



Bio-condition Vegetation Assessment

Mount Emerald Wind Farm Offset Site

April 2022



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Revision History

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1.0 Introduction

Bio-condition assessments on the Mount Emerald Wind Farm (MEWF) Offset Site have been completed by 4 Elements Consulting on behalf of RATCH Australia Corporation Ltd (RATCH). This has been completed as part of the Mount Emerald Offset Management Plan monitoring requirements.

The purpose of these Bio-condition assessments is to provide detailed information on a range of vegetation communities that are present within the MEWF Offset site and repeat this effort biennially to monitor vegetation condition through time. It is important that the widest variety of regional ecosystems are captured in the baseline round of survey to detect any future changes to vegetation condition across the site. For this purpose, a total of 18 permanent sites have been located throughout the MEWF offset site. The first round of monitoring occurred over two consecutive years (2018/19) see (4 Elements, 2019). From this point forward it is expected that all 18 bio-condition plots will be monitored biennially in the same year. A summary of survey results for the latest survey period (April 2020) is provided in the below report body. Biennial surveys will continue until 2028 as per the Offsets Area Management Plan (RPS, 2016).

1.1 Site Threatened Flora

To offset impacts to threatened flora because of the construction of the Mount Emerald Wind Farm, a biodiversity offset (MEWF Offset site) was established and subsequently gazetted as a nature refuge in 2018 under the *Nature Conservation Act 1992*. A baseline survey was conducted over this property (Gleed, 2016) with one of the key aims being to determine the presence of threatened flora listed under the *Nature Conservation Act 1992* and the *EPBC Act 1999* on the MEWF offset site. A total of eight (8) listed species were recorded in this survey. With seven of these species being present on the Mount Emerald Wind Farm Project Site.

All listed threatened flora that was known to be present from the baseline survey has been recorded during the MEWF offset site in the current round of monitoring. Three (3) additional species have also now been included under a conservation listing since this the baseline survey which include *Zieria fordii*, *Comesperma anemosmaragdinum* and *Eleutheroglossum fellowsii*. This now brings the total number of threatened species present within the MEWF Offset Site to 11 species. All listed threatened species under the *EPBC Act* and or *NC Act* present on the MEWF offset site are listed below;

- ▶ *Acacia purpureopetala* (Purple-flowering Wattle) - Critically Endangered (EPBC Act), Vulnerable (NC Act);
- ▶ *Comesperma anemosmaragdinum* (no common name) – Endangered (NC Act);
- ▶ *Grevillea glossadenia* (no common name) - Vulnerable (EPBC Act), Vulnerable (NC Act);
- ▶ *Eleutheroglossum fellowsii* (Native Damsel Orchid) – Vulnerable (NC Act);
- ▶ *Homoranthus porteri* (no common name) - Vulnerable (EPBC Act), Vulnerable (NC Act);
- ▶ *Melaleuca sylvana* (no common name) – Endangered (NC Act);
- ▶ *Melaleuca uxorum* (no common name) - Endangered (NC Act);

-
- ▶ *Plectranthus amoenus* (Plectranthus) - Vulnerable (NC Act);
 - ▶ *Prostanthera albohirta* (a mint bush) – Critically Endangered (EPBC Act), Critically Endangered (NC Act);
 - ▶ *Prostanthera clotteniana* (Mint Bush) - Critically Endangered (EPBC Act), Endangered (NC Act);
 - ▶ *Zieria fordii* (Ford's Stink-bush) – Critically Endangered (NC Act).

The bio-condition monitoring survey locations have been selected to include threatened flora populations so that the survey plots may act as a monitoring tool of the threatened flora population health on the site. Most species present on MEWF project site are represented within a bio-condition except for *Melaleuca sylvana*.

2.0 Methodology

The methodology of this year's Bio-condition sampling follows closely the work in the previous two (2) monitoring periods (4 Elements, 2019 and Four Elements 2020). The methods used for the Bio-condition assessments followed those described by Eyre et al. (2017) and Neldner et al. (2017). The method works on a series of plots and transects nested within a survey area of 10,000 m² (1 ha).

The location of the bio-condition sites provides the opportunity to monitor a subset of the threatened flora populations present on the offset site. All new records of threatened flora are recorded and collected for submission to the herbarium when traversing the offset site. All threatened flora species present within any bio-condition plots are recorded and tallied in the results summary tables for each site (see section 3 results). Any sign of dieback or disease are recorded along with any flowering, fruiting and juvenile plant recruitment is recorded to monitor population health and persistence through time. An opportunistic weed survey is also undertaken during site traverse.

2.1 Time of Survey

The survey period was conducted over multiple days between the dates of 17 February and the 10 April 2022. This timing is considered the optimal timing for flora assessment when prevailing warm wet conditions promote plant growth and reproduction. All ground forbs, herbs and grasses were readily detectable and could often be confidently identified to species. The exception was for a small number of grass species that could occasionally only be identified to the genus level. This did not impact on the species abundance tally for the bio-condition assessment.

2.2 Survey Limitations

Under the MEWF Offset Area Management Plan, (RPS, 2016), the schedule of two (2) replicates for each of the Offset properties Regional Ecosystems was determined to be a requirement under the MEWF approval with conditions (EPBC 2011/6228). Although this monitoring schedule uses the bio-condition conditional assessment (Eyre *et al* 2015) to assess vegetation condition, a bio-condition score is unable to be applied to the sampled vegetation communities. This is primarily due to the fact that there are currently no published reference sites for any vegetation communities within the Wet Tropics Bioregion to which the property is located entirely within. Therefore, a requirement to survey a minimum of three (3) external reference sites are required to be surveyed for each Regional Ecosystem that has been sampled within the offset property. This is outside the scope of this monitoring schedule as determined in the project approval conditions.

Every effort was made to provide two replicate sites for each of the discreet remnant vegetation communities and relevant sub-categories mapped under the Regional Ecosystem Description Database Version 11.1 (REDD 2019). Due to difficulty in accessing some regional ecosystems (RE's) associated with steep and loose rocky terrain, not all could be replicated twice. Both RE 712.57a and RE 7.12.26e were only sampled with a single

replicate due to difficulty in site access. Other regional ecosystems were rare on site occurring only at a single location and therefore, these RE's were also only sampled utilizing a single replicate. These included the vine forest and riverine communities of RE 7.12.9, RE 7.12.7c, RE 7.3.26a and RE 7.2.16a. These regional ecosystems are also not represented on the Mount Emerald Wind Farm site and therefore not considered as high a priority for monitoring. All other regional ecosystems have two (2) independent replicates for future monitoring. Summary of sampled vegetation communities are summarised in **Table 1**.

For some Regional Ecosystems (e.g. RE 7.12.65k and RE 7.12.57a) a 100 m transect within the plot was not possible due to the limited extent of the community on narrow rock outcrops or within narrow rocky gullies. A 50 m transect was used in these situations and data extrapolated to the 1 ha survey area. Where a 50m transect was utilised it is listed in (**Table 1**) below.

Table 1 Bio-condition Sampling Frequency on the MEWF Offset Site

Regional Ecosystem (REDD)	Survey Number	No. of Replicates	Transect Length (m)
RE 7.12.65k	Site 2, Site 17	2	50
RE 7.12.58	Site 1, Site 18	2	100
RE 7.12.57a	Site 15	1	50
RE 7.12.57c	Site 3, Site 16	2	100
RE 7.12.34	Site 12, Site 13	1	100
RE 7.12.30d	Site 4, Site 8	2	100
RE 7.12.29a	Site 9, Site 14	2	50
RE 7.12.26e	Site 10	1	100
RE 7.12.16a	Site 6	1	25
RE 7.12.9	Site 5	1	25
RE 7.12.7c	Site 11	1	100
RE 7.3.26a	Site 7	1	100

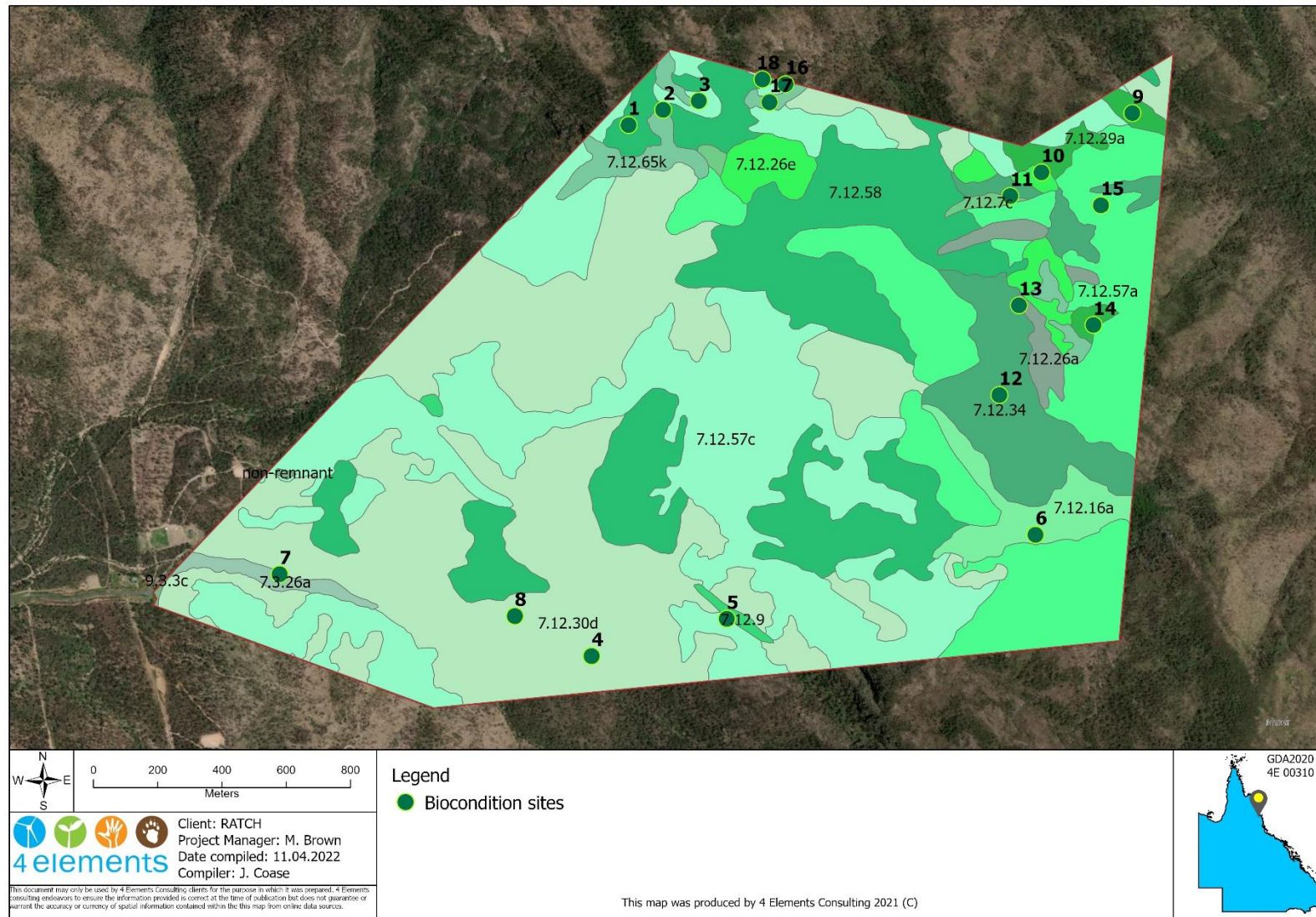


Figure 1 *MEWF Offset Bio-condition Assessment Plot Locations*

3.0 Bio-condition Report Summary

3.1 Additional New Threatened Flora Records

In addition to monitoring the vegetation condition throughout the offset property, the bio-condition assessment has provided opportunity to monitor the distribution of threatened flora populations whilst moving between sites. All the eight (8) known threatened flora species known to be present in the initial 2016 survey were recorded in the current monitoring period. All species except for EPBC listed *Critically Endangered Prostanthera albohirta*, *Prostanthera clotteniana* and *Zieria fordii* the *Endangered Melaleuca sylvana* were recorded within individual bio-condition monitoring plots as indicated in **Appendix A**. The following section details all new records including basic habitat descriptions of threatened flora records of the latest survey period.

3.1.1 *Acacia purpureopetala*

The EPBC Act 1999 listed Critically Endangered and NC Act 1992 Vulnerable *Acacia purpureopetala* has been recorded at a single location within the offset site (see **Figure 2**). Since the previous survey (4Elements 2020) a further two (2) populations have been located approximately 250 m to the north and 600 m to the north (see **Figure 2**). These two (2) additional populations were in a similar aspect and vegetation community as the original record (see **Plate 1 & Plate 2**). This included a SE facing slope within RE 7.12.30d at an elevation between 650 and 750 m asl. Both additional sites had been burnt in October 2020 with the previous record unimpacted by fire.



Plate 1 Location of additional Purple Acacia Record Post Fire (July 2021)



Plate 2 Unburned Fruiting Purple Acacia Within New Location Post Fire (July 2021)



Plate 3 Flowering *Acacia purpureopetala* at Bio-condition site 4 (February 2022)

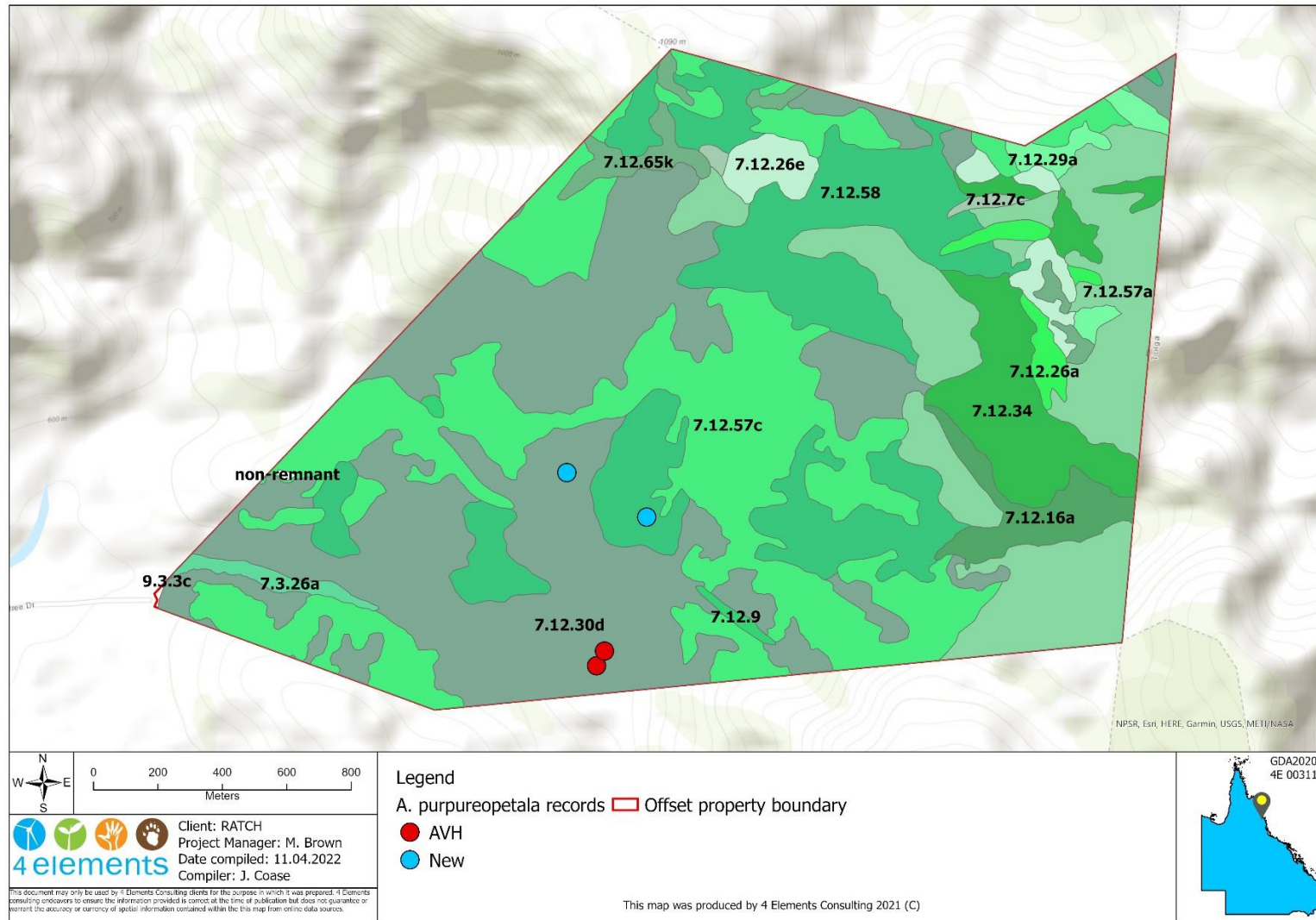


Figure 2 *Acacia purpureopetala* Indicating Australian Virtual Herbarium (AVH) Records and New 2021 Records

3.1.2 *Eleutheroglossum fellowsii*

During the most recent monitoring period, a new population of the *Nature Conservation Act 1992 Vulnerable* listed *Eleutheroglossum fellowsii* syn *Dendrobium fellowsii* was recorded on site at three (3) additional locations in the northeast of the site (**Plate 4**). This species is now located within three (3) Biocondition monitoring plots (see **Figure 3**). This species is an epiphytic orchid found growing in moist windswept environments on the sides of rough barked trees. All populations were located within *Syncarpia glomulifera*, *Eucalyptus crebra* and *Corymbia intermedia* dominated open forest often containing an understory of *Allocasuarina littoralis* on the top of a high elevation (>1000 m asl) forested ridge facing the predominate southeast cloud moisture.



Plate 4.E. *fellowsii* growing as an epiphyte on *Eucalyptus crebra* at Bio-condition site 12 (December 2021)

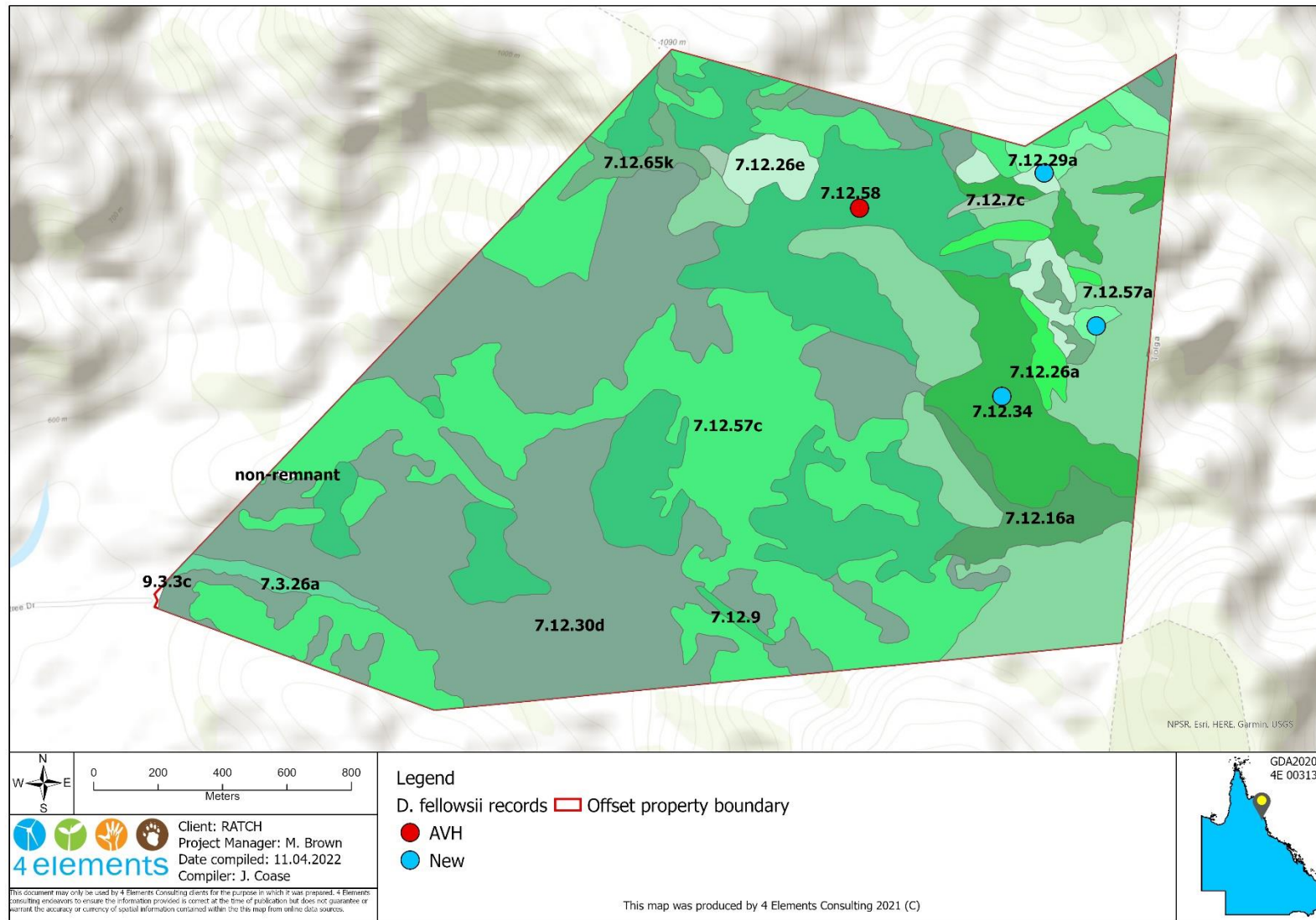


Figure 3

Dendrobium fellowsii Indicating Australian Virtual Herbarium (AVH) and New 2022 Record

3.1.3 *Prostanthera clotteniana*

The NC Act 1992 listed Endangered *Prostanthera clotteniana* has previously been recorded at two (2) locations within the offset site (see **Figure 4**). Since the previous survey (4 Elements 2020) a further one (1) population was located approximately 500 m to the east of the previous known record (see **Figure 4**). This population contained approximately 50 mature individuals and was in flower and fruit at the time of survey (see **Plate 5**). This new population was in a similar aspect and vegetation community as the original record. Population was located at 720 m asl within RE 7.12.57c on a North facing steep rhyolite slope with a *Callitris intratropica*, *Acacia disparrima* canopy *Bursaria incana*, *Grevillea glossadenia*, *Homoranthus porteri* with a dense *Themeda triandra* ground layer (see **Plate 5**). Previously five (5) records had been located all within RE 7.12.30d.



Plate 5 *Prostanthera clotteniana* Additional Population (-17.20968, 145.39684)

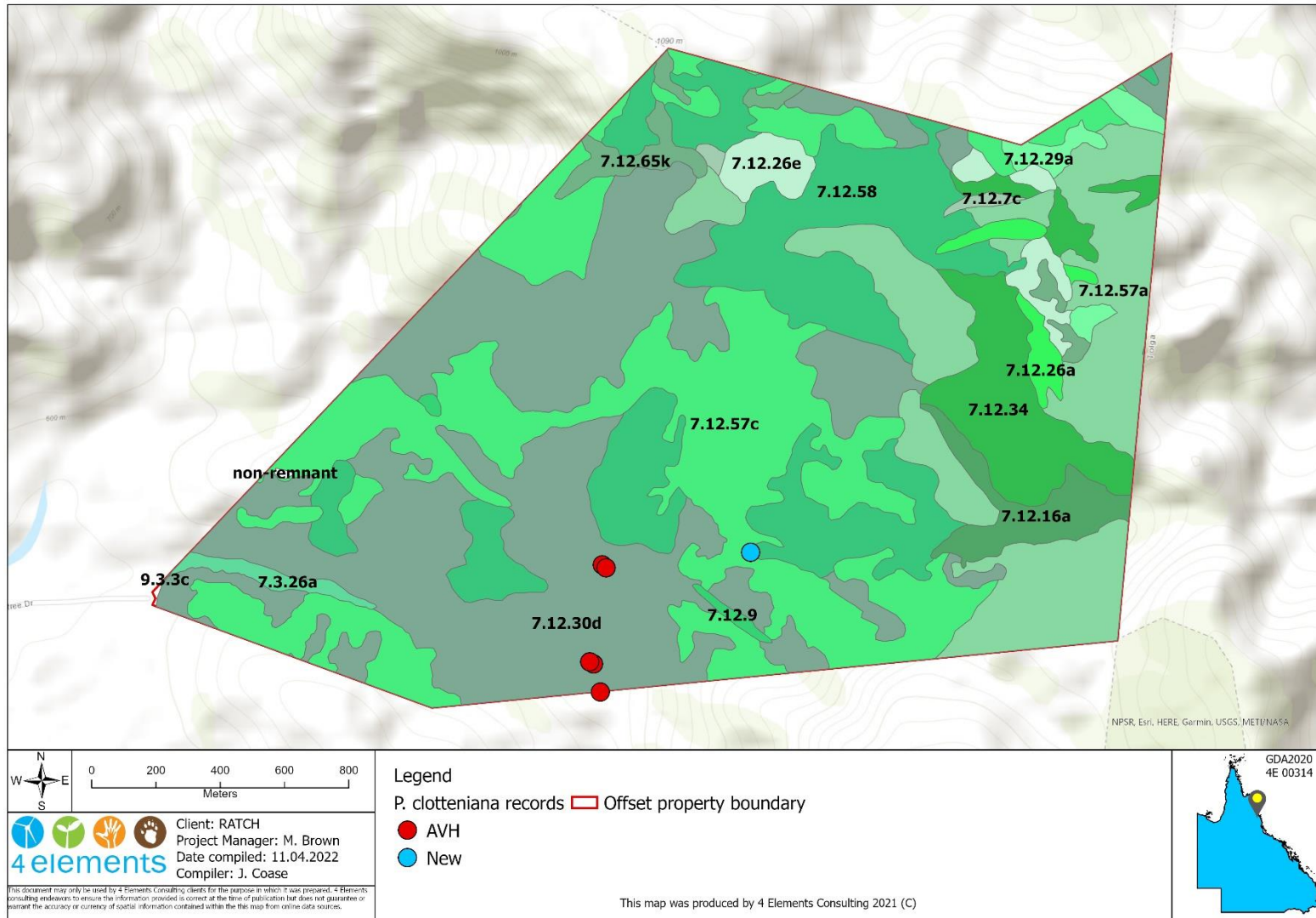


Figure 4 *Prostanthera clotteniana* Indicating Australian Virtual Herbarium (AVH) Records and New 2022 Record

3.1.4 *Zieria fordii* (Ford's Stink Bush)

This species is listed as Critically Endangered under the Nature Conservation Act 1992. This species was formally described in August 2019 (Duretto, 2019). It is a small shrub to 1.6 m in height with trifoliate leaves in opposite pairs covered in a dense stellate indumentum (see **Plate 6**). This species was split from the widespread and morphologically diverse *Zieria cytisoides* primarily due to the sepals being longer or almost the same length as the petals (2-2.5mm long).

Zieria fordii is known to occur as a single population which is comprised of three (3) sub-populations that occur within 100 ha total extent of occurrence. Many of the individuals recorded previously are within RE 7.12.58 (see **Plate 7**). The entire known global distribution of this species is within the offset site and the property immediately to the east. An additional population was located during the current survey period which increases the known populations to four (4) (see **Figure 4**). The recent additional record consisted of approximately 50 individuals to a height up to 1 m. They were growing under 4-5 m canopy of *Acacia aulacocarpa*, *Pittosporum venulosum*, *Syncarpia glomulifera*. *Z. fordii* formed part of shrub layer with *Astroloma* sp., *Melaleuca recurva* and *Bertya polystigma*. Dense grassy ground layer on rhyolite ridge southeast facing ridge immediately a vertical drops off to the east.



Plate 6 Close up of *Zieria fordii* Flowers (-17.19704, 145.39415)



Plate 7 *Zieria fordii* Within *Eucalyptus reducta* Woodland February 2022 (-17.19704, 145.39415)

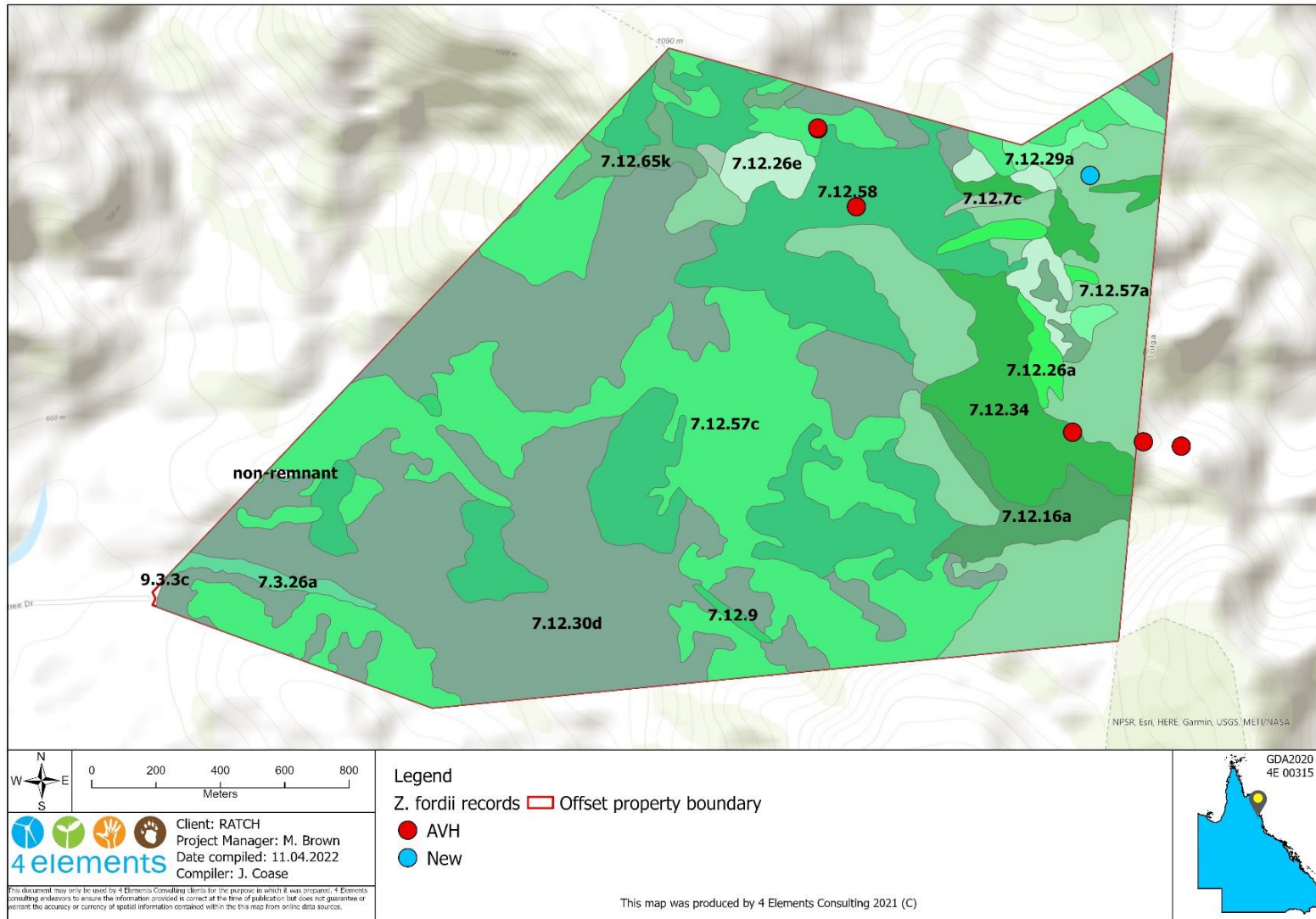


Figure 5 *Zieria fordii* Indicating Australian Virtual Herbarium (AVH) Records and New 2022 Record

3.1.5 *Comesperma anemosmaragdinum*

An erect and multibranched perennial shrub to 1.6 m in height. It has concolorous elliptic leaves which are grey green in colour and hairless (see **Plate 8**). This species occurs within RE 7.12.58 and RE 7.12.57c (see **Plate 9**) and is known only from the northern end of the Herberton Range between the Mount Emerald Project Site near to WTG 30 south to Mt Misch (AVH, 2022). The total extent of occurrence is approximately 9 km² and with an area of occupancy of less than 1 ha (Ford *et. al.* 2017). This species was first recorded on the offset site in 2009 although was not listed as a threatened species under the *Nature Conservation Act 1992* until September 15, 2020. Therefore, this current survey is the first undertaken where this species has been listed as threatened. No new records of this species were in the current survey.



Plate 8 *Comesperma anemosmaragdinum* Close up of Foliage and Flowers (Bio condition Site 1)



Plate 9 *Comesperma anemosmaragdinum* Present in the Understory at Bio-condition Site 1

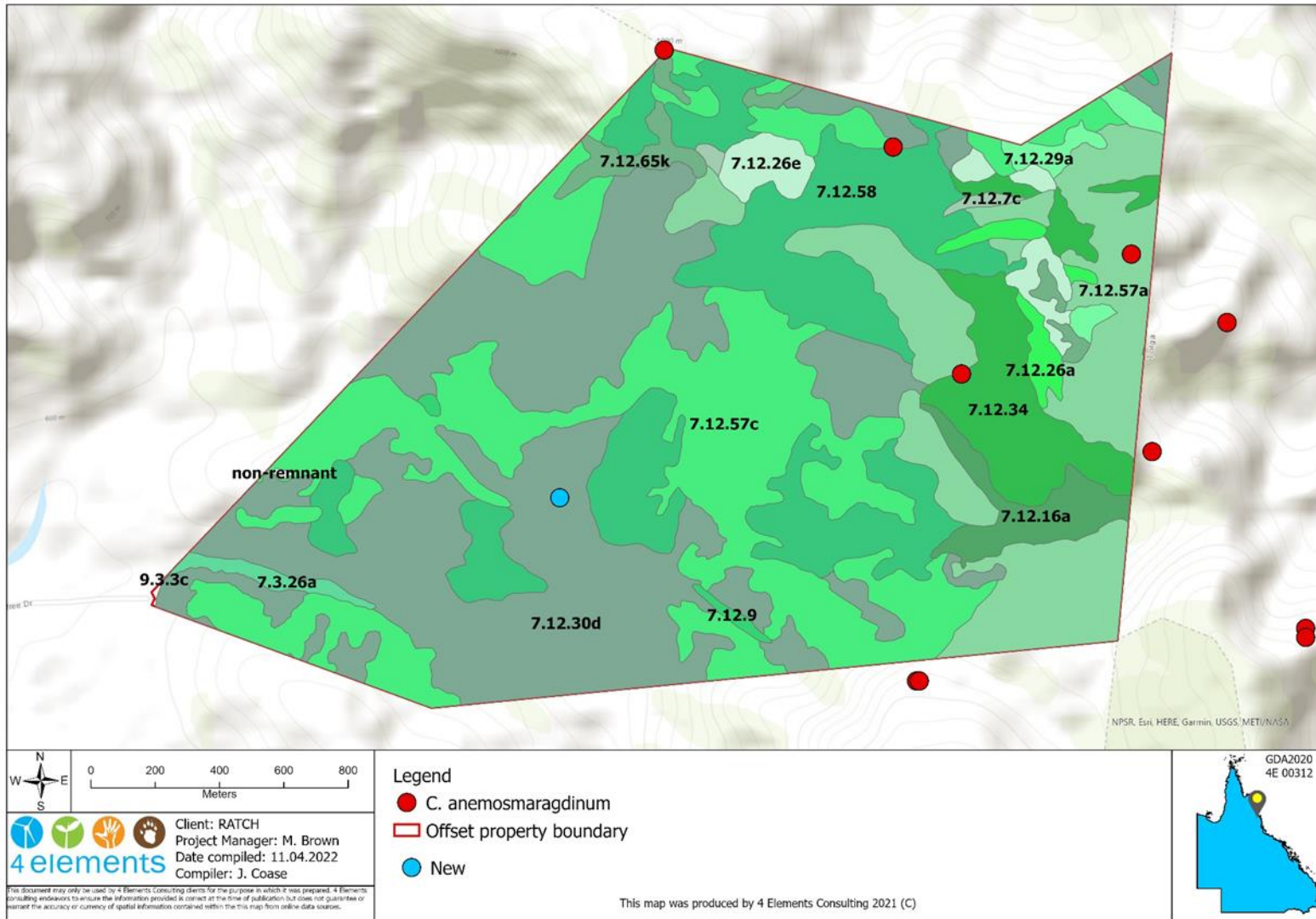


Figure 6 *Comesperma anemosmaragdinum* Indicating Australian Virtual Herbarium (AVH) Records and New 2022 Record

4.0 Discussion

The Mount Emerald offset site is a biodiversity offset that was gazetted in 2018 as a Nature Refuge under the *Nature Conservation Act 1992*. The site is well selected as an Offset property for the MEWF project which is the neighbouring property located directly to the north. Vegetation communities present on the MEWF project site are represented as are the listed threatened species under both the *EPBC Act 1999* and the *NC Act 1992*. All are represented in healthy populations distributed widely across the site.

Within the 18 bio-condition permanent plots, a total of 11 sites contained listed threatened flora as listed under both state and federal legislation. Threatened species were mostly associated with drier and more structurally open regional ecosystems (7.12.30d, 7.12.57c, 7.12.58 and 7.12.65k). These regional ecosystems are the same as those represented on the MEWF project site where threatened species are clustered. All species that are present within the MEWF site are now included in this bio-condition assessment monitoring plan for the offset site except for *Diuris oporina*, *Prostanthera clotteniana* and *Melaleuca sylvana*. An additional threatened species, *Eleutheroglossum fellowsii*, listed *Vulnerable* under the *Nature Conservation Act 1992* was recorded in three (3) of the permanent bio-condition sites on this round of bio-condition monitoring. These individuals were found within regional ecosystem 7.12.26e, 7.12.29a and 7.12.34. Conditions for this species are not considered favourable on the MEWF project site due to the prevailing drier and rockier conditions present within that property. There exist numerous locations for this species to occur throughout the high elevation forested peaks of the offset property and further incidental records are likely during the monitoring phase which is to continue biennially until 2028.

No evidence of phytophthora dieback or myrtle rust infection were recorded at any of the 18 bio-condition sites that is common in the lower eastern parts of the wet tropic's bioregion. Non-native flora species were generally very low in abundance and/or absent from many of the sites. Common weeds included *Praxelis clematidea* and *Melinis repens* which are both present across similar habitat across much of the wet tropics due to the ability to wind disperse. Otherwise, ground cover was between 0-1% for herbaceous weeds. No woody weeds have been detected in any of the 18 bio-condition plots. Feral digging was not present at any of the 18 bio-condition sites; however, it was recorded occasionally during site traverse between bio-condition plots.

Due to the lack of reference sites within the wet tropic's bioregion, a bio-condition score for each of the surveyed vegetation communities cannot be achieved currently. Once reference sites are collected and published by the Queensland Herbarium for the regional ecosystems present on the Offset property this may then occur. As was found in the field surveys for the initial site assessment (RPS, 2016) the condition of the offset site is considered in pristine ecological condition with low disturbance recorded and high abundance of threatened flora species. After the completion of three (3) biennial rounds of bio-condition monitoring, this remains the case. Continued biennial monitoring of the 18-permanent bio-condition plots will provide quantitative monitoring of threatened species health and distribution until 2028.

5.0 References

- 4 Elements (2019) Bio-condition Survey- MEWF Offset Site April 2019. Unpublished report prepared for Ratch Australia Pty.
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- Ford, A. J., Halford, D. A., Van Der Merwe, M. and Mathieson, M. (2017). A revision of the tropical white-flowered species of *Comesperma* (Polygalaceae) in Australia. *CSIRO Publishing Australian Systematic Botany*. 30 (2) pp 159-182.
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- Queensland Herbarium (2022). Regional Ecosystem Description Database (REDD). Version 11.1 (April 20 2022). DSITI, Brisbane.
- RPS (2016) Offsets Area Management Plan. Mt Emerald Wind Farm, Herberton Range, North Queensland. Unpublished report prepared for Ratch Australia Pty.

Bio-condition Site 1

Date:	17-02-2022			
Plot Origin:	Zone: 55K	Easting: 0329103	Northing: 8097846	Elevation: 1036
Plot Centre:	Zone 55K	Easting: 0329142	Northing: 8097874	Elevation: 1043
Plot Bearing:	NE	Plot Alignment:	Parallel to contour	



North



East



South



West

Habitat Description:	<i>Eucalyptus reducta</i> open woodland with a canopy height ranging from 8-10m. A shrubby understory consisting of <i>Leptospermum amboinense</i> , <i>Xanthorrhoea johnsonii</i> and <i>Acacia calyculata</i> 0.5-1m in height. The ground cover species consist of <i>Cleistochloa subjuncea</i> and <i>Lepidosperma laterale</i> to 0.25m tall.		
Regional Ecosystem (Mapped):	RE 7.12.58 <i>Eucalyptus reducta</i> +/- <i>E. granitica</i> +/- <i>Corymbia dimorpha</i> +/- <i>C. citriodora</i> woodland to open forest on granite and rhyolite.		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	1
		Shrubs:	9
		Grasses:	2

Bio-condition Site 1			
		Forbs/Other:	11
	Tree Canopy	Median Height (m)	9
		Tree Canopy Cover (%)	33.6
	Tree Sub-canopy	Tree sub-canopy median Height (m)	N/A
		Tree Sub-canopy Cover	0
	Large Trees	Large Eucalypt tree DBH threshold (cm)	35
		Large Eucalypt trees per hectare	20
		Large non-eucalypt trees threshold (cm)	NA
		Large non-eucalypt trees per hectare	NA
	Shrub Cover	Native Shrub Layer 1 Cover (%)	3.6
		Native Shrub Layer 2 Cover (%)	38.2
	Ground Cover	Native Perennial Grass Cover (%)	85
		Forbs and Non-grass (%)	2
		Shrubs (%)	46
		Organic litter cover (%)	23
		Rock (%)	8
		Bare Ground (%)	3
		Cryptograms (%)	3
		Non-native plant cover (%)	0
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	98
Native Species Richness:	Trees	<i>Eucalyptus reducta</i>	
	Shrubs	<i>Acacia calyculata, Acrothamnus spathaceus, Comesperma anemosmaragdinum, Exocarpos cupressiformis, Leptospermum amboinense, Persoonia falcata, Platysace valida, Pseudanthus ligulatus, Xanthorrhoea johnsonii</i>	
	Grasses	<i>Aristida sp., Cleistochloa subjuncea</i>	
	Forbs and Others	<i>Fimbristylis sp., Hovea nana, Pigea enneasperma, Lepidosperma laterale, Lomandra filiformis, Lomandra multiflora, Melichrus urceolatus, Pimelea linearifolia, Pultenaea millarii, Stylidium graminifolium, Tricoryne anceps</i>	
Non-native Species	Nil		
Threatened flora	<i>Comesperma anemosmaragdinum</i>		

Table 2 Bio-condition site 2

Bio-condition Site 2				
Date:	17-02-2022			
Plot Origin:	Zone: 55K	Lat: 329249	Long: 8097871	Elevation: 1019m
Plot Centre:	Zone: 55K	Lat: 329250	Long: 8097921	Elevation: 1034m
Plot Bearing:	N	Plot Alignment:	Upslope across rock pavement	
				
North		East		
				
South		West		
Habitat Description:	Rock pavement community that slopes southward. Shrubland community consisting of <i>Acacia aulacocarpa</i> , <i>Eucalyptus lockyeri</i> and <i>Leptospermum amboinense</i> as the dominant shrubs on the site.			
Regional Ecosystem (Mapped):	7.12.65k: Granite and rhyolite rock outcrop, of dry western areas, associated with shrublands to closed forests of <i>Acacia spp.</i> and/or <i>Lophostemon spp.</i> and/or <i>Allocasuarina spp.</i> In the Mount Emerald area, shrubs may include <i>Acacia umbellata</i> , <i>Melaleuca borealis</i> , <i>Homoranthus porteri</i> , <i>Leptospermum neglectum</i> , <i>Melaleuca recurva</i> , <i>Melaleuca uxorum</i> , <i>Grevillea glossadenia</i> , <i>Corymbia abergiana</i> , <i>Eucalyptus lockyeri</i> , <i>Sannantha angusta</i> , <i>Pseudanthus ligulatus subsp. ligulatus</i> , <i>Acacia aulacocarpa</i> , <i>Leptospermum amboinense</i> , <i>Xanthorrhoea johnsonii</i> and <i>Jacksonia</i>			

Bio-condition Site 2

	<i>thesioides</i> . Ground-cover species may include <i>Borya septentrionalis</i> , <i>Lepidosperma laterale</i> , <i>Eriachne</i> spp., <i>Cleistochloa subjuncea</i> , <i>Boronia occidentalis</i> , <i>Cheilanthes</i> spp., <i>Coronidium newcastlianum</i> , <i>Schizachyrium</i> spp., <i>Tripogon loliiformis</i> , <i>Gonocarpus acanthocarpus</i> and <i>Eragrostis</i> spp. Dry western areas. Granite and rhyolite. (BVG1M: 29b)		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%)	100%	
	Native plant species richness:	Trees:	2
		Shrubs:	10
		Grasses:	6
		Forbs/Other:	9
	Tree Canopy	Median Height (m)	NA
		Tree Canopy Cover (%)	NA
	Tree Sub-canopy	Tree sub-canopy median Height (m)	NA
		Tree Sub-canopy Cover	NA
	Large Trees	Large Eucalypt tree DBH threshold (cm)	NA
		Large Eucalypt trees per hectare	NA
		Large non-eucalypt trees threshold (cm)	NA
		Large non-eucalypt trees per hectare	NA
	Shrubs	Native Shrub Cover (%)	6.5
	Ground Cover	Native Perennial Grass Cover (%)	0
		Forbs and Non-grass (%)	2
		Shrubs (%)	3
		Organic litter cover (%)	5
		Rock (%)	36
		Bare Ground (%)	NA
Cryptograms (%)		54	
Non-native plant cover (%)		3	
Total Non-native species richness	1		
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	0	
Native Species Richness:	Trees	<i>Eucalyptus atrata</i> , <i>E. reducta</i>	
	Shrubs	<i>Acacia aulacocarpa</i> , <i>Acrothamnus spathaceus</i> , <i>Astrotricha pterocarpa</i> , <i>Melaleuca recurva</i> , <i>Hibbertia stirlingii</i> , <i>Hibiscus meraukensis</i> , <i>Homoranthus porteri</i> , <i>Seringia lanceolata</i> , <i>Leptospermum amboinense</i> , <i>Plectranthus amoenus</i> .	

Bio-condition Site 2	
Grasses	<i>Aristida sp., Arundinella setosa, Cleistochloa subjuncea, Digitaria sp., Eragrostis schultzii, Urochloa holosericea.</i>
Forbs and Others	<i>Cheilanthes distans, Commelina ensifolia, Baronial occidentalis, Drynaria rigidula, Fimbristylis sp., Gonocarpus acanthocarpus, Hypericum gramineum, Plectranthus parviflorus, Sedopsis sp. Bulimba Station</i>
Non-native Species	<i>Praxelis clematidea*</i>
Threatened Flora	<i>Homoranthus porteri, Plectranthus amoenus</i>

Table 3 Bio-condition site 3

Bio-condition Site 3				
Date:	17-02-2022			
Plot Origin:	Zone: 55K	Easting: 329366	Northing: 8097925	Elevation: 1033m
Plot Centre:	Zone: 55K	Easting: 329361	Northing: 8097949	Elevation: 1020m
Plot Bearing:	NNW	Plot Alignment:	Upslope across centre of vegetation type	
				
North		East		
				

Bio-condition Site 3			
South	West		
Habitat Description:	Low shrubland/heathland 1-2.5m high with a patchy rock pavement surface. The ground layer occurs at a height of 0.25-0.5m, with the dominant grass species occurring as <i>Cleistochloa subjuncea</i> . <i>Xanthorrhoea johnsonii</i> , <i>Acacia calyculata</i> and <i>Eucalyptus lockyeri</i> are dominant species.		
Regional Ecosystem (Mapped):	7.12.57c 7.12.57c: Shrubland/low woodland (1.5-9 m tall) mosaic with variable dominance, often including <i>Eucalyptus cloeziana</i> , <i>Corymbia abergiana</i> , <i>E. portuensis</i> , <i>E. reducta</i> , <i>E. lockyeri</i> , <i>C. leichhardtii</i> , <i>Callitris intratropica</i> , <i>E. atrata</i> , <i>E. pachycalyx</i> , <i>E. shirleyi</i> , <i>E. drepanophylla</i> and <i>Homoranthus porteri</i> , on rhyolite and granite		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%)	100%	
	Native plant species richness:	Trees:	4
		Shrubs:	12
		Grasses:	1
		Forbs/Other:	21
	Tree Canopy	Median Height (m)	NA
		Tree Canopy Cover (%)	0
	Tree Sub-canopy	Tree sub-canopy median Height (m)	NA
		Tree Sub-canopy Cover	0
	Large Trees	Large Eucalypt tree DBH threshold (cm)	40
		Large Eucalypt trees per hectare	4
		Large non-eucalypt trees threshold (cm)	0
		Large non-eucalypt trees per hectare	0
	Shrubs	Native Shrub Layer 1 Cover (%)	0.9
		Native Shrub Layer 2 Cover (%)	13.3
	Ground Cover	Native Perennial Grass Cover (%)	48
		Forbs and Non-grass (%)	1
		Shrubs (%)	17
		Organic litter cover (%)	7
		Rock (%)	21
Bare Ground (%)		0	
Cryptograms (%)		3	
Non-native plant cover (%)		3	
Total Non-native species richness	0		
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	0	
Native Species Richness:	Trees	<i>Allocasuarina inophloia</i> , <i>Eucalyptus drepanophylla</i> , <i>Eucalyptus lockyeri</i> , <i>Eucalyptus reducta</i>	

Bio-condition Site 3	
Shrubs	<i>Acacia calyculata, Acrothamnus spathes, Alphitonia excelsa, Astrotricha pterocarpa, Hakea benthamii, Hibbertia styling, Hibiscus normanii, Leptospermum amboinense, Persoonia falcata, Platysace valida, Sannantha angusta, Xanthorrhoea johnsonii</i>
Grasses	<i>Cleistochloa subjuncea, Cymbopogon bombycinus, Eragrostis sp., Eriachne mucronata, Panicum simile, Schizachyrium fragile, Themeda triandra, Tripogon loliiformis</i>
Forbs and Others	<i>Boea hygroskopica, Boronia occidentalis, Cheilanthes brownii, Cheilanthes distans, Cheilanthes nudiuscula, Coronidium newcastlianum, Dianella nervosa, Drosera lunata, Fimbristylis dichotoma, Gonocarpus acanthocarpus, Habanera elongata, Heliotropium tabuliplagae, Hibbertia longifolia, Hypericum gramineum, Lepidosperma laterale, Melichrus adpressus, Peripleura diffusa, Phyllanthus dallachyana, Schoenus sp., Styliidium gramineum, Tricoryne anceps.</i>
Non-native Species	Nil
Threatened Flora	Nil

Table 4 Bio-condition site 4

Bio-condition site 4				
Date:	01-04-2022			
Plot Origin:	Zone: 55K	Lat: -17.21282	Long: 145.39218	Elevation: 1036m
Plot Centre:	Zone: 55K	Lat: -17.21256,	Long: 145.39212	Elevation: 1036m
Plot Bearing:	S	Plot Alignment:	Along contour of hillslope. North-south orientation.	

Bio-condition site 4



North

East



South

West

Habitat Description:

Steep hillslope of dry open forest/woodland. The dominant tree species consist of *Eucalyptus cloeziana*, *Eucalyptus pachycalyx*, *Callitris intratropica* and *Allocasuarina inophloia* in the sub canopy. The shrub layer is sparse with a thicker grass layer. Grass layer consists largely of *Triodia microstachya* and *Cleistochloa subjuncea* with a shrub layer of mostly of *Acacia calyculata* and *Hibbertia stirlingii*.

Regional Ecosystem (Mapped):





7.12.30d: Open woodland to open forest (10-20m tall) mosaic with variable dominance, often including *Eucalyptus cloeziana*, *C. citriodora*, *E. portuensis*, *E. lockyeri*, *C. leichhardtii*, *E. atrata*, *E. pachycalyx*, *E. reducta*, *C. intermedia* and *E. shirleyi*. There is often a very sparse to mid-dense secondary tree layer of *C. abergiana* and/or *C. stockeri*. A very sparse to sparse tall shrub layer may be present and can include *Acacia flavescens*, *Persoonia falcata*, *Bursaria spinosa* subsp. *spinosa*, *Allocasuarina inophloia*, *Petalostigma pubescens* and *Grevillea glauca*. A sparse to dense lower shrub layer may include *Jacksonia thesioides*, *Acacia calyculata*, *Xanthorrhoea johnsonii* and *Grevillea glossadenia*. The ground layer may be dominated by species such as *Themeda triandra*, *Heteropogon triticeus*,

Bio-condition site 4

	<i>Mnesithea rottboellioides</i> , <i>Arundinella setosa</i> , <i>Cleistochloa subjuncea</i> , <i>Eriachne pallescens</i> var. <i>pallescens</i> , <i>Lepidosperma laterale</i> and <i>Xanthorrhoea johnsonii</i> . Rocky slopes on granite and rhyolite. (BVG1M: 9d).		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%)		100
	Native plant species richness:	Trees:	7
		Shrubs:	21
		Grasses:	6
		Forbs/Other:	10
	Tree Canopy	Median Height (m)	10
		Tree Canopy Cover (%)	32.1
	Tree Sub-canopy	Tree sub-canopy median Height (m)	NA
		Tree Sub-canopy Cover	NA
	Large Trees	Large Eucalypt tree DBH threshold (cm)	35
		Large Eucalypt trees per hectare	10
		Large non-eucalypt trees threshold (cm)	23
		Large non-eucalypt trees per hectare	4
	Shrubs	Native Shrub Cover (%)	31.3
	Ground Cover	Native Perennial Grass Cover (%)	25
		Forbs and Non-grass (%)	4
		Shrubs (%)	16
		Organic litter cover (%)	40
		Rock (%)	15
		Bare Ground (%)	0
Cryptograms (%)		0	
Non-native plant cover (%)		<1	
Total Non-native species richness		1	
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	90	
Native Species Richness:	Trees	<i>Allocasuarina inophloia</i> , <i>Eucalyptus cloeziana</i> , <i>Eucalyptus crebra</i> , <i>Eucalyptus pachycalyx</i> , <i>Callitris intratropica</i> , <i>Corymbia erythrophloia</i> , <i>Corymbia leichhardtii</i>	
	Shrubs	<i>Acacia calyculata</i> , <i>Acacia multisiliqua</i> , <i>Acacia nesophila</i> , <i>Acacia umbellata</i> , <i>Bursaria incana</i> , <i>Capparis canescens</i> , <i>Dodonaea lanceolata</i> , <i>Exocarpos cupressiformis</i> , <i>Gompholobium nitidum</i> , <i>Grevillia glossadenia</i> , <i>Hibbertia stirlingii</i> , <i>Hibbertia longifolia</i> ,	

Bio-condition site 4	
	<i>Jacksonia thesioides, Larsenaikia ochreatea, Persoonia falcata, Petalostigma banksii, Psydrax attenuata, Thaumastochloa major, Xanthorrhoea johnsonii.</i>
Grasses	<i>Arundinella setosa, Cleistochloa subjuncea, Cymbopogon sp., Panicum simile, Themeda triandra, Triodia microstachya.</i>
Forbs and Others	<i>Cheilanthes nitida, Cyathilium cinereum, Dianella nervosa, Goodenia spathulata, Gonocarpus acanthocarpus, Iphigenia indica, Phyllanthus simplex, Poranthera microphylla., Scleria brownii</i>
Non-native Plant Species	<i>Praxelis clematidea</i>
Threatened Flora	<i>Acacia purpureopetala, Grevillea glossadenia</i>

Table 5 Bio-condition site 5

Bio-condition Site 5				
Date:	04-03-2022			
Plot Origin:	Zone: 55K	easting: 329465	northing: 8096347	Elevation: 725m
Plot Centre:	Zone: 55K	easting: 3294483	northing: 8096336	Elevation: 726m
Plot Bearing:	W	Plot Alignment:	Upslope through a boulder strewn gully	
				
North		East		
				
South		West		
Habitat Description:	Dry vine forest within a rocky granite gully.			
Regional Ecosystem (Mapped):	7.12.9 <i>Acacia celsa</i> open forest to closed forest. Foothills, uplands and highlands on granites and rhyolites, of the very wet and wet rainfall zone. (BVG1M: 5d)			
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):			100%
	Native plant species richness:	Trees:	11	
		Shrubs:	14	
		Grasses:	4	
		Forbs/Other:	13	
	Tree Canopy	Median Height (m)	16	
		Tree Canopy Cover (%)	20.8	

Bio-condition Site 5

	Tree Sub-canopy	Tree sub-canopy median Height (m)	8
		Tree Sub-canopy Cover	6.2
	Large Trees	Large Eucalypt tree DBH threshold (cm)	Nil
		Large Eucalypt trees per hectare	Nil
		Large non-eucalypt trees threshold (cm)	28
		Large non-eucalypt trees per hectare	32
	Shrubs	Native Shrub Cover (%)	0.7
	Ground Cover	Native Perennial Grass Cover (%)	14.2
		Forbs and Non-grass (%)	25
		Shrubs (%)	0
		Organic litter cover (%)	16.8
		Rock (%)	41
		Bare Ground (%)	3
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
Total Non-native species richness		3	
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	21.3	
Native Species Richness:	Trees	<i>Acronychia laevis, Atractocarpus fitzalanii, Bursaria tenuifolia, Callitris intratropica, Chionanthus ramiflorus, Davidsonia pruriens, Drypetes deplanchei, Euroschinus falcata, Ficus rubiginosa, Ficus virens, Homalium circumpinnatum, Gossia bidwillii, Ligustrum australianum, Myrsine variabilis Olea paniculata Pleiogynium timorense, Pittosporum venulosum, Sersalisia sericea.</i>	
	Shrubs	<i>Alchornea sp., Alyxia ruscifolia, Bursaria spinosa, Canarium australianum, Elaeodendron melanocarpum, Euroschinus falcata, Ficus rubiginosa, Ficus virens, Hibiscus meraukensis, Myrsine variabilis, Polyscias elegans, Psydrax dallachiana, Sersalisia sericea, Wikstroemia indica</i>	
	Grasses	<i>Arundinella setosa, Oplismenus compositus, Ottochloa sp., Themeda triandra,</i>	
	Forbs and Others	<i>Adiantum aethiopicum, Asystasia sp., Cissus oblonga, Commelina ensifolia, Dioscorea bulbifera, Dioscorea transversa, Paraceterach muelleri, Phyllanthus simplex, Plectranthus amoenus, Plectranthus sp.,</i>	

Bio-condition Site 5	
	<i>Proiphys amboinense</i> , <i>Scleria mackaviensis</i> , <i>Tectaria confluens</i>
Non-native species	<i>Praxelis clematidea</i> , <i>Lantana camara</i> , <i>Solanum seaforthianum</i>
Threatened Flora	<i>Plectranthus amoenus</i>

Table 6 Bio-condition Site 6

Bio-condition Site 6				
Date:	11-02-2022			
Plot Origin:	Zone: 55K	easting: 330389	northing: 8096572	Elevation: 793m
Plot Centre:	Zone: 55K	easting: 330409	northing: 8096598	Elevation: 792m
Plot Bearing:	E	Plot Alignment:	Crosses braided watercourse channel.	
				
North		East		
				
South		West		
Habitat Description:	Vine forest across rocky stream and terrace.			





Bio-condition Site 6

Regional Ecosystem (Mapped):	7.12.16a: Simple notophyll vine forest on wet and moist uplands, granite and rhyolite. Uplands of the cloudy wet to moist rainfall zones. Granite and rhyolite. (BVG1M: 6b)		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	10
		Shrubs:	6
		Grasses:	1
		Forbs/Other:	15
	Tree Canopy	Median Height (m)	17
		Tree Canopy Cover (%)	91.2
	Tree Sub-canopy	Tree sub-canopy median Height (m)	10
		Tree Sub-canopy Cover	24
	Large Trees	Large Eucalypt tree DBH threshold (cm)	NA
		Large Eucalypt trees per hectare	0
		Large non-eucalypt trees threshold (cm)	28
		Large non-eucalypt trees per hectare	10
	Shrubs	Native Shrub Cover (%)	12.4
	Ground Cover	Native Perennial Grass Cover (%)	1
		Forbs and Non-grass (%)	16
		Shrubs (%)	5
		Organic litter cover (%)	32
		Rock (%)	34
		Bare Ground (%)	2
		Cryptogams (%)	10
		Non-native plant cover (%)	<1
Total Non-native species richness		1	
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	36	
Native Species Richness:	Trees	<i>Agathis robusta, Atractocarpus fitzalanii, Chionanthus grandiflora, Drypetes deplanchei, Elaeodendron melanocarpum, Gossia bidwillii, Mallotus philippensis, Olea paniculata, Pleiogynium timorense, Sersalisia sericea</i>	
	Shrubs	<i>Alyxia ruscifolia, Alyxia spicata, Alectryon tomentosus, Homalium cur, Melodinus australis, Psychotria dallachiana</i>	
	Grasses	<i>Ottochloa gracillima</i>	

Bio-condition Site 6

	Forbs and Others	<i>Adiantum hispidulum, Adiantum atroviride, Boea sp., Cymbidium madidum, Drynaria sparsisora, Geitonoplesium sp., Microsorium punctatum, Parsonsia sp., Plectranthus mirus, Proiphys amboinensis, Pseuderanthemum variabile, Scleria mackaviensis, Wikstroemia indica</i>
Non-native Species		<i>Praxelis clematidea</i>
Threatened Flora		Nil

Table 7 Bio-condition Site 7

Bio-condition Site 7				
Date:	14-04-2022			
Plot Origin:	Zone: 55K	easting: 328005	northing: 8096481	Elevation: 596m
Plot Centre:	Zone: 55K	easting: 328056	northing: 8096475	Elevation: 596m
Plot Bearing:	SE	Plot Alignment:	Upstream between ephemeral stream beds	
				
North		East		
				

Bio-condition Site 7			
South	West		
Habitat Description:	Braided seasonal watercourse with sandy and rocky bars. <i>Eucalyptus tereticornis</i> dominant, 15m high. Subcanopy of <i>Callitris intratropica</i> , <i>Acacia disparrima</i> at 1-4m high. Grassy ground layer, 0.5m high.		
Regional Ecosystem (Mapped):	7.3.26a <i>Casuarina cunninghamiana</i> , <i>Eucalyptus tereticornis</i> , <i>Lophostemon suaveolens</i> , <i>Melaleuca leucadendra</i> , <i>M. fluviatilis</i> , <i>Buckinghamia celsissima</i> , <i>Mallotus philippensis</i> woodland and forest with an understorey of <i>Melaleuca viminalis</i> and <i>Bursaria tenuifolia</i> . Fringing forests of larger streams. Riverine wetland or fringing riverine wetland. (BVG1M: 16a).		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%)	100%	
	Native plant species richness:	Trees:	16
		Shrubs:	17
		Grasses:	13
		Forbs/Other:	14
	Tree Canopy	Median Height (m)	15
		Tree Canopy Cover (%)	30.8
	Tree Sub-canopy	Tree sub-canopy median Height (m)	7
		Tree Sub-canopy Cover	14.5
	Large Trees	Large Eucalypt tree DBH threshold (cm)	45
		Large Eucalypt trees per hectare	16
		Large non-eucalypt trees threshold (cm)	24
		Large non-eucalypt trees per hectare	8
	Shrubs	Native Shrub Cover (%)	6.3
	Ground Cover	Native Perennial Grass Cover (%)	42
		Forbs and Non-grass (%)	2
		Shrubs (%)	2
		Organic litter cover (%)	20
		Rock (%)	19
		Bare Ground (%)	8.6
Cryptograms (%)		0	
Non-native plant cover (%)		6.4	
Total Non-native species richness	4		
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	30.5	
Native Species Richness:	Trees	<i>Acacia disparrima</i> , <i>Acacia flavescens</i> , <i>Alphitonia excelsa</i> , <i>Bursaria tenuifolia</i> , <i>Corymbia leichhardtii</i> , <i>Corymbia erythrophloia</i> , <i>Corymbia clarksoniana</i> , <i>Callitris</i>	

Bio-condition Site 7	
	<i>intratropica, Canarium australianum, Eucalyptus crebra, Eucalyptus tereticornis, Grevillea parallela, Larsenaikia ochreatea, Lophostemon grandiflora, Sersalisia sericea, Santalum lanceolatum</i>
Shrubs	<i>Acacia nesophila, Breynia oblongifolia, Cajanus acerifolius, Clerodendrum longiflorum, Crotalaria brevis, Dodonaea lanceolata, Dodonaea dodecandra, Drypetes deplanchei, Exocarpos latifolius, Ficus opposita, Grevillea glossadenia, Grewia mesomischa, Hibiscus meraukensis, Homalium brachybotrys, Petalostigma pubescens, Pimelea confertifolia, Trema aspera</i>
Grasses	<i>Aristida sp., Arundinella nepalensis, Arundinella setosa, Cleistochloa subjuncea, Cymbopogon ambiguus, Digitaria sp., Heteropogon contortus, Heteropogon triticeus, Panicum effusum, Panicum simile, Sarga plumosum, Setaria surgens, Themeda triandra</i>
Forbs and Others	<i>Camel bush, Commelina ensifolia, Cyathillium cinereum, Dianella nervosa, Flemingia parviflora, Geitonoplesium cymosum, Hibbertia longifolia, Lomandra longifolia, Poranthera microphylla, Phyllanthus dallachyanus, Scleria brownii, Tricoryne anceps, Waltheria indica. Wikstroemia indica</i>
Non-native Species	<i>Praxelis clematidea, Melinis minutiflora, Lantana camara, Melinis repens, Themeda quadrivalvis</i>
Threatened Flora	<i>Grevillea glossadenia</i>

Table 8 Bio-condition site 8

Bio-condition Site 8				
Date:	01-04-2022			
Plot Origin:	Zone: 55K	easting: 328826	northing: 8096354	Elevation: 630m
Plot Centre:	Zone: 55K	easting: 328788	northing: 8096345	Elevation: 624m
Plot Bearing:	SW	Plot Alignment:	Parallel with contour of rounded hill.	

Bio-condition Site 8



North

East



South



West

<p>Habitat Description:</p>	<p>Grassy woodland open woodland with <i>Eucalyptus cloeziana</i> and <i>Corymbia leichhardtii</i> dominant trees, 9-11m tall. Subcanopy consists of <i>Callitris intratropica</i> and <i>Acacia disparrima</i> 4-5m tall. Shrub layer 0.5-1.5m tall. Ground cover to half a metre.</p>		
<p>Regional Ecosystem (Mapped):</p>	<p>7.12.30d Open woodland to open forest (10-20m tall) mosaic with variable dominance, often including <i>Eucalyptus cloeziana</i>, <i>C. citriodora</i>, <i>E. portuensis</i>, <i>E. lockyeri</i>, <i>C. leichhardtii</i>, <i>E. atrata</i>, <i>E. pachycalyx</i>, <i>E. reducta</i>, <i>C. intermedia</i> and <i>E. shirleyi</i>.</p>		
<p>Vegetation Attributes:</p>	<p>Recruitment of Dominant Canopy Species (%):</p>		<p>N/A</p>
	<p>Native plant species richness:</p>	<p>Trees:</p>	<p>5</p>
		<p>Shrubs:</p>	<p>23</p>
		<p>Grasses:</p>	<p>10</p>
		<p>Forbs/Other:</p>	<p>21</p>
<p>Tree Canopy</p>	<p>Median Height (m)</p>	<p>10</p>	

Bio-condition Site 8			
		Tree Canopy Cover (%)	54.6
	Tree Sub-canopy	Tree sub-canopy median Height (m)	5
		Tree Sub-canopy Cover	3.6
	Large Trees	Large Eucalypt tree DBH threshold (cm)	35
		Large Eucalypt trees per hectare	12
		Large non-eucalypt trees threshold (cm)	23
		Large non-eucalypt trees per hectare	4
	Shrubs	Native Shrub Cover (%)	10.4
	Ground Cover	Native Perennial Grass Cover (%)	15
		Forbs and Non-grass (%)	4
		Shrubs (%)	17
		Organic litter cover (%)	21
		Rock (%)	16
		Bare Ground (%)	25
		Cryptograms (%)	0
		Non-native plant cover (%)	2
		Total Non-native species richness	1
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	38	
Native Species Richness:	Trees	<i>Callitris intratropica, Corymbia erythrophloia, Corymbia leichhardtii, Eucalyptus cloeziana, Eucalyptus shirleyi</i>	
	Shrubs	<i>Acacia calyculata, Acacia flavescens, Acacia humifusa, Acacia multisiliqua, Acacia simsii, Alphitonia excelsa, Breynia oblongifolia, Capparis canescens, Clerodendrum longiflorum, Coelospermum reticulatum, Denhamia cunninghamiana, Dodonaea lanceolata, Gastrolobium grandiflorus, Goodenia pubescens, Grevillea glossadenia, Hibbertia stirlingii, Jacksonia thesioides, Persoonia falcata, Pimelea confertifolia, Planchonia careya, Santalum lanceolatum, Wikstroemia indica, Xanthorrhoea johnsonii</i>	
	Grasses	<i>Alloteropsis semialata, Aristida sp., Arundinella setosa, Cleistochloa subjuncea, Cymbopogon bombycinus, Digitaria sp., Heteropogon triticeus, Panicum simile, Schizachyrium fragile, Themeda triandra</i>	

Bio-condition Site 8	
Forbs and Others	<i>Bidens pilosa</i> , <i>Cheilanthes nitidum</i> , <i>Clematicissus opaca</i> , <i>Commelina ensifolia</i> , <i>Coronidium newcastlianum</i> , <i>Crotalaria brevis</i> , <i>Cyanthillium cinereum</i> , <i>Dianella nervosa</i> , <i>Glycine clandestina</i> , <i>Gompholobium nitidum</i> , <i>Hibbertia longifolia</i> , <i>Iphigenia indica</i> , <i>Lomandra confertifolia</i> , <i>Phyllanthus simplex</i> , <i>Pigea stellarioides</i> , <i>Poranthera microphylla</i> , <i>Scleria brownii</i> , <i>Tephrosia juncea</i> , <i>Tricoryne anceps</i> , <i>Wahlenbergia queenslandica</i> , <i>Zornia sp.</i>
Non-native Plant Species	<i>Praxelis clematidea</i>
Threatened Flora	<i>Grevillea glossadenia</i>

Table 9 Bio-condition Site 9

Bio-condition Site 9				
Date:	13-04-2022			
Plot Origin:	Zone: 55K	Lat: 17.19718	Long: 145.40770	Elevation: 984m
Plot Centre:	Zone 55K	Lat: 17.19741	Long: 145.40807	Elevation: 980m
Plot Bearing:	SW	Plot Alignment:	Mid-slope running parallel to the hill contour.	
				
North		East		

Bio-condition Site 9



South

West

Habitat Description:	Open forest with a canopy dominated by <i>Corymbia intermedia</i> , <i>Eucalyptus drepanophylla</i> and <i>Eucalyptus tereticornis</i> . Sparse shrub layer (5m) contains <i>Allocasuarina littoralis</i> , <i>Acacia flavescens</i> and <i>Lophostemon suaveolens</i> . Grassy understorey (<1.5m) of <i>Themeda triandra</i> and <i>Mnesithea rottboellioides</i> .		
Regional Ecosystem (Mapped):	RE 7.12.29a <i>Corymbia intermedia</i> and/or <i>Lophostemon suaveolens</i> open forest to woodland +/- areas of <i>Allocasuarina littoralis</i> and <i>A. torulosa</i> on uplands on granite and rhyolite.		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	5
		Shrubs:	9
		Grasses:	7
		Forbs/Other:	21
	Tree Canopy	Median Height (m)	9
		Tree Canopy Cover (%)	26.0
	Tree Sub-canopy	Tree sub-canopy median Height (m)	N/A
		Tree Sub-canopy Cover	N/A
	Large Trees	Large Eucalypt tree DBH threshold (cm)	30
		Large Eucalypt trees per hectare	14
		Large non-eucalypt trees threshold (cm)	20
		Large non-eucalypt trees per hectare	6
	Shrubs	Native Shrub Cover (%)	6.6
	Ground Cover	Native Perennial Grass Cover (%)	67
		Forbs and Non-grass (%)	8
Shrubs (%)		2	
Organic litter cover (%)		6	

Bio-condition Site 9			
		Rock (%)	10
		Bare Ground (%)	6
		Cryptograms (%)	0
		Non-native plant cover (%)	1
		Total Non-native species richness	1
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	180
Native Species Richness:	Trees	<i>Allocasuarina littoralis, Corymbia intermedia, Eucalyptus drepanophylla, Eucalyptus tereticornis, Eucalyptus reducta</i>	
	Shrubs	<i>Acacia calyculata, Acacia flavescens, Alphitonia excelsa, Breynia oblongifolia, Capparis canescens, Coelospermum reticulatum, Lophostemon suaveolens, Pimelea sericostachya, Xanthorrhoea johnsonii</i>	
	Grasses	<i>Arundinella setosa, Capillipedium spicigerum, Heteropogon triticeus, Mnesithea rottboellioides, Panicum simile, Sarga plumosum, Themeda triandra.</i>	
	Forbs and Others	<i>Adiantum hispidulum, Commelina ensifolia, Coronidium newcastlianum, Cyanthillium cinereum, Crotalaria brevis, Desmodium rhytidophyllum, Dianella nervosa, Drynaria rigidula, Flemingia parviflora, Glycine clandestina, Hibbertia longifolia, Lomandra filiformis, Phyllanthus simplex, Lepidosperma laterale, Pteridium esculentum, Poranthera microphylla, Rostellularia adscendens, Scleria mackaviensis, Apowollastonia spilanthoides, Indigofera bancroftii, Xerochrysum bracteatum</i>	
Non-native Species	<i>Praxelis clematidea</i>		
Threatened Flora	Nil		

Table 10 Bio-condition Site 10

Bio-condition Site 10				
Date:	29-05-2020			
Plot Origin:	Zone: 55K	Lat: 17.19918	Long: 145.40564	Elevation: 1061m
Plot Centre:	Zone: 55K	Lat: 17.19905	Long: 145.4540	Elevation: 1062m
Plot Bearing:	SW	Plot Alignment:	Mid-slope running parallel to the hill contour	

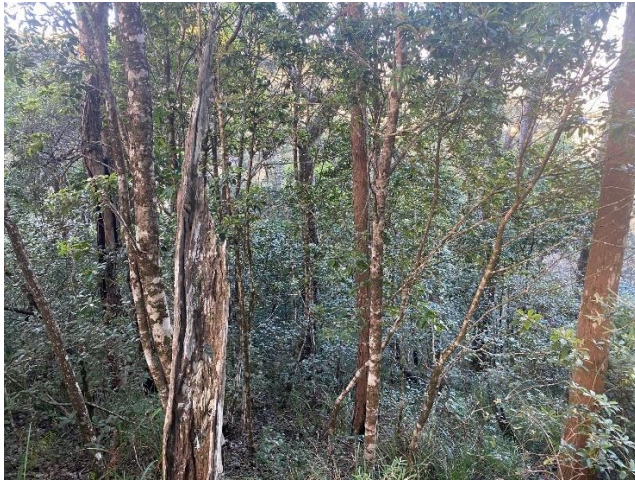
Bio-condition Site 10



North



East



South



West

Habitat Description:	Open forest with a canopy (11m) dominated by <i>Syncarpia glomulifera</i> with occasional <i>Eucalyptus drepanophylla</i> . Open shrub layer (5m) contains <i>Acacia aulacocarpa</i> and <i>Leptospermum amboinense</i> . Grassy understorey (0.5m) of <i>Entolasia stricta</i> and <i>Ottochloa sp.</i>		
Regional Ecosystem (Mapped):	7.12.26e <i>Syncarpia glomulifera</i> low open forest and low woodland. Uplands on steep rocky slopes, of the moist and dry rainfall zone. Granite and rhyolite.		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	2
		Shrubs:	18
		Grasses:	5
		Forbs/Other:	27
	Tree Canopy	Median Height (m)	11
Tree Canopy Cover (%)		55.5	
Tree Sub-canopy	Tree sub-canopy median Height (m)	8	

Bio-condition Site 10			
		Tree Sub-canopy Cover	7.5
	Large Trees	Large Eucalypt tree DBH threshold (cm)	30
		Large Eucalypt trees per hectare	12
		Large non-eucalypt trees threshold (cm)	30
		Large non-eucalypt trees per hectare	24
	Shrubs	Native Shrub Cover (%)	26.0
	Ground Cover	Native Perennial Grass Cover (%)	38
		Forbs and Non-grass (%)	20
		Shrubs (%)	0
		Organic litter cover (%)	29
		Rock (%)	2
		Bare Ground (%)	11
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
		Total Non-native species richness	1
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	80
Native Species Richness:	Trees	<i>Syncarpia glomulifera, Eucalyptus drepanophylla</i>	
	Shrubs	<i>Acacia aulacocarpa, Acrothamnus spathaceus, Alyxia spicata, Bertya polystigma, Astrotricha pterocarpa, Bursaria spinosa, Seringia lanceolata, Psychotria loniceroides, Pittosporum venulosum, Pomaderris argyrophylla, Wikstroemia indica, Clerodendrum longiflora, Glochidion sumatranum, Notelaea venosa, Leptospermum amboinense, Rhodamnia sp., Wilkiea sp., Denhamia bilocularis</i>	
	Grasses	<i>Entolasia stricta, Oplismenus aemulus, Ottochloa gracimila, Panicum effusum, Panicum simile</i>	
	Forbs and Others	<i>Acianthus borealis, Adiantum aethiopicum, Adiantum hispidulum, Bulbophyllum sp., Cheilanthes brownii, Clematis pickeringii, Coronidium rupicola, Corybas sp., Eleutheroglossum fellowsii, Drynaria rigidula, Geitonoplesium cymosum, Lindsaea microphylla, Lepidosperma laterale, Lomandra multiflora, Parsonsia straminea, Plectranthus hirtus, Plectranthus mirus, Plexaure crassula, Pterostylis stricta, Scleria mackaviensis, Smilax australis, Smilax calophylla, Tricoryne anceps, Viola hederacea, Apowollastonia spilanthoides, Xerochrysum bracteatum</i>	

Bio-condition Site 10

Non-native Species	<i>Praxelis clematidea</i>
Threatened Flora	<i>Eleutheroglossum fellowsii</i>

Table 11 Bio-condition Site 11

Bio-condition Site 11

Date:	03-02-2022			
Plot Origin:	Zone: 55K	Lat: 17.19979	Long: 145.40494	Elevation: 1008m
Plot Centre:	Zone: 55K	Lat: 17.19971	Long: 145.40448	Elevation: 984m
Plot Bearing:	NW	Plot Alignment:	Running NW downslope across the contour line within a steep rocky gully	



North



East



South



West

Habitat Description:	Open forest with a canopy (18m) dominated by <i>Olea paniculata</i> , <i>Mallotus philippensis</i> , <i>Pleiogynium timorense</i> , <i>Pittosporum venulosum</i> , <i>Euroschinus falcata</i> and <i>Cupaniopsis anacardioides</i> . Emergent (25m) <i>Agathis robusta</i> .
Regional Ecosystem (Mapped):	7.12.7c Simple to complex microphyll to notophyll vine forest, often with <i>Agathis robusta</i> or <i>A. microstachya</i> , on granites and rhyolites of moist foothills and uplands.



Bio-condition Site 11

Bio-condition Site 11			
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	10
		Shrubs:	19
		Grasses:	1
		Forbs/Other:	20
	Tree Canopy	Median Height (m)	18
		Tree Canopy Cover (%)	77.7
	Tree Sub-canopy	Tree sub-canopy median Height (m)	8
		Tree Sub-canopy Cover	41.8
	Large Trees	Large Eucalypt tree DBH threshold (cm)	30
		Large Eucalypt trees per hectare	1
		Large non-eucalypt trees threshold (cm)	25
		Large non-eucalypt trees per hectare	24
	Shrubs	Native Shrub Cover (%)	9.8
	Ground Cover	Native Perennial Grass Cover (%)	0
		Forbs and Non-grass (%)	14
		Shrubs (%)	3
		Organic litter cover (%)	44
		Rock (%)	36
		Bare Ground (%)	3
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
	Total Non-native species richness	1	
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	36	
Native Species Richness:	Trees	<i>Agathis robusta, Brachychiton alceifolius, Chionanthus ramiflorus, Corymbia intermedia, Elaeodendron melanocarpum, Pitaviaster haplophyllus, Polyscias elegans, Schefflera actinophylla, Syncarpia glomulifera, Syzygium johnsonii</i>	
	Shrubs	<i>Acronychia laevis, Alchornea ilicifolia, Alyxia ruscifolia, Alectryon tomentosus, Atractocarpus Fitzalania, Breynia stipitata, Clerodendrum longiflorum, Callicarpa pedunculata, Denhamia bilocularis, Drypetes deplanchei, Guioa acutifolia, Ligustrum australianum, Mallotus philippensis, Myrsine variable, Pittosporum venulosum, Polyalthia nitidissima, Psychotria loniceroides, Psychotria dallachiana, Wikstroemia indica</i>	

Bio-condition Site 11


	Grasses	<i>Ottochloa gracillima</i>
	Forbs and Others	<i>Adiantum aethiopicum, Asplenium nidus, Alpinia caerulea, Boea hygroskopica, Calochlaena dubia, Clematis pickeringii, Commelina ensifolia, Dioscorea transversa, Gahnia aspera, Geitonoplesium cymosum, Microsorium punctatum, Parsonsia velutina, Plectranthus mirus, Plectranthus mirus, Pseuderanthemum variable, Pyrrosia rupestris, Smilax blumei, Smilax australis, Tetrastigma nitens, Trophis scandens</i>
Non-native Species		<i>Lantana camara</i>
Threatened Flora		Nil

Table 12 Bio-condition Site 12

Bio-condition Site 12				
Date:	16-03-2022			
Plot Origin:	Zone: 55K	Lat: 17.20494	Long: 145.40387	Elevation: 1075m
Plot Centre:	Zone: 55K	Lat: 17.20531	Long: 145.40411	Elevation: 1071m
Plot Bearing:	W	Plot Alignment:	Near to ridge top following the contour	
				
North		East		
				
South		West		
Habitat Description:	Open forest with a canopy (12m) dominated by <i>Eucalyptus drepanophylla</i> , <i>Corymbia intermedia</i> and <i>Syncarpia glomulifera</i> . Sparse shrub layer (3m) contains <i>Acrothamnus spathaceus</i> , <i>Allocasuarina torulosa</i> , <i>Acacia aulacocarpa</i> and <i>Lophostemon grandiflorus</i> . Grassy understorey (0.5m) of <i>Themeda triandra</i> and <i>Mnesithea rottboellioides</i>			
Regional Ecosystem (Mapped):	7.12.34 <i>Eucalyptus portuensis</i> and/or <i>E. drepanophylla</i> , +/- <i>C. intermedia</i> +/- <i>C. citriodora</i> , +/- <i>E. granitica</i> open woodland to open forest on uplands on granite			
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):			100%
	Native plant species richness:	Trees:		4
		Shrubs:		8





Bio-condition Site 12			
		Grasses:	3
		Forbs/Other:	15
	Tree Canopy	Median Height (m)	12
		Tree Canopy Cover (%)	50.8
	Tree Sub-canopy	Tree sub-canopy median Height (m)	7
		Tree Sub-canopy Cover	9.5
	Large Trees	Large Eucalypt tree DBH threshold (cm)	30
		Large Eucalypt trees per hectare	24
		Large non-eucalypt trees threshold (cm)	30
		Large non-eucalypt trees per hectare	2
	Shrubs	Native Shrub Cover (%)	11.7
	Ground Cover	Native Perennial Grass Cover (%)	70
		Forbs and Non-grass (%)	5.2
		Shrubs (%)	11
		Organic litter cover (%)	7
		Rock (%)	6.8
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
		Total Non-native species richness	1
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	0	
Native Species Richness:	Trees	<i>Allocasuarina torulosa, Corymbia intermedia, Eucalyptus drepanophylla, Syncarpia glomulifera</i>	
	Shrubs	<i>Acacia aulacocarpa, Acacia flavescens, Acrothamnus spathaceus, Astrotricha pterocarpa, Bursaria spinosa, Platysace valida, Polyscias elegans, Xanthorrhoea johnsonii</i>	
	Grasses	<i>Mnesithea rottboellioides, Ottochloa gracillima, Themeda triandra</i>	
	Forbs and Others	<i>Ajuga australis, Coronidium newcastlianum, Dianella nervosa, Eleutheroglossum fellowsii, Gahnia aspera, Geitonoplesium cymosum, Glycine sp., Hibbertia longifolia, Lepidosperma laterale, Lomandra multiflora, Panicum simile, Forb 1, Rostellularia adscendens, Widelia spilanthoides, Xerochrysum bracteatum,</i>	
Non-native species		<i>Praxelis clematidea</i>	
Threatened Flora		<i>Eleutheroglossum fellowsii</i>	

Table 13 Bio-condition Site 13

Bio-condition Site 13				
Date:	16-03-2022			
Plot Origin:	Zone: 55K	Lat: 17.20323	Long: 145.40465	Elevation: 1083m
Plot Centre:	Zone: 55K	Lat: 17.20279	Long: 145.40471	Elevation: 1087m
Plot Bearing:	W	Plot Alignment:	Steep mid-slope, following contour	
				
North		East		
				
South		West		
Habitat Description:	Open woodland with a canopy (12m) dominated by <i>Eucalyptus drepanophylla</i> , <i>Corymbia intermedia</i> and <i>Lophostemon grandiflorus</i> . Understorey of <i>Allocasuarina torulosa</i> and canopy associates (5-8). Sparse shrub layer (3m) contains <i>Acacia aulacocarpa</i> . Grassy understorey (<1.0m) of <i>Themeda triandra</i> and <i>Mnesithea rottboellioides</i> and <i>Capillipedium spicigerum</i> .			
Regional Ecosystem (Mapped):	7.12.34 <i>Eucalyptus portuensis</i> and/or <i>E. drepanophylla</i> , +/- <i>C. intermedia</i> +/- <i>C. citriodora</i> , +/- <i>E. granitica</i> open woodland to open forest on uplands on granite.			
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):			100%
	Native plant species richness:	Trees:	4	
		Shrubs:	6	

Bio-condition Site 13			
		Grasses:	8
		Forbs/Other:	16
	Tree Canopy	Median Height (m)	12
		Tree Canopy Cover (%)	72.4
	Tree Sub-canopy	Tree sub-canopy median Height (m)	6.5
		Tree Sub-canopy Cover	15.9
	Large Trees	Large Eucalypt tree DBH threshold (cm)	30
		Large Eucalypt trees per hectare	20
		Large non-eucalypt trees threshold (cm)	30
		Large non-eucalypt trees per hectare	2
	Shrubs	Native Shrub Cover (%)	0.6
	Ground Cover	Native Perennial Grass Cover (%)	80
		Forbs and Non-grass (%)	3
		Shrubs (%)	0
		Organic litter cover (%)	10
		Rock (%)	2
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	5
		Total Non-native species richness	2
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	0	
Native Species Richness:	Trees	<i>Allocasuarina torulosa, eucalyptus drepanophylla, Corymbia intermedia, Lophostemon grandiflorus</i>	
	Shrubs	<i>Acacia aulacocarpa, Dodonaea lanceolata, Hibiscus merylkempsis, Platysace valida, Trema tomentosa, Xanthorrhoea johnsonii</i>	
	Grasses	<i>Capillipedium spicigerum, Digitaria sp., Gahnia aspera, Melanes repens, Mnesithea rottboellioides, Molasses grass, Panicum effusum, Themeda triandra</i>	
	Forbs and Others	<i>Adiantum aethiopicum, Chamaecrista nomame, Crotalaria brevis, Cheilanthes sieberi, Cyanthillium cinereum, Drynaria redijula, Forb 1, Forb 2, Geitonoplesium, Hibbertia longifolia, Lomandra multiflora, Phyllanthus simplex, Plectranthus amoenus, Pterocaulon redolens, Rostellularia adscendens, Scleria brownii</i>	
Non-native Species		<i>Stylo sp., Praxelis sp.</i>	
Threatened Flora		<i>Plectranthus amoenus</i>	

Table 14 Bio-condition Site 14





Bio-condition Site 14				
Date:	23-03-2022			
Plot Origin:	Zone: 55K	Lat: 17.20341	Long: 145.40645	Elevation: 1114m
Plot Centre:	Zone: 55K	Lat: 17.20336	Long: 145.40688	Elevation: 1120m
Plot Bearing:	E	Plot Alignment:	Near to top of ridgeline, following contour	
				
North		East		
				
South		West		
Habitat Description:	Open woodland with a canopy (10m) dominated by <i>Corymbia intermedia</i> and/or <i>Eucalyptus drepanophylla</i> and <i>Syncarpia glomulifera</i> . Understorey of <i>Allocasuarina torulosa</i> and canopy associates (5-8). Sparse shrub layer (3m) contains <i>Acacia aulacocarpa</i> . Grassy understorey (<1.0m) of <i>Themeda triandra</i> and <i>Mnesithea rottboellioides</i> and <i>Capillipedium spicigerum</i>			
Regional Ecosystem (Mapped):	7.12.29a <i>Corymbia intermedia</i> , <i>Eucalyptus tereticornis</i> , <i>E. drepanophylla</i> open forest to low open forest and woodland with <i>Allocasuarina torulosa</i> , <i>A. littoralis</i> , <i>Lophostemon suaveolens</i> , <i>Acacia cincinnata</i> , <i>A. flavescens</i> , <i>Banksia aquilonia</i> and <i>Xanthorrhoea johnsonii</i> . Uplands, on granite and rhyolite.			
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):			100%
	Native plant species richness:	Trees:	3	

Bio-condition Site 14			
		Shrubs:	19
		Grasses:	8
		Forbs/Other:	22
	Tree Canopy	Median Height (m)	11
		Tree Canopy Cover (%)	27
	Tree Sub-canopy	Tree sub-canopy median Height (m)	4
		Tree Sub-canopy Cover	0
	Large Trees	Large Eucalypt tree DBH threshold (cm)	20
		Large Eucalypt trees per hectare	20
		Large non-eucalypt trees threshold (cm)	20
		Large non-eucalypt trees per hectare	2
	Shrubs	Native Shrub Cover (%)	35.9
	Ground Cover	Native Perennial Grass Cover (%)	33
		Forbs and Non-grass (%)	8
		Shrubs (%)	27
		Organic litter cover (%)	38
		Rock (%)	0
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
Total Non-native species richness		1	
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	0	
Native Species Richness:	Trees	<i>Eucalyptus drepanophylla</i> , <i>Corymbia intermedia</i> , <i>Syncarpia glomulifera</i>	
	Shrubs	<i>Acacia aulacocarpa</i> , <i>Acacia implexa</i> , <i>Acrothamnus spathacea</i> , <i>Acrotriche aggregata</i> , <i>Allocasuarina littoralis</i> , <i>Allocasuarina torulosa</i> , <i>Alphitonia excelsa</i> , <i>Banksia aquilonia</i> , <i>Bursaria spinosa</i> , <i>Glochidion sumatranum</i> , <i>Hakea plurinervia</i> , <i>Hibiscus meraukensis</i> , <i>Hovea densivellosa</i> , <i>Lophostemon suaveolens</i> , <i>Notelaea venosa</i> , <i>Pittosporum venulosum</i> , <i>Pomaderris argyrophylla</i> , <i>Trema aspera</i> , <i>Xanthorrhoea johnsonii</i> .	
	Grasses	<i>Arundinella setosa</i> , <i>Capillipedium spicigerum</i> , <i>Cleistochloa subjuncea</i> , <i>Entolasia stricta</i> , <i>Mnesithea rottboellioides</i> , <i>Melinis minutiflora</i> , <i>Panicum effusum</i> , <i>Themeda triandra</i>	
	Forbs and Others	<i>Breyenia stipitata</i> , <i>Calochlaena dubia</i> , <i>Coleus australis</i> , <i>Commelina ensifolia</i> , <i>Crassocephalum sp.</i> , <i>Cyanthillium</i>	

Bio-condition Site 14

		<i>cinereum, Dendrobium jonesii, Dendrobium fellowsii, Desmodium rhytidophyllum, Dianella caerulea, Drynaria rigidula, Eustrephus latifolius Fabaceae vine, Flemingia parviflora, Glycine clandestina, Lepidosperma laterale, Lomandra multiflora, Pseuderanthemum variable, Rostellularia adscendens, Schelhammera multiflora, Tricoryne anceps, Widelia spilanthoides</i>
Non-native Species		<i>Praxelis clematidea</i>
Threatened Flora		Nil

Table 15 Bio-condition Site 15

Bio-condition Site 15				
Date:	23-03-2022			
Plot Origin:	Zone: 55K	Lat: 17.19982	Long: 145.40669	Elevation: 1056m
Plot Centre:	Zone: 55K	Lat: 17.19999	Long: 145.40713	Elevation: 1055m
Plot Bearing:	NE	Plot Alignment:	Mid-slope very steep slope following contour	
				
North		East		
				
South		West		
Habitat Description:	Open shrubland (<3m) dominated by <i>Corymbia abergiana</i> , <i>Eucalyptus lockyeri</i> and <i>Syncarpia glomulifera</i> . Grassy understorey (<1.0m) of <i>Themeda triandra</i> and <i>Mnesithea rottboellioides</i> and <i>Capillipedium spicigerum</i>			
Regional Ecosystem (Mapped):	7.12.57a Shrubland and low woodland mosaic with <i>Syncarpia glomulifera</i> , <i>Corymbia abergiana</i> , <i>Eucalyptus portuensis</i> , <i>Allocasuarina littoralis</i> and <i>Xanthorrhoea johnsonii</i> . Uplands and highlands on granite and rhyolite, of the moist and dry rainfall zones.			
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):			N/A
	Native plant species richness:	Trees:	0	
		Shrubs:	12	

Bio-condition Site 15			
		Grasses:	9
		Forbs/Other:	24
	Tree Canopy	Median Height (m)	N/A
		Tree Canopy Cover (%)	0
	Tree Sub-canopy	Tree sub-canopy median Height (m)	N/A
		Tree Sub-canopy Cover	0
	Large Trees	Large Eucalypt tree DBH threshold (cm)	N/A
		Large Eucalypt trees per hectare	0
		Large non-eucalypt trees threshold (cm)	N/A
		Large non-eucalypt trees per hectare	0
	Shrubs	Native Shrub Cover (%)	50.1
	Ground Cover	Native Perennial Grass Cover (%)	39
		Forbs and Non-grass (%)	7
		Shrubs (%)	35
		Organic litter cover (%)	0
		Rock (%)	12
		Bare Ground (%)	7
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
		Total Non-native species richness	1
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	Nil	
Native Species Richness:	Trees	Nil (shrubland)	
	Shrubs	<i>Acacia calyculata, Acacia flavescens, Allocasuarina littoralis, Eucalyptus crebra, Hakea benthamii, Lophostemon suaveolens, Melichrus adpressus, Persoonia falcata, Platysace valida, Sannantha angusta, Syncarpia glomulifera, Xanthorrhoea johnsonii</i>	
	Grasses	<i>Alphitonia excelsa, Aristida utilis, Arundinella setosa, Capillipedium spicigerum, Cymbopogon bombycinus, Mnesithea rottboellioides, Panicum simile, Themeda triandra, Tripogon loliiformis</i>	
	Forbs and Others	<i>Brunoniella australis, Clematicissus opaca, Cyathillium cinereum, Cheilanthes brownii, Coronidium newcastlianum, Crotalaria brevis, Desmodium rhytidophyllum, Dianella nervosa, Glycine clandestina, Glycine tabacina, Hypericum gramineum, Lomandra filiformis, Acianthus borealis, Mitrasacme sp., Oxalis radicans, Xerochrysum</i>	

Bio-condition Site 15	
	<i>newcastlium</i> , <i>Poranthera microphylla</i> , <i>Rostellularia adscendens</i> , <i>Scleria brownii</i> , <i>Thysanotus tuberosa</i> , <i>Tricoryne anceps</i> , <i>Wahlenbergia sp.</i> , <i>Widelia spilanthoides</i> , <i>Zornia sp.</i>
Non-native Plant Species	<i>Praxelis clematidea</i>
Threatened Flora	Nil

Table 16 Bio-condition Site 16



Bio-condition Site 16				
Date:	26-05-2020			
Plot Origin:	Zone: 55K	Lat: 17.19669	Long: 145.39780	Elevation: 1036m
Plot Centre:	Zone: 55K	Lat: 17.19627	Long: 145.39784	Elevation: 1036m
Plot Bearing:	SE	Plot Alignment:	Top of ridge following contour	
				
North		East		
				
South		West		
Habitat Description:	Open shrubland to heathland (<2m) with occasional rock pavement outcrops			
Regional Ecosystem (Mapped):	7.12.57c Shrubland/low woodland (1.5-9m tall) mosaic with variable dominance, often including <i>Eucalyptus cloeziana</i> , <i>Corymbia abergiana</i> , <i>E. portuensis</i> , <i>E. reducta</i> , <i>E. lockyeri</i> , <i>C. leichhardtii</i> , <i>Callitris intratropica</i> , <i>E. atrata</i> , <i>E. pachycalex</i> , <i>E. shirleyi</i> , <i>E. drepanophylla</i> and			

Bio-condition Site 16

	<p><i>Homoranthus porteri</i>, on rhyolite and granite. There is occasionally a very sparse to sparse secondary tree layer of <i>Corymbia abergiana</i> and/or <i>C. stockeri</i>. A very sparse to sparse tall shrub layer may be present and can include <i>Persoonia falcata</i>, <i>Exocarpos cupressiformis</i> and <i>Melaleuca viridiflora</i> var. <i>viridiflora</i>. A sparse to dense lower shrub layer may include <i>Jacksonia thesioides</i>, <i>Acacia calyculata</i>, <i>Coelospermum reticulatum</i>, <i>Xanthorrhoea johnsonii</i>, <i>Acacia humifusa</i>, <i>Dodonaea lanceolata</i> var. <i>subsessilifolia</i>, <i>Grevillea dryandri</i> subsp. <i>dryandri</i>, <i>Grevillea glossadenia</i>, <i>Acacia umbellata</i> and <i>Ericaceae</i> spp. The ground layer may be dominated by species such as <i>Themeda triandra</i>, <i>Xanthorrhoea johnsonii</i>, <i>Eriachne pallescens</i> var. <i>pallescens</i>, <i>Cleistochloa subjuncea</i>, <i>Borya septentrionalis</i>, and <i>Eriachne</i> spp. Includes open rocky dominated by herbs and grasses. This RE includes areas of 7.12.65k (rocky areas with shrubby/herbaceous cover) which are too small to map. Rocky slopes on granite and rhyolite.</p>		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):	N/A	
	Native plant species richness:	Trees:	2
		Shrubs:	16
		Grasses:	8
		Forbs/Other:	17
	Tree Canopy	Median Height (m)	N/A
		Tree Canopy Cover (%)	0
	Tree Sub-canopy	Tree sub-canopy median Height (m)	1.3
		Tree Sub-canopy Cover	0
	Large Trees	Large Eucalypt tree DBH threshold (cm)	20
		Large Eucalypt trees per hectare	8
		Large non-eucalypt trees threshold (cm)	N/A
		Large non-eucalypt trees per hectare	0
	Shrubs	Native Shrub Cover (%)	19.2
	Ground Cover	Native Perennial Grass Cover (%)	28
		Forbs and Non-grass (%)	0
		Shrubs (%)	54
		Organic litter cover (%)	5
		Rock (%)	5
		Bare Ground (%)	4
Cryptograms (%)		2	
Non-native plant cover (%)		2	
Total Non-native species richness	1		
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	Nil	
Trees	<i>Eucalyptus reducta</i> , <i>Eucalyptus crebra</i> ,		

Bio-condition Site 16		
Native Species Richness:	Shrubs	<i>Acacia aulacocarpa</i> , <i>Acacia calyculata</i> , <i>Acrothamnus spathaceus</i> , <i>Allocasuarina inophloia</i> , <i>Aristida sp.</i> , <i>Eucalyptus lockyeri</i> , <i>Eriachne sp.</i> , <i>Hakea benthamii</i> , <i>Leptospermum amboinensis</i> , <i>Melaleuca uxorum</i> , <i>Melichrus adpressus</i> , <i>Persoonia falcata</i> , <i>Platysace valida</i> , <i>Pseudanthus ligulatus</i> , <i>Sannantha augusta</i> , <i>Xanthorrhoea johnsonii</i>
	Grasses	<i>Cleistochloa subjuncea</i> , <i>Cymbopogon bombycinus</i> , <i>Digitaria sp.</i> , <i>Dimeria ornithopoda</i> , <i>Eragrostis schultzei</i> , <i>Eriachne mucronata</i> , <i>Schizachyrium fragile</i> , <i>Tripogon loliiformis</i>
	Forbs and Others	<i>Boronia occidentalis</i> , <i>Borya septemtrionalis</i> , <i>Cheilanthes distans</i> , <i>Cheilanthes nitida</i> , <i>Coronidium newcastlianum</i> , <i>Cymbopogon bombycinus</i> , <i>Drosera lunata</i> , <i>Gonocarpus acanthocarpus</i> , <i>Hibbertia longifolia</i> , <i>Hovea nana</i> , <i>Hypericum gramineum</i> , <i>Lepidosperma laterale</i> , <i>Mitrasacme sp.</i> , <i>Pimelea linariifolia</i> , <i>Pterocaulon redolens</i> , <i>Sedopsis sp.</i> , <i>Tricoryne anceps</i>
Non-native Plant Species		Nil
Threatened Flora		<i>Melaleuca uxorum</i>

Table 17 Bio-condition Site 17

Bio-condition Site 17				
Date:	18-02-2022			
Plot Origin:	Zone: 55K	Lat: 17.19696	Long: 145.39706	Elevation: 1045m
Plot Centre:	Zone: 55K	Lat: 17.19702	Long: 145.39746	Elevation: 1045m
Plot Bearing:	SE	Plot Alignment:	Top of ridge following the contour	
				
North		East		

Bio-condition Site 17




South

West

Habitat Description:	Rhyolite rock pavement outcrops sloping on a SW aspect. Mosaic of rock pavement and heathland vegetation.		
Regional Ecosystem (Mapped):	<p>7.12.65k Granite and rhyolite rock outcrop, of dry western areas, associated with shrublands to closed forests of <i>Acacia spp.</i> and/or <i>Lophostemon spp.</i> and/or <i>Allocasuarina spp.</i> In the Mount Emerald area, shrubs may include <i>Acacia umbellata</i>, <i>Melaleuca borealis</i>, <i>Homoranthus porteri</i>, <i>Leptospermum neglectum</i>, <i>Melaleuca recurva</i>, <i>Melaleuca uxorum</i>, <i>Grevillea glossadenia</i>, <i>Corymbia abergiana</i>, <i>Eucalyptus lockyeri</i>, <i>Sannantha angusta</i>, <i>Pseudanthus ligulatus subsp. ligulatus</i>, <i>Acacia aulacocarpa</i>, <i>Leptospermum amboinense</i>, <i>Xanthorrhoea johnsonii</i> and <i>Jacksonia thesioides</i>. Ground-cover species may include <i>Borya septentrionalis</i>, <i>Lepidosperma laterale</i>, <i>Eriachne spp.</i>, <i>Cleistochloa subjuncea</i>, <i>Boronia occidentalis</i>, <i>Cheilanthes spp.</i>, <i>Coronidium newcastlianum</i>, <i>Schizachyrium spp.</i>, <i>Tripogon loliiformis</i>, <i>Gonocarpus acanthocarpus</i> and <i>Eragrostis spp.</i> Dry western areas. Granite and rhyolite.</p>		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		N/A
	Native plant species richness:	Trees:	0
		Shrubs:	12
		Grasses:	10
		Forbs/Other:	16
	Tree Canopy	Median Height (m)	N/A
		Tree Canopy Cover (%)	0
	Tree Sub-canopy	Tree sub-canopy median Height (m)	N/A
		Tree Sub-canopy Cover	0
	Large Trees	Large Eucalypt tree DBH threshold (cm)	N/A
		Large Eucalypt trees per hectare	0
		Large non-eucalypt trees threshold (cm)	N/A
		Large non-eucalypt trees per hectare	0
Shrubs	Native Shrub Cover (%)	11.3	

Bio-condition Site 17			
	Ground Cover	Native Perennial Grass Cover (%)	16
		Forbs and Non-grass (%)	0
		Shrubs (%)	18
		Organic litter cover (%)	0
		Rock (%)	56
		Bare Ground (%)	3
		Cryptogams (%)	1
		Non-native plant cover (%)	6
		Total Non-native species richness	1
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	Nil
Native Species Richness:	Trees	N/A	
	Shrubs	<i>Acacia aulacocarpa, Acrothamnus spathaceus, Eucalyptus lockyeri, Hibbertia stirlingii, Leptospermum amboinensis, Melaleuca uxorum, Melichrus adpressus, Platysace valida, Pseudanthus ligulatus, Sannantha angusta, Seringia lanceolata, Xanthorrhoea johnsonii,</i>	
	Grasses	<i>Aristida sp., Cleistochloa subjuncea, Cymbopogon bombycinus, Digitaria sp., Eragrostis schultzei, Eriachne mucronate, Panicum simile, Schizachyrium fragile, Themeda triandra, Tripogon loliiformis</i>	
	Forbs and Others	<i>Boronia occidentalis, Borya septentrionalis, Caladenia sp., Cheilanthes distans, Coronidium newcastlianum, Cyanthillium cinereum, Drosera lunata, Fimbristylis dichotoma, Gonocarpus acanthocarpus, Hypericum gramineum, Lepidosperma laterale, Mitrasacme sp., Pimelea linariifolia, Phyllanthus dallachyanus, Plectranthus amoenus, Tricoryne anceps</i>	
Non-native Plant Species		<i>Praxelis clematidea</i>	
Threatened Flora		<i>Melaleuca uxorum, Plectranthus amoenus</i>	

Table 18 Bio-condition Site 18

Bio-condition Site 18				
Date:	18-02-2022			
Plot Origin:	Zone: 55K	Lat: 17.19645	Long: 145.39725	Elevation: 1064m
Plot Centre:	Zone: 55K	Lat: 17.19612	Long: 145.39754	Elevation: 1058m
Plot Bearing:	SE	Plot Alignment:	Mid-slope running parallel to the hill contour	
				
North		East		
				
South		West		
Habitat Description:	Open forest (14m) dominated by <i>Eucalyptus reducta</i> . Grassy understorey (<1.0m) of <i>Themeda triandra</i> and <i>Mnesithea rottboellioides</i> combined with a low heathy shrub layer			
Regional Ecosystem (Mapped):	7.12.58 <i>Eucalyptus reducta</i> +/- <i>E. granitica</i> +/- <i>Corymbia dimorpha</i> +/- <i>C. citriodora</i> woodland to open forest on granite and rhyolite			
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):			100%
	Native plant species richness:	Trees:		2
		Shrubs:		10
		Grasses:		4
		Forbs/Other:		11

Bio-condition Site 18			
	Tree Canopy	Median Height (m)	14
		Tree Canopy Cover (%)	23.5
	Tree Sub-canopy	Tree sub-canopy median Height (m)	5
		Tree Sub-canopy Cover	0
	Large Trees	Large Eucalypt tree DBH threshold (cm)	30
		Large Eucalypt trees per hectare	32
		Large non-eucalypt trees threshold (cm)	0
		Large non-eucalypt trees per hectare	0
	Shrubs	Native Shrub Cover (%)	30.2
	Ground Cover	Native Perennial Grass Cover (%)	34
		Forbs and Non-grass (%)	0
		Shrubs (%)	24
		Organic litter cover (%)	12
		Rock (%)	9
		Bare Ground (%)	8
		Cryptograms (%)	0
Non-native plant cover (%)		13	
	Total Non-native species richness	1	
Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	32.5	
Native Species Richness:	Trees	<i>Eucalyptus crebra, Eucalyptus reducta</i>	
	Shrubs	<i>Acacia calyculata, Acrothamnus spathaceus, Astrotricha pterocarpan, Hakea benthamii, Hibiscus normanii, Melichrus urceolatus, Notelaea venosa, Platysace valida, Pultenaea millarii, Xanthorrhoea johnsonii,</i>	
	Grasses	<i>Cleistochloa subjuncea, Eriachne mucronata, Panicum simile, Themeda triandra.</i>	
	Forbs and Others	<i>Cheilanthes brownii, Coronidium newcastlianum, Dianella nervosa, Dipodium sp., Hibbertia longifolia, Lepidosperma laterale, Lomandra filiformis, Phyllanthus dallachyanus, Pimelea linariifolia, Plectranthus parviflora, Tricoryne anceps.</i>	
Non-native Flora	Praxelis clematidea		
Threatened Flora	Nil		

DATE	PERSON	EDIT
31/03/2022	Ryan	Added this document to 2022 job folder
31/03/2022	Susie	Updated tables for Biocondition site 1, 2, and 3
01/04/2022	Susie	Updated tables for Biocondition site 4, 5, 6, and 8.
20/04/2022	Patricia	Updated tables for Biocondition site 11, 12, 13, 14, 15, 16, 17 and 18.