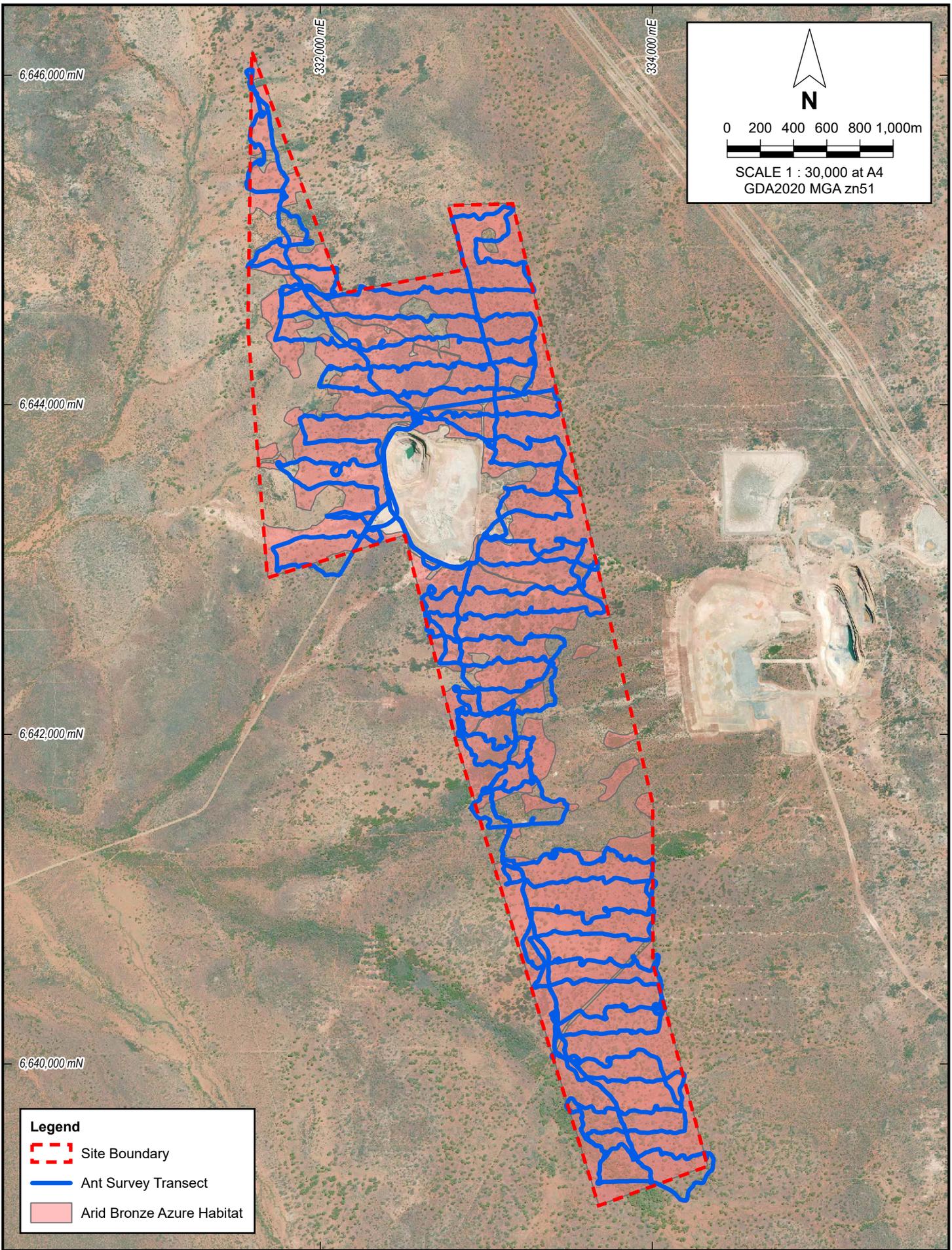
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ARID BRONZE AZURE BUTTERFLY SURVEY  
EUREKA PROJECT AREA

ARID BRONZE AZURE HABITAT WITH  
TREE SAMPLING LOCATIONS

Figure 2

Job: 2024-0109



**N**

0 200 400 600 800 1,000m

SCALE 1 : 30,000 at A4  
 GDA2020 MGA zn51

**Legend**

- Site Boundary
- Ant Survey Transect
- Arid Bronze Azure Habitat

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**TERRESTRIAL  
ECOSYSTEMS**

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 ARID BRONZE AZURE BUTTERFLY SURVEY  
 EUREKA PROJECT AREA

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ARID BRONZE AZURE BUTTERFLY SURVEYS

Figure 3

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Job: 2024-0109

**Appendix 1. Host ant survey data (UTM Zone 51)**

Site name: Eureka	
Date: 18 September 2024	Observers: Dr Scott Thompson and Isaac Cable

Tree	Species/type	Diameter (mm) at ~ 1.5m above the ground	Ants present? (Yes/No)	Leafhoppers present (Yes/No/NA)	Easting	Northing
1	Smooth	300	No	No	332526	6643943
2	Rough	700	No	No	332385	6643929
3	Smooth	300	No	No	332249	6643926
4	Smooth	100	No	No	332099	6643935
5	Smooth	500	No	No	331878	6643917
6	Smooth	700	No	No	331907	6643767
7	Rough	100	No	No	332068	6643783
8	Smooth	100	No	No	332217	6643777
9	Smooth	150	No	No	332353	6643782
10	Rough	300	No	No	332351	6643649
11	Rough	250	No	No	332214	6643659
12	Smooth	700	No	No	332094	6643643
13	Smooth	1000	No	No	331910	6643675
14	Smooth	400	No	No	331896	6643507
15	Smooth	600	No	No	332069	6643524
16	Smooth	100	No	No	332231	6643507
17	Smooth	100	No	No	332342	6643482
18	Smooth	100	No	No	332336	6643350
19	Smooth	300	No	No	332223	6643317
20	Smooth	600	No	No	332075	6643319
21	Rough	200	No	No	332370	6643191
22	Rough	500	No	No	332206	6643222
23	Smooth	900	Red and Black ants	No	332019	6643203
24	Smooth	400	No	No	331893	6643198
25	Smooth	600	No	No	331716	6643135
26	Smooth	1000	No	No	331745	6642990
27	Smooth	500	No	No	331936	6643045
28	Smooth	700	No	No	333247	6644547
29	Smooth	400	No	No	333139	6644550
30	Smooth	300	No	No	332967	6644516
31	Smooth	500	No	No	332835	6644544
32	Rough	800	No	No	332667	6644527
33	Rough	400	No	No	332514	6644528
34	Smooth	300	No	No	332374	6644532
35	Smooth	400	No	No	332216	6644532
36	Smooth	300	No	No	332068	6644550
37	Smooth	100	No	No	331893	6644562
38	Smooth	1000	Red and Black ants	No	331754	6644534

Tree	Species/type	Diameter (mm) at ~ 1.5m above the ground	Ants present? (Yes/No)	Leafhoppers present (Yes/No/NA)	Easting	Northing
39	Rough	800	No	No	332368	6644699
40	Rough	150	No	No	332541	6644678
41	Smooth	150	No	No	332670	6644688
42	Smooth	500	No	No	332820	6644697
43	Smooth	1000	Little black ants	No	332967	6644685
44	Smooth	650	Little black ants	No	333104	6644699
45	Smooth	200	Little black ants	No	333275	6644685
46	Smooth	450	Hairy black ants	No	333226	6644853
47	Smooth	600	No	No	333123	6644867
48	Smooth	200	No	No	332958	6644859
49	Smooth	800	No	No	332943	6645005
50	Smooth	600	No	No	333105	6645021
51	Smooth	900	No	No	333143	6645163
52	Smooth	300	No	No	332933	6645150
53	Smooth	600	No	No	332792	6645123
54	Smooth	250	No	No	333026	6643646
55	Rough	200	No	No	333140	6643639
56	Rough	200	No	No	333304	6643631
57	Rough	100	No	No	333416	6643637
58	Smooth	600	Little black ants	No	333504	6643323
59	Smooth	500	No	No	333409	6643306
60	Smooth	800	No	No	333259	6643340
61	Smooth	500	No	No	333148	6643348
62	Smooth	600	Hairy black ants	No	332665	6643008
63	Rough	300	No	No	332997	6643038
64	Rough	200	No	No	333128	6643027
65	Smooth	600	Hairy black ants	No	333290	6643045
66	Smooth	600	Little black ants	No	333415	6643057
67	Smooth	500	Little black ants	No	333523	6643048
68	Smooth	800	Little black ants	No	333662	6643050
69	Smooth	400	Little black ants	No	333696	6642737
70	Smooth	400	Little black ants	No	333591	6642772
71	Smooth	600	Little black ants	No	333409	6642749
72	Smooth	400	No	No	333269	6642761
73	Rough	200	No	No	333136	6642734
74	Rough	200	No	No	333027	6642714
75	Smooth	300	No	No	332821	6642727
76	Rough	500	No	No	332664	6642741
77	Rough	400	No	No	332716	6642434
78	Smooth	200	No	No	332813	6642437
79	Smooth	600	No	No	332994	6642414
80	Rough	400	No	No	333131	6642436

Tree	Species/type	Diameter (mm) at ~ 1.5m above the ground	Ants present? (Yes/No)	Leafhoppers present (Yes/No/NA)	Easting	Northing
81	Smooth	450	No	No	333256	6642460
82	Smooth	400	No	No	333405	6642431
83	Smooth	800	Little black ants	No	333295	6642147
84	Rough	100	No	No	333116	6642132
85	Smooth	500	No	No	332980	6642125
86	Smooth	500	Little black ants	No	332850	6642133
87	Smooth	750	No	No	332920	6641875
88	Rough	200	Hairy black ants	No	333145	6641828
89	Smooth	600	No	No	333252	6641854
90	Smooth	600	Little black ants	No	333444	6641604
91	Rough	200	No	No	333490	6641568
92	Smooth	400	No	No	333277	6641488
93	Smooth	1400	Little black ants	No	333134	6641093
94	Smooth	300	No	No	333295	6641074
95	Smooth	300	No	No	333458	6641107
96	Smooth	300	No	No	333570	6641117
97	Smooth	1000	No	No	333723	6641099
98	Smooth	350	No	No	333723	6641099
99	Smooth	600		No	333868	6641103
100	Smooth	400	Little black ants	No	333991	6641100
101	Smooth	800	Little black ants	No	334000	6640774
102	Smooth	400	Hairy black ants	No	333844	6640780
103	Smooth	400	No	No	333698	6640791
104	Smooth	500	No	No	333564	6640801
105	Smooth	750	No	No	333405	6640807
106	Smooth	600	No	No	333271	6640765
107	Smooth	500	No	No	333283	6640473
108	Smooth	300	No	No	333450	6640495
109	Smooth	300	No	No	333574	6640506
110	Smooth	450	No	No	333741	6640497
111	Smooth	500	Meat ants	No	333872	6640502
112	Smooth	500	No	No	334030	6640484
113	Smooth	400	Little black ants	No	334005	6640194
114	Smooth	500	No	No	333880	6640194
115	Rough	800	No	No	333729	6640187
116	Smooth	450	No	No	333582	6640195
117	Smooth	500	No	No	333424	6640161
118	Smooth	800	No	No	333556	6639905
119	Smooth	1000	No	No	333732	6639892
120	Smooth	600	No	No	333854	6639901
121	Smooth	800	Hairy black ants	No	334013	6639896
122	Smooth	750	Meat ants	No	334171	6639859

Tree	Species/type	Diameter (mm) at ~ 1.5m above the ground	Ants present? (Yes/No)	Leafhoppers present (Yes/No/NA)	Easting	Northing
123	Smooth	400	Little black ants	No	334183	6639591
124	Smooth	600	No	No	334026	6639588
125	Rough	400	No	No	333883	6639596
126	Smooth	450	No	No	333726	6639589
127	Rough	500	No	No	333609	6639577
128	Smooth	800	No	No	333668	6639276
129	Rough	800	No	No	333856	6639288
130	Smooth	600	Red and Black ants	No	333996	6639281
131	Smooth	250	No	No	332661	6643942
132	Smooth	350	No	No	332821	6643935
133	Smooth	180	No	No	332963	6643940
134	Smooth	300	No	No	333127	6643934
135	Smooth	510	No	No	333261	6643949
136	Rough	420	No	No	333418	6643940
137	Smooth	400	No	No	333415	6644097
138	Smooth	500	No	No	333252	6644075
139	Smooth	300	No	No	333122	6644096
140	Smooth	170	No	No	332973	6644097
141	Smooth	140	No	No	332814	6644093
142	Rough	480	No	No	332660	6644082
143	Rough	350	No	No	332501	6644070
144	Smooth	230	No	No	332358	6644072
145	Smooth	140	No	No	332218	6644092
146	Rough	330	No	No	332054	6644228
147	Smooth	210	No	No	332215	6644229
148	Smooth	500	No	No	332367	6644229
149	Smooth	150	No	No	332520	6644222
150	Rough	180	No	No	332659	6644246
151	Rough	160	No	No	332807	6644231
152	Smooth	250	No	No	332959	6644226
153	Smooth	400	No	No	333134	6644263
154	Smooth	430	Meat ant	No	333274	6644250
155	Smooth	230	Little black ant	No	333272	6644407
156	Smooth	190	Little black ant	No	333110	6644375
157	Smooth	340	No	No	332968	6644386
158	Smooth	200	No	No	332842	6644398
159	Smooth	280	No	No	332654	6644411
160	Smooth	200	No	No	332524	6644397
161	Rough	210	No	No	332371	6644378
162	Smooth	250	No	No	332226	6644386
163	Smooth	350	No	No	332059	6644381
164	Smooth	400	Little black ant	No	331726	6644391

Tree	Species/type	Diameter (mm) at ~ 1.5m above the ground	Ants present? (Yes/No)	Leafhoppers present (Yes/No/NA)	Easting	Northing
165	Smooth	400	No	No	331767	6644701
166	Smooth	600	Meat ant	No	332071	6644686
167	Smooth	450	Meat ant	No	332091	6644831
168	Smooth	450	No	No	331934	6644830
169	Rough	820	No	No	331754	6644852
170	Smooth	470	No	No	331575	6644836
171	Rough	320	No	No	331751	6644989
172	Rough	400	No	No	331907	6644997
173	Smooth	1100	No	No	331777	6645277
174	Smooth	400	No	No	331626	6645467
175	Smooth	1200	No	No	331607	6645562
176	Rough	450	No	No	331652	6645752
177	Rough	550	No	No	331584	6645915
178	Rough	400	Little black ant	No	331555	6646024
179	Smooth	180	Little black ant	No	332990	6643778
180	Smooth	350	Little black ant	No	333143	6643787
181	Smooth	400	No	No	333253	6643802
182	Smooth	180	Little black ant	No	333431	6643782
183	Smooth	350	No	No	333547	6643480
184	Smooth	870	No	No	333404	6643478
185	Smooth	350	Hairy ant	No	333268	6643479
186	Smooth	240	Little black ant	No	333112	6643498
187	Smooth	320	No	No	332984	6643197
188	Smooth	300	Meat ant	No	333272	6643156
189	Smooth	450	Little black ant	No	333419	6643175
190	Smooth	280	Meat ant	No	333576	6643179
191	Smooth	470	Meat ant	No	333563	6642887
192	Rough	400	Meat ant	No	333385	6642894
193	Smooth	500	No	No	333254	6642873
194	Rough	170	No	No	333112	6642869
195	Smooth	370	No	No	332806	6642891
196	Smooth	210	Little black ant	No	332661	6642606
197	Smooth	250	Hairy ant	No	332808	6642575
198	Smooth	130	No	No	332968	6642592
199	Smooth	250	No	No	333102	6642583
200	Smooth	800	Meat ant	No	333249	6642586
201	Rough	300	No	No	333259	6642305
202	Smooth	190	No	No	333110	6642272
203	Smooth	230	No	No	332970	6642274
204	Rough	350	No	No	332823	6642289
205	Smooth	300	Little black ant	No	332829	6641994
206	Smooth	180	No	No	332980	6641995

Tree	Species/type	Diameter (mm) at ~ 1.5m above the ground	Ants present? (Yes/No)	Leafhoppers present (Yes/No/NA)	Easting	Northing
207	Smooth	90	No	No	333123	6641977
208	Smooth	200	No	No	333277	6641984
209	Smooth	300	Meat ant	No	333273	6641698
210	Smooth	200	Little black ant	No	333098	6641676
211	Smooth	310	No	No	332980	6641672
212	Smooth	300	No	No	333131	6641395
213	Smooth	340	No	No	333107	6641230
214	Smooth	180	No	No	333297	6641223
215	Smooth	230	Little black ant	No	333410	6641265
216	Smooth	1060	Meat ant	No	333571	6641245
217	Smooth	400	No	No	333687	6641240
218	Smooth	430	Hairy ant	No	333866	6641259
219	Smooth	350	Little black ant	No	334007	6641233
220	Smooth	400	Meat ant	No	333984	6640910
221	Smooth	140	Meat ant	No	333865	6640920
222	Smooth	300	Meat ant	No	333724	6640935
223	Smooth	450	Meat ant	No	333558	6640914
224	Smooth	410	No	No	333434	6640929
225	Smooth	370	No	No	333273	6640917
226	Smooth	150	Meat ant	No	333279	6640616
227	Smooth	350	No	No	333414	6640629
228	Smooth	430	No	No	333564	6640611
229	Smooth	300	No	No	333754	6640629
230	Smooth	630	No	No	333881	6640647
231	Smooth	350	No	No	334005	6640653
232	Smooth	300	No	No	334034	6640340
233	Smooth	320	No	No	333843	6640345
234	Smooth	400	Meat ant	No	333712	6640288
235	Smooth	370	No	No	333546	6640317
236	Smooth	180	Meat ant	No	333399	6640312
237	Smooth	270	Little black ant	No	333395	6640040
238	Smooth	380	Little black ant	No	333544	6640023
239	Smooth	500	Hairy ant	No	333732	6640014
240	Smooth	180	No	No	333872	6640064
241	Smooth	200	No	No	334044	6640013
242	Smooth	400	Hairy ant	No	334173	6639712
243	Smooth	470	Little black ant	No	334020	6639743
244	Smooth	350	No	No	333855	6639707
245	Smooth	380	No	No	333712	6639705
246	Smooth	400	No	No	333567	6639745
247	Smooth	450	No	No	333712	6639456
248	Smooth	470	No	No	333882	6639416

Tree	Species/type	Diameter (mm) at ~ 1.5m above the ground	Ants present? (Yes/No)	Leafhoppers present (Yes/No/NA)	Easting	Northing
249	Smooth	1100	No	No	334051	6639460
250	Smooth	400	No	No	334195	6639435
251	Smooth	250	No	No	334326	6639447

## Appendix 2. Arid Bronze Azure Butterfly survey data (weather)

<b>Site name:</b> Eureka		
<b>Observers:</b> Scott Thompson and Isaac Cable		
Date: 18/9/2024	Cloud cover %: zero	
Start time: 0630hrs	Temperature C° - 17 °C	Wind speed (km/hr) – 0kph,
Time: 0800hrs	Temperature C° - 24.3 °C	Wind speed (km/hr) – 2kph,
Time: 1000hrs	Temperature C° - 34 °C	Wind speed (km/hr) – 0kph,
Time: 1115hrs	Temperature C° - 32 °C	Wind speed (km/hr) – 2kph,

**Appendix 3. Sampled trees**



**Tree 1**



**Tree 2**



**Tree 3**



**Tree 4**



**Tree 5**



**Tree 6**



**Tree 7**



**Tree 8**



**Tree 9**



**Tree 10**



**Tree 11**



**Tree 12**



**Tree 13**



**Tree 14**



**Tree 15**



**Tree 16**



**Tree 17**



**Tree 18**



**Tree 19**



**Tree 20**



**Tree 21**



**Tree 22**



**Tree 23**



**Tree 24**



**Tree 25**



**Tree 26**



**Tree 27**



**Tree 28**



**Tree 29**



**Tree 30**



**Tree 31**



**Tree 32**



**Tree 33**



**Tree 34**



**Tree 35**



**Tree 36**



**Tree 37**



**Tree 38**



**Tree 39**



**Tree 40**



**Tree 41**



**Tree 42**



**Tree 43**



**Tree 44**



**Tree 45**



**Tree 46**



**Tree 47**



**Tree 48**



**Tree 49**



**Tree 50**



**Tree 51**



**Tree 52**



**Tree 53**



**Tree 54**



**Tree 55**



**Tree 56**



**Tree 57**



**Tree 58**



**Tree 59**



**Tree 60**



**Tree 61**



**Tree 62**



**Tree 63**



**Tree 64**



**Tree 65**



**Tree 66**



**Tree 67**



**Tree 68**



**Tree 69**



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**Tree 74**



**Tree 75**



**Tree 76**



**Tree 77**



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**Tree 84**



**Tree 85**



**Tree 86**



**Tree 87**



**Tree 88**



**Tree 89**



**Tree 90**



**Tree 91**



**Tree 92**



**Tree 93**



**Tree 94**



**Tree 95**



**Tree 96**



**Tree 97**



**Tree 98**



**Tree 99**



**Tree 100**



**Tree 101**



**Tree 102**



**Tree 103**



**Tree 104**



**Tree 105**



**Tree 106**



**Tree 107**



**Tree 108**



**Tree 109**



**Tree 110**



**Tree 111**



**Tree 112**



**Tree 113**



**Tree 114**



**Tree 115**



**Tree 116**



**Tree 117**



**Tree 118**



**Tree 119**



**Tree 120**



**Tree 121**



**Tree 122**



**Tree 123**



**Tree 124**



**Tree 125**



**Tree 126**



**Tree 127**



**Tree 128**



**Tree 129**



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**Tree 137**



**Tree 138**



**Tree 139**



**Tree 140**



**Tree 141**



**Tree 142**



**Tree 143**



**Tree 144**



**Tree 145**



**Tree 146**



**Tree 147**



**Tree 148**



**Tree 149**



**Tree 150**



**Tree 151**



**Tree 152**



**Tree 153**



**Tree 154**



**Tree 155**



**Tree 156**



**Tree 157**



**Tree 158**



**Tree 159**



**Tree 160**



**Tree 161**



**Tree 162**



**Tree 163**



**Tree 164**



**Tree 165**



**Tree 166**



**Tree 167**



**Tree 168**



**Tree 169**



**Tree 170**



**Tree 171**



**Tree 172**



**Tree 173**



**Tree 174**



**Tree 175**



**Tree 176**



**Tree 177**



**Tree 178**



**Tree 179**



**Tree 180**



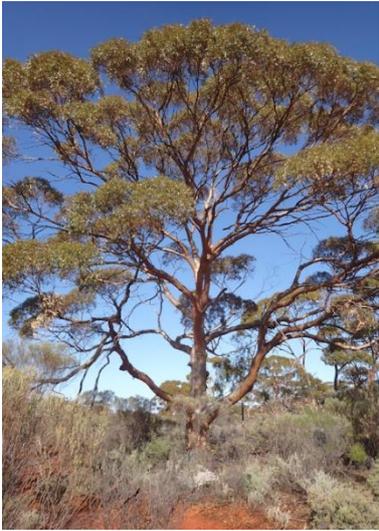
**Tree 181**



**Tree 182**



**Tree 183**



**Tree 184**



**Tree 185**



**Tree 186**



**Tree 187**



**Tree 188**



**Tree 189**



**Tree 190**



**Tree 191**



**Tree 192**



**Tree 193**



**Tree 194**



**Tree 195**



**Tree 196**



**Tree 197**



**Tree 198**



**Tree 199**



**Tree 200**



**Tree 201**



**Tree 202**



**Tree 203**



**Tree 204**



**Tree 205**



**Tree 206**



**Tree 207**



**Tree 208**



**Tree 209**



**Tree 210**



**Tree 211**



**Tree 212**



**Tree 213**



**Tree 214**



**Tree 215**



**Tree 216**



**Tree 217**



**Tree 218**



**Tree 219**



**Tree 220**



**Tree 221**



**Tree 222**



**Tree 223**



**Tree 224**



**Tree 225**



**Tree 226**



**Tree 227**



**Tree 228**



**Tree 229**



**Tree 230**



**Tree 231**



**Tree 232**



**Tree 233**



**Tree 234**



**Tree 235**



**Tree 236**



**Tree 237**



**Tree 238**



**Tree 239**



**Tree 240**



**Tree 241**



**Tree 242**



**Tree 243**



**Tree 244**



**Tree 245**



**Tree 246**



**Tree 247**



**Tree 248**



**Tree 249**



**Tree 250**



**Tree 251**