Bio-condition Survey

Mount Emerald Wind Farm Offset Site

April 2020

4 elements

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Revision History

Version	Purpose	Issued by	Date	Reviewer	Date
0.01	Draft	Ryan Hughes	18-06-2020	Mellissa Brown	18-06-2020
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4 Elements Consulting

107 Scott Street

Bungalow, QLD 4870

www.4elementsconsulting.com.au

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1.0 Introduction

Bio-condition assessments on the Mount Emerald Wind Farm (MEWF) Offset Site have been provided 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 as a result 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 survey was conducted over this property (Gleed, 2016) to determine the presence of threatened flora listed under the *Nature Conservation Act 1992* and the *EPBC Act 1999* on the MEWF offset site. All listed threatened flora that was known to be present on the wind farm site has been recorded on the MEWF offset site with an additional species being recorded, *Prostanthera albohirta*. All listed species on the MEWF offset site are listed below;

- *Acacia purpureopetala* (Purple-flowering Wattle) - Critically Endangered (EPBC Act), Vulnerable (NC Act);
- *Grevillea glossadenia* (no common name) - Vulnerable (EPBC Act), 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); and
- *Prostanthera clotteniana* (Mint Bush) - Critically Endangered (EPBC Act), Endangered (NC Act).

The bio-condition monitoring surveys are often located so the threatened species recorded on the MEWF site so that the survey plots may act as a monitoring tool of the threatened flora population health on the site. All species present on MEWF are present within a bio-condition plot with the exception of *Melaleuca sylvana*.

2.0 Methodology

The methodology of this year's Bio-condition sampling follows closely the work in the previous monitoring period that was split over two years (Gleed, 2018) and (4 Elements, 2019). 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 present on site. All new records of threatened flora are recorded 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.

2.1 Time of Survey

The survey period was conducted over multiple days between the dates of 21st April and the 27th May 2020. This matched the dates for the previous survey effort in 2018/19. All ground forbs, herbs and grasses were readily detectable and could 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 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 Bio-region 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 7.12.58	Site 1, Site 18	2	100
RE 7.12.65k	Site 2, Site 17	2	50
RE 7.12.57a	Site 15	1	50
RE 7.12.57c	Site 3, Site 16	2	100
RE 7.12.30d	Site 4, Site 8	2	100
RE 7.12.9	Site 5	1	50
RE 7.12.16a	Site 6	1	50
RE 7.3.26a	Site 7	1	100
RE 7.12.29a	Site 9, Site 14	2	50
RE 7.12.26e	Site 10	1	100
RE 7.12.7c	Site 11	1	100
RE 7.12.34	Site 12, Site 13	1	100

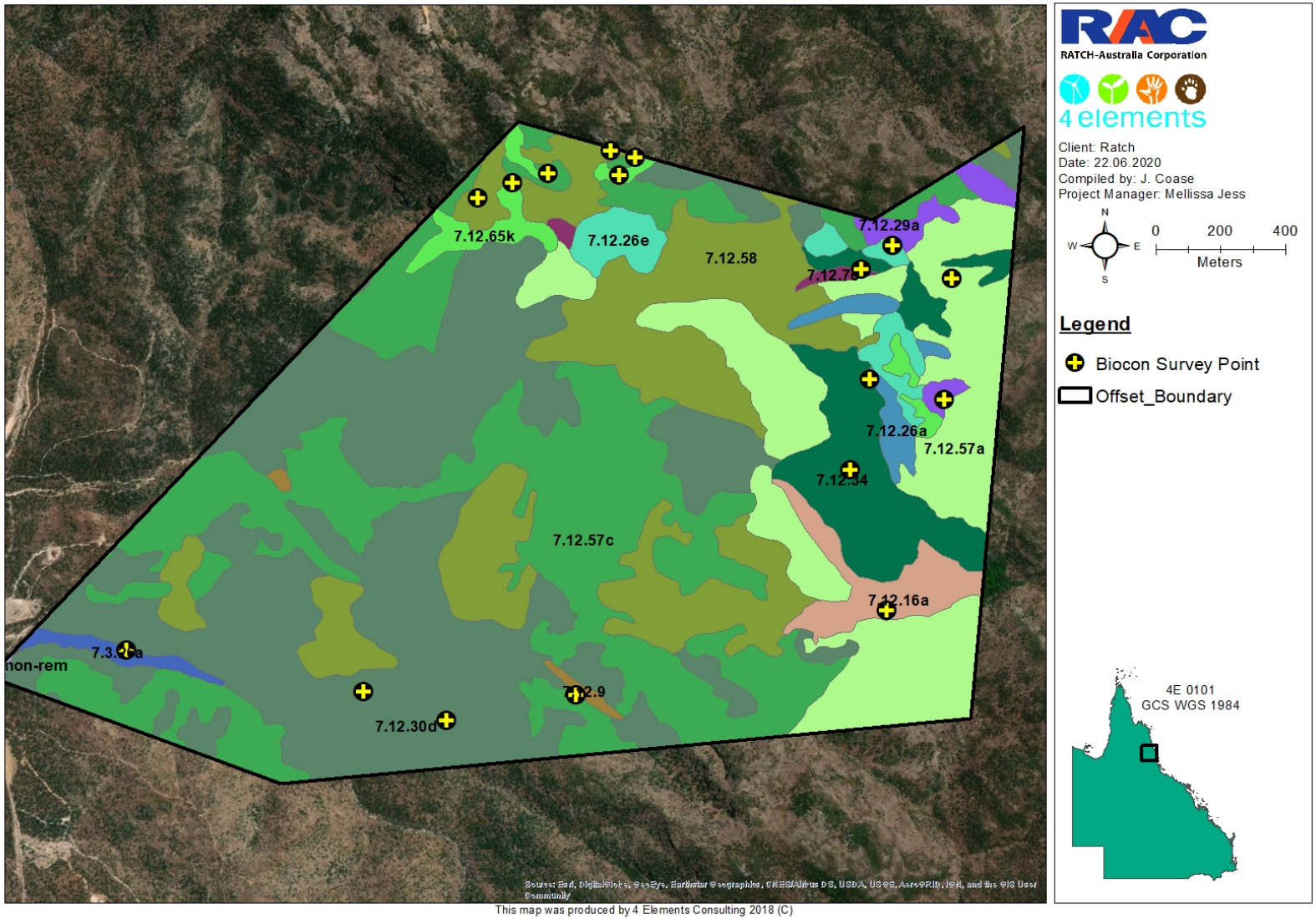


Figure 1 MEWF Offset Bio-condition Assessment Locations

3.0 Bio-condition Report Summary

3.1 Threatened Flora Results

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. All of the six 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* and *Prostanthera clotteniana* and the *Endangered Melaleuca sylvana* were recorded within individual bio-condition monitoring plots as indicated in **Table 2-19** below.

Plate 1 Flowering *Acacia purpureopetala* at Bio-condition site 4 (April 2020)

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 two (2) separate locations in the north east of the site (**Plate 1**) (**Table 11 & 13**). This species is an epiphytic orchid found growing in moist cool environments on the sides of rough barked trees. Both populations were located within *Syncarpia glommulifera* and *Corymbia intermedia* dominated open forest with an understorey of *Allocasuarina littoralis* on the top of a high elevation forested ridge facing the predominate south east cloud moisture.

Plate 2 ***E. fellowsii*** **growing as an epiphyte at Bio-condition site 12 (April 2020)**

Table 2 Bio-condition Site 1

Bio-condition Site 1				
Date:	**21-04-2020**			
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:	*Eucalyptus reducta* open woodland with a canopy height ranging from 8-10m. A shrubby understory consisting of *Leptospermum sp, Xanthorrhoea johnsonii and Acacia calyculata* 0.5-1m in height. The ground cover species consist of *Cleistochloa subjuncea* and *Leptosperma laterale* to 0.25m tall.			
Regional Ecosystem (Mapped):	**RE 7.12.58** *Eucalyptus reducta +/- E. granitica +/- Corymbia dimorpha +/- C. citriodora* woodland to open forest on granite and rhyolite.			
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):			100%
	Native plant species richness:		Trees:	2
			Shrubs:	11

Bio-condition Site 1			
		Grasses:	3
		Forbs/Other:	11
	Tree Canopy	Median Height (m)	9
		Tree Canopy Cover (%)	27.1
	Tree Sub-canopy	Tree sub-canopy median Height (m)	8
		Tree Sub-canopy Cover	31.4
	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
	Shrubs	Native Shrub Cover (%)	39.4
	Ground Cover	Native Perennial Grass Cover (%)	24
		Forbs and Non-grass (%)	2
		Shrubs (%)	33
		Organic litter cover (%)	14
		Rock (%)	22
		Bare Ground (%)	4.4
		Cryptograms (%)	3
		Non-native plant cover (%)	<1
		Total Non-native species richness	1
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	257
Native Species Richness:	Trees	*Eucalyptus reducta, Syncarpia glomulifera*	
	Shrubs	*Acacia calyculata, Comesperma anemosmaragdinum, Exocarpos cuppressiformis, Hakea plurinervia, Leptospermum amboinense, Monotoca scaparia, Persoonia falcata, Pimelia linarifolia, Platysace vallida, Pultenaea millarii, Xanthorrhoea johnsonii*	
	Grasses	*Aristida sp., Cleistochloa subjuncea, Eriachne pallescens.*	
	Forbs and Others	*Fimbristylus sp, Hovea nana, Hybanthus enneaspermus, Lepidosperma laterale, Lomandra filiformis, Melicris adpressus, Pseudanthus ligulatus, Stylidium graminifolium, Trichoryne anceps, Zieria cytisoides*	
Non-native Species	Nil		
Threatened flora	Nil		

Table 3 Bio-condition site 2

Bio-condition Site 2				
Date:	**21-04-2020**			
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 *Acacia aulacocarpa, Eucalyptus lockyeri* and *Leptospermum ambionense* 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 *Acacia spp.* and/or *Lophostemon spp.* and/or *Allocasuarina spp.* In the Mount Emerald area, shrubs may include *Acacia umbellata, Melaleuca borealis, Homoranthus porteri, Leptospermum neglectum, Melaleuca recurva, Melaleuca uxorum, Grevillea glossadenia, Corymbia abergiana, Eucalyptus lockyeri, Sannantha angusta, Pseudanthus ligulatus subsp. ligulatus,*			

Bio-condition Site 2			
	Acacia aulacocarpa, Leptospermum amboinense, Xanthorrhoea johnsonii and Jacksonia thesioides. Ground-cover species may include Borya septentrionalis, Lepidosperma laterale, Eriachne spp., Cleistochloa subjuncea, Boronia occidentalis, Cheilanthes spp., Coronidium newcastlianum, Schizachyrium spp., Tripogon loliiformis, Gonocarpus acanthocarpus and Eragrostis spp. Dry western areas. Granite and rhyolite. (BVG1M: 29b)		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	4
		Shrubs:	10
		Grasses:	10
		Forbs/Other:	11
	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 (%)	6.3
	Ground Cover	Native Perennial Grass Cover (%)	3.2
		Forbs and Non-grass (%)	0.2
		Shrubs (%)	3
		Organic litter cover (%)	8
		Rock (%)	13
		Bare Ground (%)	NA
		Cryptograms (%)	69.6
		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	*Corymbia abergiana, Eucalyptus atrata, E. lockyeri, E. reducta*	
	Shrubs	*Acacia aulacocarpa, Astrotricha pterocarpa, Melaleuca recurva, Hibbertia bicarpellata, Homoranthus porteri, Keraudrenia lanceolata,*	

Bio-condition Site 2		
		Leucopogon sp. Leptospermum amboinense, Notelaea punctata, Plectranthus amoenus.
	Grasses	*Aristida sp., Arundinella setosa, Cleistochloa subjuncea, Cymbopogon bombycinus, Digitaria sp, Eragrostis schultzii, Panicum simili, Schizachyrium pachyarthron, Themeda triandra, Tripogon loliiformis.*
	Forbs and Others	*Cheilanthes siberii, C. nitidum, Commelina ensifolia, Drynaria rigidula, Gahnia aspera, Gonocarpus acanthocarpus, Hovea nana, Hypericum gramineum, Lomandra filiformis, Plectranthus parviflorus, Sedopsis sp Bulimba station.*
Non-native Species		*Praxelis clematidea**
Threatened Flora		*Homoranthus porteri*

Table 4 Bio-condition site 3

Bio-condition Site 3				
Date:	**21-04-2020**			
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 *Cleistochloa subjuncea*. *Xanthorrhoea johnsonii, Acacia calyculata* and *Eucalyptus lockyeri* 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 *Eucalyptus cloeziana, Corymbia abergiana, E. portuensis, E. reducta, E. lockyeri, C. leichhardtii, Callitris intratropica, E. atrata, E. pachycalyx, E. shirleyi, E. drepanophylla* and *Homoranthus porteri*, on rhyolite and granite		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	4
		Shrubs:	7
		Grasses:	8
		Forbs/Other:	14
	Tree Canopy	Median Height (m)	2
		Tree Canopy Cover (%)	1.2
	Tree Sub-canopy	Tree sub-canopy median Height (m)	NA
		Tree Sub-canopy Cover	NA
	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 Cover (%)	23.2
	Ground Cover	Native Perennial Grass Cover (%)	36
		Forbs and Non-grass (%)	2
		Shrubs (%)	43
		Organic litter cover (%)	12

Bio-condition Site 3			
		Rock (%)	6
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
		Total Non-native species richness	0
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	0
Native Species Richness:	Trees	*Eucalyptus reducta, Eucalyptus lockyeri, Allocasurina inophloia, Eucalyptus atrata*	
	Shrubs	*Acacia calyculata, Astrotricha pterocarpa, Eucalyptus lockyeri, Hakea benthamii, Leptospermum ambionense, Sannantha angusta, Xanthorrhoea johnsonii*	
	Grasses	*Cleistochloa subjuncea, Cymbopogon bombycinus, Eragrostis schultzii, E. pallescens, Panicum simile, Schizachyrium fragile, Tripogon loliiformis, Themeda triandra*	
	Forbs and Others	*Gonocarpus acanthocarpus, Hibiscus normanii, Hibbertia longifolia, Lepidosperma laterale, Leucopogon sp, Lomandra filiformis, Melicris adpressus, Platysace vallida, Peripleura diffusa, Persoonia falcata, Poranthera microphylla, Phyllanthus dallachyana, Thysanotus tuberosa, Tricoryne anceps.*	
Non-native Species		Nil	
Threatened Flora		Nil	

Table 5 Bio-condition site 4

Bio-condition site 4				
Date:	**23-04-2020**			
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:	S	**Plot Alignment:**	Along contour of hillslope. North-south orientation.	

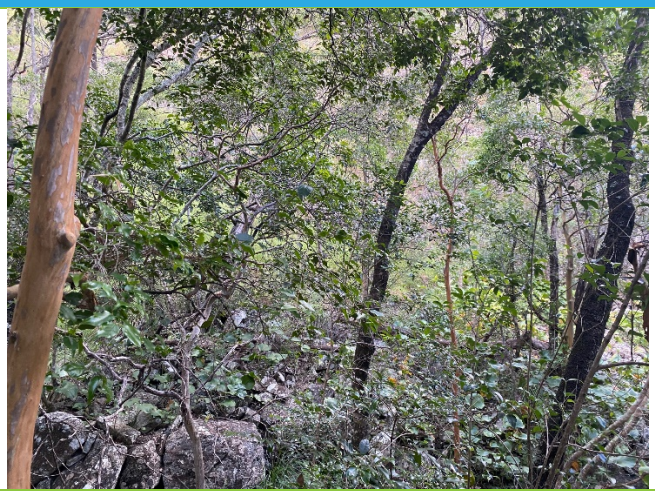
Bio-condition site 4	
	
North	East
	
South	West
Habitat Description:	Steep hillslope of dry open forest/woodland. The dominant tree species consist of *Eucalyptus cloezianna, Eucalyptus pachycalyx, Callitris introtropica* and *Allocasurina inophloia* in the sub canopy. The shrub layer is sparse with 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 sterlingii.*
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			
	Mnesithea rottboellioides, Arundinella setosa, Cleistochloa subjuncea, Eriachne pallescens var. pallescens, Lepidosperma laterale and Xanthorrhoea johnsonii. Rocky slopes on granite and rhyolite. (BVG1M: 9d).		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100
	Native plant species richness:	Trees:	5
		Shrubs:	15
		Grasses:	11
		Forbs/Other:	13
	Tree Canopy	Median Height (m)	10
		Tree Canopy Cover (%)	30.6
	Tree Sub-canopy	Tree sub-canopy median Height (m)	8
		Tree Sub-canopy Cover	2.2
	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 (%)	11.9
	Ground Cover	Native Perennial Grass Cover (%)	26
		Forbs and Non-grass (%)	3.4
		Shrubs (%)	6
		Organic litter cover (%)	20.6
		Rock (%)	44
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
		Total Non-native species richness	2
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	90
Native Species Richness:	Trees	*Eucalyptus pachycalyx, Eucalyptus cloezianna, Callitris introtropica, Corymbia leichhardtii, Corymbia erythrophloia.*	
	Shrubs	*Acacia calyculata, Acacia multisiliqua, Acacia umbellata, Acacia purpureopetala, Capparis canescens, Dodonaea dodecandra, Denhamia cuminghamii, Grevillia glossadenia, Hibbertia stirlingii, Hibbertia longifolia, Larsenaikia ochreata, Psydrax attenuata.*	

Bio-condition site 4		
	Grasses	*Arundinella setosa, Aristida sp., Cleistochloa subjuncea, Cymbopogon bombycinus, Digitaria sp., Eriachne mucronata, Urochloa holosericea, Panicum simile, Themeda triandra, Triodia microstachya.*
	Forbs and Others	*Acacia galioides, Cheilanthes nitida, Cheilanthes brownii, Curculigo ensiflolia., Cyanthilium cinereum, Gonocarpus acanthocarpus, Mitrasacme sp., Platysace vallida, Poranthera microphylla., Tricoryne anceps, Velleia spathulata, Waltheria indica.*
Non-native Plant Species		*Praxelis clematidea, Bidens bipinnata*
Threatened Flora		*Acacia purpureopetala, Grevillea glossadenia*

Table 6 Bio-condition site 5

Bio-condition Site 5				
Date:	**23-04-2020**			
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	

Bio-condition Site 5			
			
South		West	
Habitat Description:	Dry vine forest within a rocky granite gully.		
Regional Ecosystem (Mapped):	**7.12.9** *Acacia celsa* 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:	19
		Shrubs:	8
		Grasses:	2
		Forbs/Other:	16
	Tree Canopy	Median Height (m)	16
		Tree Canopy Cover (%)	88.4
	Tree Sub-canopy	Tree sub-canopy median Height (m)	8
		Tree Sub-canopy Cover	39
	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 (%)	9.2
	Ground Cover	Native Perennial Grass Cover (%)	nil
		Forbs and Non-grass (%)	34
		Shrubs (%)	2
		Organic litter cover (%)	23
		Rock (%)	38
		Bare Ground (%)	1
		Cryptograms (%)	8
		Non-native plant cover (%)	<1
		Total Non-native species richness	3

Bio-condition Site 5			
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	21.3
Native Species Richness:	Trees	*Acronychia laevis, Atractocarpus fitzalanii, Bursaria tenuifolia, Callitris introtropica, 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.*	
	Shrubs	*Acacia Celsa, Bursaria spinosa, Drypetes deplanchei, Alyxia spicata, Wikstroemia indica, Myrsine variabilis, Flueggea virosa, Turraea pubescens.*	
	Grasses	*Oplismenus compositus, Arundinella setosa.*	
	Forbs and Others	*Cissus oblonga, Commelina ensifolia, Cyanthillium cinereum, Proiphys amboinensis, Parsonsia straminea, Tetrastigma nitens, Adiantum atroviride, Neoachmandra cunninghamii, Tectaria confluens, Plectranthus mirus, Asystasia sp., Scleria mackaviensis, Dioscorea transversa, Paraceterach muelleri, Smilax calophylla, Dockrillia teretifolium*	
Non-native species		*Praxelis clematidea*, Lantana camara, Solanum seaforthianum*	
Threatened Flora		Nil	

Table 7 Bio-condition Site 6

Bio-condition Site 6				
Date:	**22-04-2020**			
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.	

Bio-condition Site 6			
			
North		East	
			
South		West	
Habitat Description:	Vine forest across rocky stream and terrace.		
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:	20
		Shrubs:	6
		Grasses:	2
		Forbs/Other:	19
	Tree Canopy	Median Height (m)	17
		Tree Canopy Cover (%)	72.4
	Tree Sub-canopy	Tree sub-canopy median Height (m)	10
		Tree Sub-canopy Cover	64
	Large Trees	Large Eucalypt tree DBH threshold (cm)	28

Bio-condition Site 6			
		Large Eucalypt trees per hectare	0
		Large non-eucalypt trees threshold (cm)	28
		Large non-eucalypt trees per hectare	20
	Shrubs	Native Shrub Cover (%)	3.6
	Ground Cover	Native Perennial Grass Cover (%)	0
		Forbs and Non-grass (%)	34
		Shrubs (%)	4
		Organic litter cover (%)	22
		Rock (%)	40
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
		Total Non-native species richness	0
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	10
Native Species Richness:	Trees	*Achronychia laevis, Agathis robusta, Alectryon tomentosus, Atractocarpus fitzilanii, Bursaria tenuifolia, Chionanthus ramiflorus, Cupaniopsis anacardioides, Drypetes deplanchei, Eleodendron meanocarpum, Euroschinus falcata, Gossia bidwillii, Harpulia pendula, Larsenaikia ochreata, Lophostemon grandiflorus, Olea paniculata, Pleiogynium timorense, Polyscias elegans Psydrax dallachiana, Sersalisia sericea, Glochidion sumatranum*	
	Shrubs	*Alyxia ruscifolia, Wikstroemia indica, Clerodendrum longiflorum, Pittosporum revolutum, Psydrax sp, Gahnia aspera,*	
	Grasses	*Entolasia stricta, Oplismenus compositus*	
	Forbs and Others	*Abrus precatorius, Adiantum hispidulum, Adiantum atroviride, Asystasia sp., Cymbidium maddidum, Dockrillia teretifolium, Drynaria rigidula, Eustrephus latifolius, Microsorum punctatum, Parsonsia straminea, Peperomia blanda, Plectranthus amoenus, Plectranthus mirus, Proiphys amboinensis, Scleria mackaviensis, Smilax calophylla, Tetrastigma nitens, Trophis scandens, Ventilago ecorollata*	
Non-native Species		*Praxelis clematidea*	
Threatened Flora		Nil	

Table 8 Bio-condition Site 7

Bio-condition Site 7				
Date:	**22-04-2020**			
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	
				
South			West	
Habitat Description:	Braided seasonal watercourse with sandy and rocky bars. *Eucalyptus tereticornis* dominant, 15m high. Subcanopy of *Callitris introtropica, Acacia disperma* at 1-4m high. Grassy ground layer, 0.5m high.			
Regional Ecosystem (Mapped):	**7.3.26a** *Casuarina cunninghamiana, Eucalyptus tereticornis, Lophostemon suaveolens, Melaleuca leucadendra, M. fluviatilis, Buckinghamia celsissima, Mallotus philippensis* woodland and forest with an understorey of *Melaleuca viminalis* and *Bursaria tenuifolia.* Fringing forests of larger streams. Riverine wetland or fringing riverine wetland. (BVG1M: 16a).			

Bio-condition Site 7			
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	16
		Shrubs:	15
		Grasses:	12
		Forbs/Other:	21
	Tree Canopy	Median Height (m)	15
		Tree Canopy Cover (%)	12.2
	Tree Sub-canopy	Tree sub-canopy median Height (m)	7
		Tree Sub-canopy Cover	25.3
	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 (%)	12.7
	Ground Cover	Native Perennial Grass Cover (%)	22
		Forbs and Non-grass (%)	2
		Shrubs (%)	4
		Organic litter cover (%)	44
		Rock (%)	4
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	12
		Total Non-native species richness	4
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	29m
Native Species Richness:	Trees	*Acacia flavescens, Alphitonia excelsa, Bursaria tenuifolia, E. crebra, Eucalyptus dallyachiana, Corymbia leichhardtii, Corymbia eryithrophloia, C. clarksoniana, Callitris introtropica, Canarium australianum, Eucalyptus tereticornis, Acacia disparrima, Larsenaikea ochreata, Lophostemon grandiflora, Sersalisia sericea, Santalum lanceolatum*	
	Shrubs	*Acacia nesophila, Acacia simsii, Breynia oblongifolia, Cajanus confertiflorus, Dodonaea lanceolata, Dodonea doecandra, Exocarpus latifolius, Grevillea glossadenia Grevillia parralella, Hibiscus meraukensis, Homalium*	

Bio-condition Site 7		
		brachybotrys, Trema aspera, Petalostigma banksii, Petalostigma pubescens, Wikstroemia indica
	Grasses	*Arundinella setosa, Cymbopogon bombycinus, Digitaria sp, Themeda triandra, Cleistochloa subjuncea, Heteropogon contortus, Heteropogon triticeus, Entolasia marginata, Aristida queenslandica, Panicum effusum, Panicum simile, Setaria surgens*
	Forbs and Others	*Alyxia spicata, Commelina ensifolia, Crotalaria medicaginea, Cyanthilum cinereum, Dianella nervosa, Dioscorea bulbifera, Eustrephus latifolius, Heliotropium tabuliplagae, Hibbertia longifolia, Lomandra filiformis, Phyllanthus fuernrohrii, Pimelia sericostachya, Tacca leontopetaloides, Tricoryne anceps, Proiphys amboinensis, Hibiscus meraukensis, Senna aciphylla, Cassytha filiformis, Grewia retusifolia, Scleria mackaviensis, Xenostegia tridentata*
Non-native Species		*Praxelis clematidea, Melinis minutiflora, Lantana camara, Melinis repens*
Threatened Flora		*Grevillea glossadenia*

Table 9 Bio-condition site 8

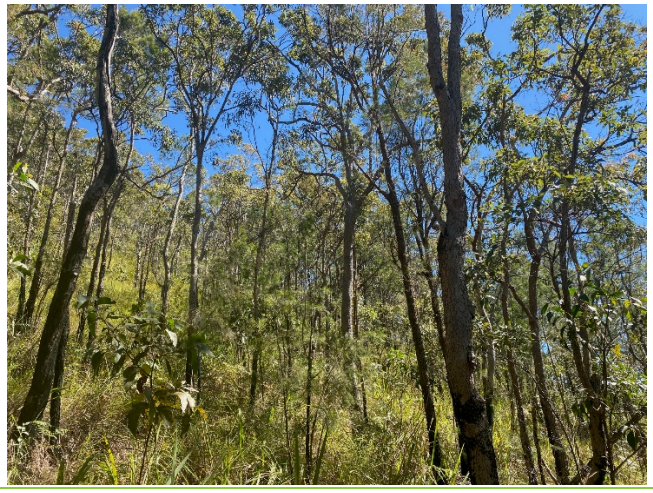
Bio-condition Site 8				
Date:	**22-04-2020**			
Plot Origin:	Zone: 55K	easting: 328826	northing: 8096354	Elevation: 630m
Plot Centre:	Zone: 55K	easting: 328788	northing: 8096345	Elevation: 624m
Plot Bearing:	SW	**Plot Alignment:**	Parallel with contour of rounded hill.	
				
North			East	

Bio-condition Site 8			
			
South		West	
Habitat Description:	Grassy woodland open woodland with *Eucalyptus cloeziana* and *Corymbia leichardtii* dominant trees, 9-11m tall. Subcanopy consists of *Callitris introtropica* and *Acacia disparrima* 4-5m tall. Shrub layer 0.5-1.5m tall. Ground cover to half a metre.		
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*.		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		N/A
	Native plant species richness:	Trees:	8
		Shrubs:	18
		Grasses:	11
		Forbs/Other:	18
	Tree Canopy	Median Height (m)	10
		Tree Canopy Cover (%)	42.2
	Tree Sub-canopy	Tree sub-canopy median Height (m)	5
		Tree Sub-canopy Cover	7.1
	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 (%)	11
	Ground Cover	Native Perennial Grass Cover (%)	21
		Forbs and Non-grass (%)	3
		Shrubs (%)	9
		Organic litter cover (%)	28

Bio-condition Site 8			
		Rock (%)	18
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
		Total Non-native species richness	4
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	10.5m
Native Species Richness:	Trees	*Acacia disparrima, Callitris intratropica, Eucalyptus atrata, E. shirleyi, E. granitica, E. cloeziana, Corymbia leichhardtii, C. erythrophloia.*	
	Shrubs	*Acacia calyculata, Acacia simsii, Acacia flavescens, Antidesma parviflorum, Breynia oblongifolia, Capparis canescens, Dodonaea lanceolata, Grevillea glauca, Hibbertia stirlingii, Planchonia careya, Psydrax saligna, Jacksonia theisoides, Pogonolobus reticulatus, Wikstroemia indica, Xanthorrhoea johnsonii, Grevillea glossadenia, Gastrolobium grandiflorum, Flueggia viscosa,*	
	Grasses	*Aristida queenslandica, Arundinella setosa, Capillipedium parviflorum, Cleistochloa subjuncea, Cymbopogon bombycinus, Digitaria sp, Heteropogon triticeus, Mnesithia rottbelliodes, Panicum simili, Urochloa holosericea, Schizachyrium fragile.*	
	Forbs and Others	*Hybanthus enneaspermus, Hibbertia longifolia, Crotalaria brevis, Commelina ensifolia, Clematicissus opaca, Cyanthillium cinereum, Cheilanthes sieberii, Cheilanthes brownii, Cheilanthes nitidum, Dianella nervosa, Lomandra longifolia, Gompholobium nitidum, Tacca leontopetaloides, Picnoria lutescens, Tricoryne anceps, Wahlenbergia queenslandica, Zornia prostrata, Scleria mackaviensis,*	
Non-native Plant Species		*Praxelis clematidea, Bidens bipenata, Emilia sonchifolia Stylosanthes guianensis*	
Threatened Flora		*Grevillea glossadenia*	

Table 10 Bio-condition Site 9

Bio-condition Site 9				
Date:	**29-05-2020**			
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

South

West

Habitat Description:	Open forest with a canopy dominated by *Corymbia intermedia*, *Eucalyptus drepanophylla* and *Eucalyptus tereticornis*. Sparse shrub layer (5m) contains *Allocasuarina littoralis*, *Acacia flavescens* and *Lophostemon suaveolens*. Grassy understorey (<1.5m) of *Themeda triandra* and *Mnesithea rottboellioides*.		
Regional Ecosystem (Mapped):	**RE 7.12.29a** *Corymbia intermedia* and/or *Lophostemon suaveolens* open forest to woodland +/- areas of *Allocasuarina littoralis* and *A. torulosa* on uplands on granite and rhyolite.		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	6
		Shrubs:	9
		Grasses:	6

Bio-condition Site 9			
		Forbs/Other:	21
	Tree Canopy	Median Height (m)	9
		Tree Canopy Cover (%)	60.2
	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 (%)	5.7
	Ground Cover	Native Perennial Grass Cover (%)	49
		Forbs and Non-grass (%)	8
		Shrubs (%)	1
		Organic litter cover (%)	39
		Rock (%)	1
		Bare Ground (%)	0
		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)	111
Native Species Richness:	Trees	*Allocasuarina littoralis, Corymbia intermedia, Eucalyptus drepanophylla, Eucalyptus tereticornis, Eucalyptus reducta, Euroschinus falcata.*	
	Shrubs	*Acacia calyculata, Acacia flavescens, Alphitonia excelsa, Breynia oblongifolia, Capparis canescens, Coelospermum reticulatum, Xanthorrhoea johnsonii, Lophostemon suaveolens, Pimelia seriostachys.*	
	Grasses	*Arundinella setosa, Capillipedium spicigerum, Themeda triandra, Heteropogon triticeus, Mnesithia rottboellioides, Sarga plumosum.*	
	Forbs and Others	*Adiantum hispidulum, Commelina ensifolia, Coronidium newcastlanum, Cyanthillium cinereum, Desmodium rhytidophyllum, Dianella nervosa, Drynaria rigidula, Flemingia parviflora, Glycine clandestina, Hibbertia longifolia, Lomandra filiformis, Lomandra longifolia, Phyllanthus simplex, Lepidosperma laterale Praxelis clematidea*, Pteridium esculentum, Poranthera*	

Bio-condition Site 9		
		microphylla, Rostellularia adscendens, Scleria mackaviensis, Widelia spilanthoides, Indigofera bancroftii, Xerochrysum bracteatum.
Non-native Species	*Praxelis clematidae*	
Threatened Flora	Nil	

Table 11 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	
				
North			East	
				
South			West	
Habitat Description:	Open forest with a canopy (11m) dominated by *Syncarpia glomulifera* with occasional *Eucalyptus drepanophylla*. Open shrub layer (5m) contains *Acacia aulococarpa* and *Leptospermum amboinense*. Grassy understorey (0.5m) of *Entolasia stricta* and *Ottochloa gracimila.*			

Bio-condition Site 10			
Regional Ecosystem (Mapped):	**7.12.26e** *Syncarpia glomulifera* 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:	16
		Grasses:	5
		Forbs/Other:	27
	Tree Canopy	Median Height (m)	11
		Tree Canopy Cover (%)	62.2
	Tree Sub-canopy	Tree sub-canopy median Height (m)	8
		Tree Sub-canopy Cover	17.8
	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 (%)	14
		Shrubs (%)	7
		Organic litter cover (%)	25
		Rock (%)	12
		Bare Ground (%)	3
		Cryptograms (%)	1
		Non-native plant cover (%)	<1
		Total Non-native species richness	1
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	160
Native Species Richness:	Trees	*Syncarpia glomulifera, Eucalyptus drepanophylla*	
	Shrubs	*Acacia aulococarpa, Acrothamnus spathaceus, Achronychia leavis, Astrotricha pterocarpa, Alyxia spicata, Breynia oblongifolia, Bursaria Spinosa Clerodendrum longiflorum, Glochidion sumatranum, Hovea densivellosa, Leptospermum amboinense, Notolaea venosa, Pittosporum venulosum, Pomaderris argyrophylla, Psychotria loniceroides, Rhodamnia sessiliflora.*	
	Grasses	*Entolasia stricta, Oplismenus aemulus, Ottochloa gracimila, Panicum effusum, Panicum simile.*	

Bio-condition Site 10		
	Forbs and Others	*Acianthus borealis, Adiantum aethiopicum, Adiantum hispidulum, Bulbophyllum spp., Clematis pickeringii, Coronidium rupicola, Eleutheroglossum fellowsii, Dianella caerulea, Drynaria rigidula, Eustrephus latifolius, Geitonoplesium cymosum, Lindsaea microphylla, Lepidosperma laterale, Lomandra multiflora, Parsonsia straminea, Plectranthus hirtus, Plectranthus parviflorus, Plexaure crassicula, Pterostylis stricta, Scleria mackaviensis, Smilax australis, Smilax calophylla, Tricoryne anceps, Viola hederacea, Widelia spilanthoides, Xerochrysum bracteatum.*
Non-native Species		*Praxelis clematidea**
Threatened Flora		*Eleutheroglossum fellowsii*

Table 12 Bio-condition Site 11

Bio-condition Site 11				
Date:	**29-05-2020**			
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	

Bio-condition Site 11			
			
South		West	
Habitat Description:	Open forest with a canopy (18m) dominated by *Olea paniculata, Mallotus phillipensis, Pleigynium timorense, Pittosporum venulosum, Euroshinus falcata and Cupaniopsis anacardioides*. Emergent (25m) *Agathis robusta*.		
Regional Ecosystem (Mapped):	**7.12.7c** Simple to complex microphyll to notophyll vine forest, often with *Agathis robusta or A. microstachya,* on granites and rhyolites of moist foothills and uplands.		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	20
		Shrubs:	16
		Grasses:	3
		Forbs/Other:	28
	Tree Canopy	Median Height (m)	18
		Tree Canopy Cover (%)	72.4
	Tree Sub-canopy	Tree sub-canopy median Height (m)	8
		Tree Sub-canopy Cover	15.5
	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 (%)	13.8
	Ground Cover	Native Perennial Grass Cover (%)	0
		Forbs and Non-grass (%)	24
		Shrubs (%)	0
		Organic litter cover (%)	26
		Rock (%)	45

Bio-condition Site 11			
		Bare Ground (%)	5
		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)	70
Native Species Richness:	Trees	*Acronychia laevis, Agathis robusta, Atractocarpus fitzilanii, Brachychiton acerifolius, Chionanthus ramiflorus, Corymbia intermedia, Cupaniopsis anacardioides, Drypetes deplanchii, Elaeodendron melanocarpum, Euroshinus falcata, Gossia bidwilli, Guioa acutifolia, Mallotus phillipensis, Olea paniculata, Pittosporum venulosum, Pleigynium timorense, Polyscias elegans, Polyalthia nitidissima, Schefflera actinophylla, Syncaria glomulifera,*	
	Shrubs	*Alyxia ruscifolia, Alyxia spicata, Alectryon tomentosus, Breynia oblongifolia, Callicarpa pedunculata, Clerodendrum longiflorum, Codiaeum variegatum var. moluccanum, Dendrocnide moroides, Glochidion sumatranum, Myrsine variabilis, Pipturus argenteus, Pomaderris argyrophylla, Psychotria loniceroides, Syzigium johnsonii, Wikstroemia indica, Wilkea pubescens.*	
	Grasses	*Ottochloa gracimilis, Oplismenus aemulus, Oplismenus compositus*	
	Forbs and Others	*Adiantum aethiopicum, Adiantum atroviride, Adiantum hispidulum, Alpinia caerulea, Aristolochia spp., Asplenium nidus, Calochlaena dubia, Christella dentata, Clematis pickeringii., Commelina diffusa, Dianella caerulea, Dioscorea transversa, Drynaria rigidula, Eustrephus latifolius, Gahnia aspera, Microsorum puntatum, Oxalis corniculata, Parsonsia straminea, Parsonsia velutina, Peperomia blanda, Plectranthus hirtus, Plectranthus amoenus, Plectranthus spp., Pseuderanthemum variable, Pyrrosia rupestris, Scleria mackaviensis, Smilax australis, Smilax calophylla, Stephaina japonica, Tetrastigma nitens.*	
Non-native Species		*Ageratum spp., Lantana camara, Melinis repens*	
Threatened Flora		Nil	

Table 13 Bio-condition Site 12

<table>
<tr><th colspan="6">Bio-condition Site 12</th></tr>
<tr><td>Date:</td><td colspan="5">25-05-2020</td></tr>
<tr><td>Plot Origin:</td><td>Zone: 55K</td><td>Lat: 17.20494</td><td colspan="2">Long: 145.40387</td><td>Elevation: 1075m</td></tr>
<tr><td>Plot Centre:</td><td>Zone: 55K</td><td>Lat: 17.20531</td><td colspan="2">Long: 145.40411</td><td>Elevation: 1071m</td></tr>
<tr><td>Plot Bearing:</td><td>W</td><td>Plot Alignment:</td><td colspan="3">Near to ridge top following the contour</td></tr>
<tr><td colspan="3">  </td><td colspan="3">  </td></tr>
<tr><td colspan="3">North</td><td colspan="3">East</td></tr>
<tr><td colspan="3">  </td><td colspan="3">  </td></tr>
<tr><td colspan="3">South</td><td colspan="3">West</td></tr>
<tr><td>Habitat Description:</td><td colspan="5">Open forest with a canopy (12m) dominated by Eucalyptus drepanophylla, Corymbia intermedia and Syncarpia glommulifera. Sparse shrub layer (3m) contains Acrothamnus spathaceus, Allocasuarina torulosa, Acacia aulococarpa and Lophostemon grandiflorus. Grassy understorey (0.5m) of Themeda triandra and Mnesithea rottboellioides</td></tr>
<tr><td>Regional Ecosystem (Mapped):</td><td colspan="5">7.12.34 Eucalyptus portuensis and/or E. drepanophylla, +/- C. intermedia +/- C. citriodora, +/- E. granitica open woodland to open forest on uplands on granite</td></tr>
<tr><td rowspan="3">Vegetation Attributes:</td><td colspan="3">Recruitment of Dominant Canopy Species (%):</td><td colspan="2">100%</td></tr>
<tr><td rowspan="2">Native plant species richness:</td><td>Trees:</td><td colspan="2">4</td></tr>
<tr><td>Shrubs:</td><td colspan="2">24</td></tr>
</table>

Bio-condition Site 12			
		Grasses:	5
		Forbs/Other:	27
	Tree Canopy	Median Height (m)	12
		Tree Canopy Cover (%)	40.9
	Tree Sub-canopy	Tree sub-canopy median Height (m)	7
		Tree Sub-canopy Cover	11.3
	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 (%)	5.1
	Ground Cover	Native Perennial Grass Cover (%)	72
		Forbs and Non-grass (%)	0
		Shrubs (%)	3
		Organic litter cover (%)	18
		Rock (%)	4
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	3
		Total Non-native species richness	1
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	60
Native Species Richness:	Trees	*Syncarpia glommulifera, Eucalyptus drepanophylla, Corymbia intermedia, Allocasuarina torulosa*	
	Shrubs	*Acacia aulococarpa, Acacia flavescens, Acacia implexa, Acrothamnus spathaceus, Achronychia leavis, Alphitonia excelsa, Allocasuarina inophloia, Alyxia spicata, Astrotricha pterocarpa, Bursaria spinosa, Breynia oblongifolia, Euroschinus falcata, Glochidion sumatranum, Maytenus disperma, Notelaea punctata, Persoonia falcata, Pittosporum venulosum, Platysace vallida, Plectranthus amoenus, Pomaderris argyrophylla, Polyscias elegans, Psychotria loniceroides, Trema tomentosa, Xanthorrhoea johnsonii,*	
	Grasses	*Entolasia stricta, Mnesithea rottboelioides, Ottochloa gracillima, Panicum simile, Themeda triandra,*	

Bio-condition Site 12		
	Forbs and Others	*Adiantum aethiopicum, Ajuga australis, Cheilanthes seiberi, Cyanthillium cinereum, Cymbidium madidum, Desmodium rhytidophyllum, Dianella caerulea, Dianella nervosa, Drynaria rigidula, Eleutheroglossum fellowsii, Flemingia parviflora, Gahnia aspera, Geitonoplesium cymosum, Hibbertia longifolia, Hypericum gramineum, Lomandra multiflora, Lepidosperma laterale, Parsonsia rotata, Plectranthus parviflora, Pterocaulon redolens, Rostellularia adscendens, Scleria mackaviensis, Thelychiton jonesii subsp. jonesii, Thysanotus tuberosus, Trachyrhizum argrostophyllum, Widelia spilanthoides, Xerochrysum bracteatum.*
Non-native species		*Praxelis clematidea, Crassocephalum crepidioides.*
Threatened Flora		*Eleutheroglossum fellowsii*

Table 14 Bio-condition Site 13

Bio-condition Site 13				
Date:	**25-05-2020**			
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	

Bio-condition Site 13			
			
South		West	
Habitat Description:	Open woodland with a canopy (12m) dominated by *Eucalyptus drepanophylla, Corymbia intermedia* and *Lophostemon grandiflorus*. Understorey of *Allocasuarina torulosa* and canopy associates (5-8). Sparse shrub layer (3m) contains *Acacia aulococarpa.* Grassy understorey (<1.0m) of *Themeda triandra* and *Mnesithea rottboellioides* and *Capillipedium spicigerum.*		
Regional Ecosystem (Mapped):	**7.12.34** *Eucalyptus portuensis* and/or *E. drepanophylla*, +/- *C. intermedia* +/- *C. citriodora*, +/- *E. granitica* open woodland to open forest on uplands on granite.		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		100%
	Native plant species richness:	Trees:	4
		Shrubs:	16
		Grasses:	9
		Forbs/Other:	28
	Tree Canopy	Median Height (m)	12
		Tree Canopy Cover (%)	28.1
	Tree Sub-canopy	Tree sub-canopy median Height (m)	6.5
		Tree Sub-canopy Cover	5.7
	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 (%)	3.3
	Ground Cover	Native Perennial Grass Cover (%)	62
		Forbs and Non-grass (%)	9
		Shrubs (%)	3
		Organic litter cover (%)	25

Bio-condition Site 13			
		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)	111
Native Species Richness:	Trees	*Eucalyptus drepanophylla, Corymbia intermedia, Allocasuarina torulosa, Lophostemon grandiflorus*	
	Shrubs	*Acacia aulococarpa, Alphitonia excelsa, Breynia oblongifolia, Dodonea lanceolata, Hakea plurinervia, Hibiscus meraukensis, Indigofera bancroftii, Lophostemon suaveolens, Persoonia falcata, Platysace vallida, Plectranthus amoenus, Pomaderris argyrophylla, Psychotria loniceroides, Trema tomentosa, Xanthorrhoea johnsonii*	
	Grasses	*Capillipedium spicigerum, Digitaria spp., Dimeria ornithopoda, Mnesithia rottboellioides, Panicum effusum, Schyzacharium fragile, Sarga plumosum, Themeda triandra, Tripogon loliiformis.*	
	Forbs and Others	*Adiantum aethiopicum, Cheilanthes sieberi, Chelanthes distans, Crotolaria brevis, Cyanthillium cinereum, Cymbidium madidum, Desmodium rhytidophyllum, Dianella nervosa, Drynaria rigidula, Eustrephus latifolius, Fimbristylis acicularis, Fimbristylis dichotoma, Flemingia parviflora, Gahnia aspera, Hyperanicum gramineum, Hybanthus stellarioides, Lepidosperma laterale, Lomandra multiflora, Phyllanthus simplex, Platyceruim bifurcatum, Poranthera microphylla, Pseudoranthemum variable, Rostellularia adscendens, Scleria mackaviensis, Spermacoce brachystema, Thelychiton jonesii subsp. jonesii, Widelia spilanthoides, Xerochrysum bracteatum.*	
Non-native Species		*Gynura crepidioides, Praxelis clematidea,*	
Threatened Flora		*Plectranthus amoenus*	

Table 15 Bio-condition Site 14

Bio-condition Site 14				
Date:	**10-04-2019**			
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	

<table>
<tr><th colspan="4">Bio-condition Site 14</th></tr>
<tr><td colspan="2">  </td><td colspan="2">  </td></tr>
<tr><td colspan="2">North</td><td colspan="2">East</td></tr>
<tr><td colspan="2">  </td><td colspan="2">  </td></tr>
<tr><td colspan="2">South</td><td colspan="2">West</td></tr>
<tr><td>Habitat Description:</td><td colspan="3">Open woodland with a canopy (10m) dominated by Corymbia intermedia and/or Eucalyptus drepanophylla and Syncarpia glomulifera. Understorey of Allocasuarina torulosa and canopy associates (5-8). Sparse shrub layer (3m) contains Acacia aulococarpa. Grassy understorey (<1.0m) of Themeda triandra and Mnesithea rottboellioides and Capillipedium spicigerum</td></tr>
<tr><td>Regional Ecosystem (Mapped):</td><td colspan="3">7.12.29a Corymbia intermedia, Eucalyptus tereticornis, E. drepanophylla open forest to low open forest and woodland with Allocasuarina torulosa, A. littoralis, Lophostemon suaveolens, Acacia cincinnata, A. flavescens, Banksia aquilonia and Xanthorrhoea johnsonii. Uplands, on granite and rhyolite.</td></tr>
<tr><td rowspan="6">Vegetation Attributes:</td><td colspan="2">Recruitment of Dominant Canopy Species (%):</td><td>100%</td></tr>
<tr><td rowspan="4">Native plant species richness:</td><td>Trees:</td><td>3</td></tr>
<tr><td>Shrubs:</td><td>18</td></tr>
<tr><td>Grasses:</td><td>7</td></tr>
<tr><td>Forbs/Other:</td><td>18</td></tr>
<tr><td>Tree Canopy</td><td>Median Height (m)</td><td>11</td></tr>
</table>

Bio-condition Site 14			
		Tree Canopy Cover (%)	56.8
	Tree Sub-canopy	Tree sub-canopy median Height (m)	4
		Tree Sub-canopy Cover	7.6
	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 (%)	15
	Ground Cover	Native Perennial Grass Cover (%)	54
		Forbs and Non-grass (%)	5
		Shrubs (%)	23
		Organic litter cover (%)	18
		Rock (%)	0
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
		Total Non-native species richness	2
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	13
Native Species Richness:	Trees	*Eucalyptus drepanophylla, Corymbia intermedia, Syncarpia glomulifera*	
	Shrubs	*Acacia aulococarpa, Acacia implexa, Allocasuarina littoralis, Allocasuarina torulosa, Alphitonia excelsa, Hakea plurinervia, Acrothamnus spathacea, Acrotriche aggregata, Banksia aquilonia, Bursaria spinosa, Glochidion sumatranum, Hibiscus meraukenensis, Hovea densivillosa, Lophostemon suaveolens, Notolaea venosa, Trema aspera, Pomaderris argyrophylla, Xanthorrhea johnsonii,*	
	Grasses	*Arundinella setosa, Capillipedium spicigerum, Entolosia stricta, Eriachne spp., Mnesithia rottboellioides, Panicum effusum, Themeda triandra.*	
	Forbs and Others	*Cyanthilium cinereum, Desmodium rhytidophyllum, Dianella caerulea, Drynaria rigidula, Eustrephus latifolius, Flemingia parviflora, Glycine clandestina, Lomandra multiflora, Plectranthus parviflorus, Pseuderanthemum variable, Pteridium esculentum, Rostellularia adscendens, Rubus moluccana, Scleria mackaviensis, Smilax australis, Thelychiton jonesii subsp. jonesii, Xerochrysum bracteatum, Widelia spilanthoides,*	

Bio-condition Site 14	
Non-native Species	*Praxelis clematidea, Melinis minutiflora*
Threatened Flora	Nil

Table 16 Bio-condition Site 15

Bio-condition Site 15				
Date:	**11-04-2019**			
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 *Corymbia abergiana, Eucalyptus lockyeri* and *Syncarpia glomulifera.* Grassy understorey (<1.0m) of *Themeda triandra* and *Mnesithea rottboellioides* and *Capillipedium spicigerum*			
Regional Ecosystem (Mapped):	**7.12.57a** Shrubland and low woodland mosaic with *Syncarpia glomulifera*, *Corymbia abergiana, Eucalyptus portuensis, Allocasuarina littoralis* and *Xanthorrhoea johnsonii*. 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:	13

Bio-condition Site 15			
		Grasses:	9
		Forbs/Other:	22
	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 (%)	27.0
	Ground Cover	Native Perennial Grass Cover (%)	45
		Forbs and Non-grass (%)	3
		Shrubs (%)	17
		Organic litter cover (%)	12.5
		Rock (%)	16
		Bare Ground (%)	1.5
		Cryptograms (%)	0
		Non-native plant cover (%)	<1
		Total Non-native species richness	2
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	Nil
Native Species Richness:	Trees	Nil (shrubland)	
	Shrubs	*Acacia calyculata, Acrothamnus spathaceus, Allocasuarina littoralis, Bursaria incana, Corymbia abergiana, Eucalyptus drepanophylla, Eucalyptus lockyeri, Hakea plurinervia, Lophostemon suaveolens, Platysace vallida, Pomaderris argyrophylla, Syncarpia glomulifera, Xanthorrhoea johnsonii.*	
	Grasses	*Aristida spp., Capillipedium spicigerum, Chleistochloa subjuncea, Eragrostis cumingii, Mnesithia rottboellioides, Panicum simile, Schyzacharium fragile, Themeda triandra, Tripogon loliiformis.*	
	Forbs and Others	*Cheilanthes brownii, Cheilanthes seiberi, Coronidium newcastleanum, Crotalaria brevis, Crotalaria montana, Cyanthillium cinereum, Desmodium rhytidophyllum, Dianella nervosa, Evolvulus alsinoides, Hibbertia longifolia, Hovea nana, Hypericum gramineum, Lepidosperma laterale,*	

Bio-condition Site 15		
		Lomandra multiflora, Melichrus adpressus, Melichrus urceolatus, Oxalis corniculatus, Poranthera microphylla, Rostellularia adscendens, Thysanotus tuberosa, Wahlenbergia queenslandica, Widelia spilanthoides,
Non-native Plant Species		*Praxelis clematidea, Melinis repens.*
Threatened Flora		Nil

Table 17 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 *Eucalyptus cloeziana, Corymbia abergiana, E. portuensis, E. reducta, E. lockyeri, C.*			

Bio-condition Site 16			
	leichhardtii, Callitris intratropica, E. atrata, E. pachycalyx, E. shirleyi, E. drepanophylla and Homoranthus porteri, on rhyolite and granite. There is occasionally a very sparse to sparse secondary tree layer of *Corymbia abergiana and/or C. stockeri*. A very sparse to sparse tall shrub layer may be present and can include *Persoonia falcata, Exocarpos cupressiformis and Melaleuca viridiflora var. viridiflora*. A sparse to dense lower shrub layer may include *Jacksonia thesioides, Acacia calyculata, Coelospermum reticulatum, Xanthorrhoea johnsonii, Acacia humifusa, Dodonaea lanceolata var. subsessilifolia, Grevillea dryandri subsp. dryandri, Grevillea glossadenia, Acacia umbellata and Ericaceae spp*. The ground layer may be dominated by species such as *Themeda triandra, Xanthorrhoea johnsonii, Eriachne pallescens var. pallescens, Cleistochloa subjuncea, Borya septentrionalis, and Eriachne 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.		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		N/A
	Native plant species richness:	Trees:	1
		Shrubs:	14
		Grasses:	7
		Forbs/Other:	8
	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 (%)	11.4
	Ground Cover	Native Perennial Grass Cover (%)	33
		Forbs and Non-grass (%)	5
		Shrubs (%)	30
		Organic litter cover (%)	9
		Rock (%)	20
		Bare Ground (%)	1
		Cryptograms (%)	1
		Non-native plant cover (%)	<1
		Total Non-native species richness	
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	Nil
	Trees	*Eucalyptus portuensis*	

Bio-condition Site 16		
Native Species Richness:	Shrubs	*Acacia aulococarpa, Allocasuarina inophloia, Acacia calyculata, Astrotricha pterocarpan, Cheilanthes brownii, Leptospermum neglectum, Melaleuca uxorum, Platysace vallida, Persoonia falcata, Phyllanthus dallachyanus, Sannantha angusta, Xanthorrhoea johnsonii*
	Grasses	*Aristida superpendens, Themeda triandra, Cymbopogon bombycinus, Eragrostis mucronata, Tripogon lolliformis, Mnesithea Formosa, Schizachyrium fragile*
	Forbs and Others	*Boronia bipinnata, Lepidosperma laterale, Melichrus urceolatus, Hibbertia longifolia, Hibbertia melanoides, Gonocarpus acanthocarpus, Borya septentrionalis Cryptandra debilis*
Non-native Plant Species		Nil
Threatened Flora		*Melaleuca uxorum*

Table 18 Bio-condition Site 17

Bio-condition Site 17				
Date:	**12-04-2019**			
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):	**7.12.65k** Granite and rhyolite rock outcrop, of dry western areas, associated with shrublands to closed forests of *Acacia spp.* and/or *Lophostemon spp.* and/or *Allocasuarina spp.* In the Mount Emerald area, shrubs may include *Acacia umbellata, Melaleuca borealis, Homoranthus porteri, Leptospermum neglectum, Melaleuca recurva, Melaleuca uxorum, Grevillea glossadenia, Corymbia abergiana, Eucalyptus lockyeri, Sannantha angusta, Pseudanthus ligulatus subsp. ligulatus, Acacia aulacocarpa, Leptospermum amboinense, Xanthorrhoea johnsonii and Jacksonia thesioides*. Ground-cover species may include *Borya septentrionalis, Lepidosperma laterale, Eriachne spp., Cleistochloa subjuncea, Boronia occidentalis, Cheilanthes spp., Coronidium newcastlianum, Schizachyrium spp., Tripogon loliiformis, Gonocarpus acanthocarpus and Eragrostis spp.* Dry western areas. Granite and rhyolite.		
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):		N/A
	Native plant species richness:	Trees:	0
		Shrubs:	9
		Grasses:	9
		Forbs/Other:	8
	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 (%)	8.0

Bio-condition Site 17			
	Ground Cover	Native Perennial Grass Cover (%)	8
		Forbs and Non-grass (%)	13
		Shrubs (%)	27
		Organic litter cover (%)	1
		Rock (%)	38
		Bare Ground (%)	8
		Cryptograms (%)	4
		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	N/A	
	Shrubs	*Eucalyptus lockyeri, Acrothamnus spathaceus, Acacia aulococarpa, Acacia calyculata, Sannantha angusta, Leptospermum neglectum, Melaleuca uxorum*	
	Grasses	*Aristida superpendens, Aristida utilis, Themeda triandra, Eragrostis shultzii, Cymbopogon bombycinus, Eriachne ciliata, Frimbristylus dichotoma, Panicum simile, Chleistochloa subjuncea, Tripogon lilliformis*	
	Forbs and Others	*Borya septrentrionalis, Dianella nervosa, Hyperanicum gramineum, Cheilanthes brownii, Gonocarpus acanthocarpus, Lepidosperma laterale, Phyllanthus dallachyana, Plectranthus amoenus*	
Non-native Plant Species		*Praxelis clematidea, Sonchus sp*	
Threatened Flora		*Melaleuca uxorum, Plectranthus amoenus*	

Table 19 Bio-condition Site 18

Bio-condition Site 18				
Date:	**12-04-2019**			
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 *Eucalyptus reducta.* Grassy understorey (<1.0m) of *Themeda triandra* and *Mnesithea rottboellioides* combined with a low heathy shrub layer			
Regional Ecosystem (Mapped):	**7.12.58** *Eucalyptus reducta* +/- *E. granitica* +/- *Corymbia dimorpha* +/- *C. citriodora* woodland to open forest on granite and rhyolite			
Vegetation Attributes:	Recruitment of Dominant Canopy Species (%):			100%
	Native plant species richness:	Trees:		2
		Shrubs:		17
		Grasses:		6
		Forbs/Other:		9

Bio-condition Site 18			
	Tree Canopy	Median Height (m)	14
		Tree Canopy Cover (%)	34.9
	Tree Sub-canopy	Tree sub-canopy median Height (m)	5
		Tree Sub-canopy Cover	1.0
	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 (%)	37.9
	Ground Cover	Native Perennial Grass Cover (%)	34
		Forbs and Non-grass (%)	2
		Shrubs (%)	42
		Organic litter cover (%)	12
		Rock (%)	10
		Bare Ground (%)	0
		Cryptograms (%)	0
		Non-native plant cover (%)	0
		Total Non-native species richness	0
	Coarse Woody Debris (CWD)	Total length >10cm width and >1m length (m)	16m
Native Species Richness:	Trees	*Eucalyptus reducta*	
	Shrubs	*Allocasuarina innophloia, Astrotricha pterocarpa, Acacia aulacocarpa, Leptospermum neglectum, Garnia aspera, Keraudrenia lanceolata, Xanthorrhoea johnsonii, Acrothamnus spathaceus, Pultanea millarii, Acacia calyculata, Platysace vallida, Phyllanthus dallachyana, Hakea plurinervia, Breynia oblongifolia.*	
	Grasses	*Themeda triandra, Panicum simile, Chleistochloa subjuncea, Schizachyrium fragile, Tripogon lilliformis, Eriachne sp.*	
	Forbs and Others	*Lepidosperma laterale, Pimelia linarifolia, Notelaea venosa, Dianella nervosa, Hibbertia melhanioides, Hibbertia longifolia, Hibiscus normanii, Cheilanthes brownii, Widelia spilanthoides*	
Non-native Flora	Nil		
Threatened Flora	Nil		

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 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 nine (9) 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 and 7.12.57c 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 with the exception of *Prostanthera clotteniana* and *Melaleuca sylvana*. An additional threatened species, *Eleutheroglossum fellowsii;* listed *Vulnerable* under the *Nature Conservation Act 1992* was recorded in two of the permanent bio-condition sites on this round of bio-condition monitoring. These individuals were found within regional ecosystem 7.12.34 and 7.12.26e. 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 tropics bio-region. Non-native flora species were generally very low in abundance and/or absent from many of the sites. Common weeds included *Praxelis clematidae* 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 two (2) 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

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