

Cassini Resources - Babel and Nebo 2018 Site SBQ99A

Type Quadrat 20 x 20

Location

MGA Zone 52 372532 mE 7098673 mN 127.723925 E -26.225795 S

Habitat SAMU

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	Out	0.1
Acacia aneura	+	0.1
Acacia aneura	15	6-7
Acacia ligulata	Out	3
Amphipogon caricina var. caricina	Out	0.4
Aristida holathera var. holathera	+	0.3
Chrysocephalum eremaeum	+	0.3
Digitaria brownii	+	0.2
Eragrostis eriopoda	+	0.4
Eriachne helmsii	Out	0.5
Eucalyptus gamophylla	Out	5
Eucalyptus oxymitra	Out	5
Hakea lorea subsp. lorea	Out	4
Maireana villosa	Out	0.3
Monachather paradoxus	Out	0.4
Paraneurachne muelleri	Out	0.3
Ptilotus obovatus	+	0.3
Salsola australis	+	0.4
Senna artemisioides subsp. x artemisioides	Out	0.5
Solanum lasiophyllum	Out	0.4
Triodia basedowii	12	1



Cassini Resources - Babel and Nebo 2018 Site SBQ100A

Type Quadrat 20 x 20

Location

MGA Zone 52 372381 mE 7098607 mN 127.722407 E -26.226378 S

Habitat LMW/SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	1	2.5
Acacia melleodora	+	1
Acacia tetragonophylla	+	0.7
Acacia walkeri	+	0.1
Aluta maisonneuvei subsp. maisonneuvei	+	0.6
Amphipogon caricinus var. caricinus	+	0.3
Aristida holathera var. holathera	+	0.3
Bonamia erecta	1	0.4
Corymbia opaca	Out	3
Cymbopogon ambiguus	+	0.8
Dicrastylis exsuccosa	Out	0.4
Dodonaea viscosa subsp. angustissima	Out	2
Eremophila longifolia	+	3
Eriachne helmsii	3	0.5
Eucalyptus gamophylla	2	5
Eucalyptus oxymitra	8	4-5
Euphorbia australis var. erythrantha	Out	0.1
Euphorbia tannensis subsp. eremophila	+	0.3
Grevillea eriostachya	Out	2
Haloragis uncatipila	+	0.3
Hibiscus solanifolius	+	0.5
Maireana villosa	+	0.2
Monachather paradoxus	+	0.3
Panicum decompositum	+	0.3
Paraneurachne muelleri	+	0.4
Paspalidium reflexum	+	0.3
Ptilotus clementii	Out	0.3
Ptilotus obovatus	+	0.5
Scaevola parvifolia subsp. parvifolia	Out	0.3
Sclerolaena parviflora	+	0.2
Senna artemisioides subsp. filifolia	+	1
Senna artemisioides subsp. x artemisioides	+	0.4
Solanum centrale	Out	0.4
Solanum centrale	Out	0.2
Solanum lasiophyllum	+	0.4
Triodia basedowii	12	1



Cassini Resources - Babel and Nebo 2018 Site SBQ101A

Type Quadrat 20 x 20

Location

MGA Zone 52 373448 mE 7098497 mN 127.733076 E -26.227465 S

Habitat ArS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	1	4
Acacia rhodophloia	9	5-6
Aluta maisonneuvei subsp. maisonneuvei	+	1
Alyogyne pinoniana	Out	0.7
Amphipogon caricinus var. caricinus	Out	0.3
Aristida holathera var. holathera	+	0.4
Bonamia erecta	1	0.3
Chrysocephalum eremaeum	Out	0.4
Cymbopogon ambiguus	Out	0.5
Enchytraea tomentosa var. tomentosa	+	0.1
Eremophila longifolia	Out	1.3
Euphorbia tannensis subsp. eremophila	+	0.4
Goodenia peacockiana	Out	0.1
Goodenia triodiophila	+	0.2
Grevillea eriostachya	Out	1
Hakea lorea subsp. lorea	Out	3
Maireana villosa	Out	0.4
Paraneurachne muelleri	Out	0.4
Paspalidium reflexum	+	0.2
Ptilotus sessilifolius	Out	0.3
Sclerolaena johnsonii	Out	0.3
Sclerolaena parviflora	Out	0.2
Solanum lasiophyllum	Out	0.6
Tridia basedowii	20	1



Cassini Resources - Babel and Nebo 2018 Site SUQ108A**Type** Quadrat 20 x 20**Location****MGA Zone** 52 384041 **mE** 7117457 **mN** 127.840797 **E** -26.057194 **S****Habitat** AmmS**SPECIES LIST:**

Name	Cover	Height
Acacia aneura	Out	5
Aluta maisonneuvei subsp. maisonneuvei	25	1.4
Amphipogon caricinus var. caricinus	+	0.2
Aristida holathera var. holathera	+	0.4
Cymbopogon ambiguus	+	0.2
Eriachne helmsii	+	0.4
Goodenia triodiophila	Out	0.2
Maireana villosa	Out	0.1
Triodia basedowii	3	0.6
Triodia schinzii	3	1.2



Cassini Resources - Babel and Nebo 2018 Site SUQ109A

Type Quadrat 20 x 20

Location

MGA Zone 52 383440 mE 7118127 mN 127.834850 E -26.051097 S

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia melleodora	4	4
Aluta maisonneuvei subsp. maisonneuvei	+	0.7
Aristida holathera var. holathera	6	0.5
Cymbopogon ambiguus	Out	0.2
Dicrastylis doranii	Out	0.3
Dodonaea viscosa subsp. angustissima	1	2
Eriachne helmsii	Out	0.4
Goodenia peacockiana	+	0.1
Grevillea stenobotrya	8	3
Paractaenum refractum	+	0.3
Paraneurachne muelleri	Out	0.4
Ptilotus obovatus	Out	0.5
Scaevola parvifolia subsp. parvifolia	Out	0.2
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	1	0.6
Sida spodochroma	+	0.3
Solanum centrale	Out	0.2
Swainsona microphylla	Out	0.3
Trichodesma zeylanicum	+	0.2
Triodia schinzii	3	1.3



Cassini Resources - Babel and Nebo 2018 Site SUQ110A

Type Quadrat 20 x 20

Location

MGA Zone 52 383221 mE 7117614 mN 127.832615 E -26.055710 S

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia kempeana	Out	2
Acacia ligulata	3	2
Aluta maisonneuvei subsp. maisonneuvei	1	1
Alyogyne pinoniana	Out	0.3
Amphipogon caricinus var. caricinus	+	0.3
Aristida holathera var. holathera	+	0.3
Bonamia erecta	+	0.3
Chrysocephalum pterochaetum	+	0.4
Cymbopogon ambiguus	Out	1
Enchytraea tomentosa var. tomentosa	+	0.3
Eragrostis laniflora	Out	0.4
Eriachne helmsii	1	0.5
Euphorbia tannensis subsp. eremophila	+	0.1
Grevillea stenobotrya	Out	2
Hakea lorea subsp. lorea	+	4
Halgnania erecta	+	0.3
Paspalidium reflexum		0.3
Santalum lanceolatum	1	2
Scaevola parvifolia subsp. parvifolia	Out	0.2
Sclerolaena cornishiana	Out	0.3
Sclerolaena johnsonii	Out	0.2
Triodia basedowii	20	1
Triodia schinzii	5	1.3



Cassini Resources - Babel and Nebo 2018 Site SUQ111A

Type Quadrat 20 x 20

Location

MGA Zone 52 384130 mE 7118381 mN 127.841768 E -26.048859 S

Habitat MgAkS

SPECIES LIST:

Name	Cover	Height
Acacia aneura	Out	2.5
Acacia kempeana	3	3
Acacia ligulata	Out	1.6
Acacia melleodora	Out	1.6
Acacia pruinocarpa	+	0.5
Amphipogon caricinus var. caricinus	Out	0.3
Aristida holathera var. holathera	Out	0.3
Cymbopogon ambiguus	Out	0.5
Dicrastylis exsuccosa	+	0.5
Digitaria brownii	+	0.3
Eragrostis eriopoda	Out	0.4
Eremophila glabra subsp. glabra	Out	1
Euphorbia tannensis subsp. eremophila	+	0.2
Goodenia triodiophila	+	0.2
Kennedia prorepens	Out	0.4
Melaleuca glomerata	12	1.7
Paraneurachne muelleri	+	0.3
Ptilotus obovatus	+	0.3
Rhyncharrhena linearis	+	0.3
Senna artemisioides subsp. filifolia	Out	1.8
Triodia basedowii	30	1
Triodia schinzii	+	1



Cassini Resources - Babel and Nebo 2018 Site SUQ112A

Type Quadrat 20 x 20

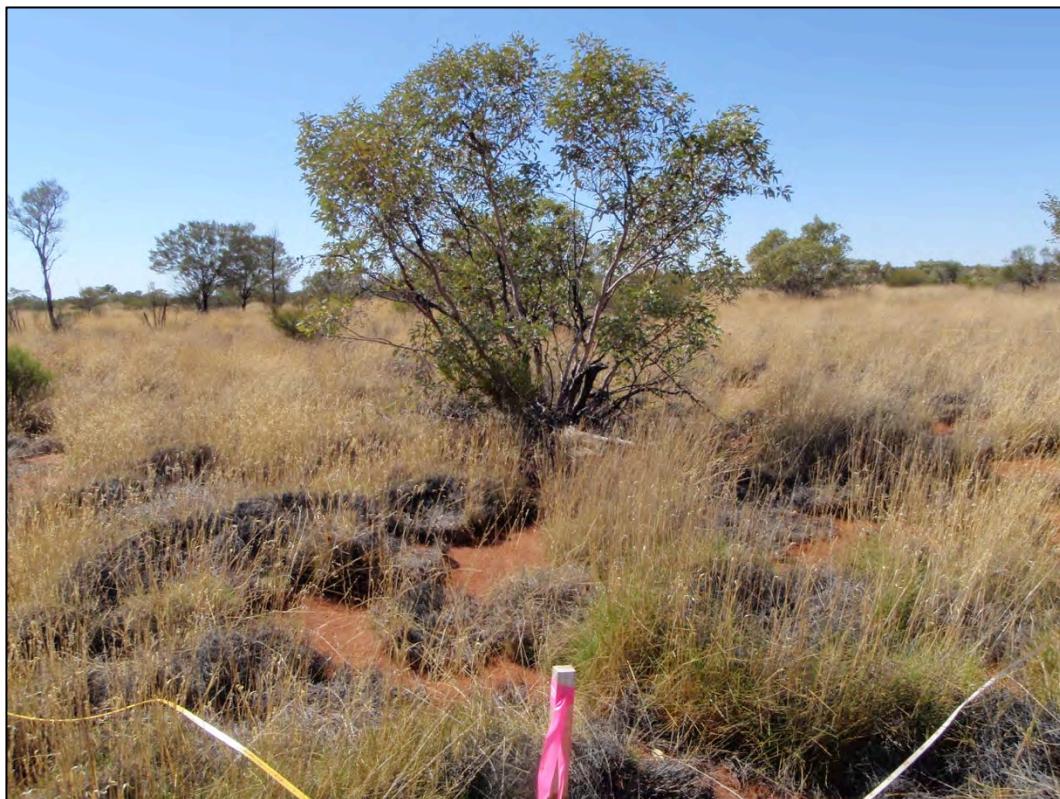
Location

MGA Zone 52 384900 **mE** 7118625 **mN** 127.849486 **E** -26.046718 **S**

Habitat LMW/SAWS

SPECIES LIST:

Name	Cover	Height
Acacia kempeana	Out	3
Acacia ligulata	1	2
Acacia maitlandii	1	1.4
Acacia sericophylla	Out	5
Aluta maisonneuvei subsp. maisonneuvei	+	0.8
Androcalva loxophylla	Out	0.4
Aristida holathera var. holathera	+	0.3
Bonamia erecta	1	0.4
Chrysocephalum pterochaetum	Out	0.1
Cymbopogon ambiguus	+	0.8
Eucalyptus oxymitra	4	3-5
Euphorbia tannensis subsp. eremophila	+	0.05
Exocarpos sparteus	Out	1.2
Goodenia peacockiana	+	0.1
Goodenia triodiophila	+	0.3
Hakea lorea subsp. lorea	+	0.4
Haloragis uncatipila	1	0.4
Hannafordia aff. quadrivalvis subsp. quadrivalvis	+	1.2
Hannafordia bissillii subsp. bissillii	+	0.7
Kennedia prorepens	1	0.5
Paraneurachne muelleri	+	0.4
Paspalidium reflexum	+	0.3
Petalostylis cassioides	Out	0.3
Ptilotus obovatus	+	0.5
Scaevola amblyanthera var. centralis	Out	0.15
Scaevola spinescens	Out	1
Sida sp. Excedentifolia (J.L. Egan 1925)	Out	0.05
Solanum centrale	+	0.3
Triodia basedowii	25	0.8
Triodia pungens	+	0.8



Cassini Resources - Babel and Nebo 2018 Site SUQ113A

Type Quadrat 20 x 20

Location

MGA Zone 52 384505 **mE** 7117584 **mN** 127.845446 **E** -26.056084 **S**

Habitat MgAkS

SPECIES LIST:

Name	Cover	Height
Acacia kempeana	8	3-4
Acacia ligulata	+	1.5
Acacia pteraneura	1	5
Acacia tetragonophylla	Out	3.5
Aluta maisonneuvei subsp. maisonneuvei	+	1.1
Amyema maidenii subsp. maidenii	Out	-
Aristida contorta	+	0.2
Aristida holathera var. holathera	+	0.3
Corymbia opaca	3	8
Cymbopogon ambiguus	+	0.7
Digitaria brownii	+	0.4
Enneapogon avenaceus	+	0.2
Eragrostis eriopoda	+	0.4
Euphorbia tannensis subsp. eremophila	+	0.1
Hakea lorea subsp. lorea	Out	2
Maireana villosa	+	0.2
Melaleuca glomerata	3	2
Paraneurachne muelleri	Out	0.4
Paspalidium reflexum	+	0.4
Ptilotus obovatus	+	0.4
Ptilotus sessilifolius	+	0.1
Rhagodia eremaea	+	1.1
Roepera eremaea	+	0.3
Senna artemisioides subsp. x artemisioides	Out	1.6
Triodia basedowii	10	1
Triodia pungens	5	1



Cassini Resources - Babel and Nebo 2018 Site SUQ114A**Type Quadrat 20 x 20****Location****MGA Zone 52 384328 mE 7117212 mN 127.843644 E -26.059429 S****Habitat MgAkS****SPECIES LIST:**

Name	Cover	Height
Acacia aptaneura	2	3-4
Acacia kempeana	Out	4
Acacia ligulata	1	3-4
Acacia pteraneura	6	3-4
Aluta maisonneuvei subsp. maisonneuvei	+	0.4
Aristida holathera var. holathera	+	0.3
Cymbopogon ambiguus	+	0.4
Digitaria brownii	+	0.3
Enneapogon avenaceus	+	0.2
Hakea lorea subsp. lorea	+	2
Paraneurachne muelleri	+	0.3
Petalostylis cassioides	+	0.7
Ptilotus obovatus	+	0.4
Solanum centrale	+	0.3
Triodia basedowii	25	0.8
Triodia pungens	2	0.8



Cassini Resources - Babel and Nebo 2018 Site SUQ115A

Type Quadrat 20 x 20

Location

MGA Zone 52 383805 mE 7116892 mN 127.838388 E -26.062275 S

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Abutilon otocarpum	Out	0.05
Acacia aptaneura	1	
Acacia aptaneura	Out	4
Acacia aptaneura	3	
Acacia ligulata	2	1.7
Alyogyne pinomiana	Out	0.6
Aristida contorta	10	0.2
Aristida holathera var. holathera	+	0.3
Boerhavia repleta	Out	0.05
Cenchrus ciliaris	Out	0.5
Chrysocephalum pterochaetum	Out	0.2
Cymbopogon ambiguus	+	0.5
Dactyloctenium radulans	+	0.1
Digitaria brownii	+	0.4
Einadia nutans subsp. eremaea	Out	0.5
Enneapogon avenaceus	+	0.2
Enneapogon polyphyllus	+	0.1
Eragrostis eriopoda	2	0.4
Eremophila glabra subsp. glabra	+	1
Eremophila longifolia	2	2
Maireana planifolia	+	0.3
Maireana planifolia	+	0.2
Paraneurachne muelleri	+	0.3
Petalostylis cassioides	Out	0.5
Portulaca intraterranea	Out	0.05
Ptilotus helipteroides	+	0.1
Ptilotus obovatus	2	0.5
Ptilotus polystachyus	+	0.4
Salsola australis	+	0.3
Sclerolaena convexula	+	0.2
Sclerolaena cornishiana	+	0.3
Sclerolaena parviflora	+	0.3
Senna pleurocarpa var. pleurocarpa	Out	1
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.3
Solanum centrale	+	0.3
Solanum cleistogamum	+	0.2
Solanum lasiophyllum	+	0.4
Solanum orbiculatum subsp. orbiculatum	Out	0.4
Solanum sturtianum	Out	0.3
Tridia scariosa	1	



Cassini Resources - Babel and Nebo 2018 Site SUQ116A

Type Quadrat 20 x 20

Location

MGA Zone 52 386660 mE 7117101 mN 127.866943 E -26.060615 S

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	+	0.5
Acacia aptaneura	2	5
Acacia ligulata	Out	0.7
Acacia pteraneura	5	7
Acacia pteraneura	+	0.5
Aristida contorta	2	0.2
Boerhavia repleta	+	0.1
Chrysocephalum pterocheatum	Out	0.3
Cleome viscosa	+	0.2
Corymbia opaca	Out	8
Cymbopogon ambiguus	+	1
Digitaria brownii	4	0.3
Enneapogon avenaceus	10	0.3
Enteropogon ramosus	Out	0.4
Euphorbia australis var. erythrantha	+	0.1
Euphorbia biconvexa	Out	0.3
Hakea lorea subsp. lorea	1	4
Heliotropium cunninghamii	+	0.2
Maireana villosa	+	0.3
Paraneurachne muelleri	Out	0.8
Portulaca intraterranea	+	0.05
Ptilotus helipteroides	+	0.15
Ptilotus obovatus	1	0.5
Rhyncharrhena linearis	+	0.1
Salsola australis	+	0.1
Sclerolaena convexula	+	0.2
Sclerolaena cornishiana	+	0.3
Sida calyxhymenia	+	0.3
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.3
Solanum cleistogamum	+	0.2
Solanum lasiophyllum	1	0.5
Tribulus astrocarpus	+	0.01
Tribulus terrestris	+	0.01
Triraphis mollis	+	0.4



Cassini Resources - Babel and Nebo 2018 Site SUQ117A

Type Quadrat 20 x 20

Location

MGA Zone 52 385693 **mE** 7116434 **mN** 127.857219 **E** -26.066561 **S**

Habitat CPHG

Notes Recently burnt, may change analysis outcome/affiliation for the site.

SPECIES LIST:

Name	Cover	Height
Acacia kempeana	Out	0.3
Acacia ligulata	Out	0.6
Acacia pachyacra	Out	0.4
Acacia pruinocarpa	Out	0.2
Alyogyne pinoniana	3	1
Androcalva loxophylla	+	0.3
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.2
Bonamia erecta	+	0.3
Chrysocephalum pterochaetum	Out	0.3
Eremophila glabra subsp. glabra	Out	1
Hakea lorea subsp. lorea	Out	0.8
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	3	0.3
Paraneurachne muelleri	3	0.4
Petalostylis cassioides	4	0.5
Ptilotus clementii	+	0.2
Ptilotus obovatus	1	0.4
Salsola australis	+	0.3
Scaevola amblyanthera var. centralis	Out	0.2
Scaevola parvifolia subsp. parvifolia	Out	0.3
Sclerolaena parviflora	+	0.1
Senna artemisioides subsp. x artemisioides	Out	0.4
Solanum centrale	Out	0.3
Tribulus terrestris	Out	0.01
Triodia scariosa	8	0.2



Cassini Resources - Babel and Nebo 2018 Site SUQ118A

Type Quadrat 20 x 20

Location

MGA Zone 52 385904 mE 7116838 mN 127.859364 E -26.062930 S

Habitat LMW/SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	4	3
Acacia maitlandii	1	2
Acacia melleodora	Out	1.5
Aluta maisonneuvei subsp. maisonneuvei	Out	1
Alyogyne pinoniana	+	1.1
Amphipogon caricinus var. caricinus	Out	0.4
Aristida holathera var. holathera	+	0.3
Bonamia erecta	1	0.3
Cymbopogon ambiguus	+	0.5
Digitaria brownii	Out	0.3
Eremophila glabra subsp. glabra	+	0.5
Eucalyptus oxymitra	6	4
Euphorbia tannensis subsp. eremophila	+	0.5
Goodenia peacockiana	+	0.05
Goodenia triodiophila	+	0.3
Hannahordia bissillii subsp. bissillii	Out	1
Paraneurachne muelleri	+	0.2
Paspalidium reflexum	+	0.2
Ptilotus obovatus	+	0.5
Ptilotus polystachyus	+	0.4
Scaevola parvifolia subsp. parvifolia	Out	0.3
Senna artemisioides subsp. filifolia	1	1.5
Solanum centrale	+	0.3
Triodia basedowii	14	0.6
Triodia schinzii	6	1



Cassini Resources - Babel and Nebo 2018 Site SUQ119A

Type Quadrat 20 x 20

Location

MGA Zone 52 385117 mE 7116351 mN 127.851454 E -26.067265 S

Habitat LMW/CPHG

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	+	0.8
Acacia melleodora	Out	0.4
Acacia pruinocarpa	Out	0.2
Alyogyne pinoniana	4	0.8
Amphipogon caricinus var. caricinus	+	0.3
Aristida contorta	+	0.2
Chrysocephalum pterochaetum	+	0.1
Corymbia opaca	Out	4
Eucalyptus gamophylla	3	2
Goodenia asteriscus	Out	0.05
Goodenia triodiophila	+	0.2
Hakea lorea subsp. lorea	Out	1
Paraneurachne muelleri	2	0.3
Ptilotus clementii	+	0.1
Ptilotus obovatus	+	0.4
Ptilotus sessilifolius	+	0.2
Salsola australis	Out	0.1
Scaevola amblyanthera var. centralis	+	0.3
Sclerolaena parviflora	+	0.3
Senna pleurocarpa var. pleurocarpa	+	0.4
Swainsona flavigarinata	+	0.01
Tribulus terrestris	Out	0.01
Triodia scariosa	18	0.5



Cassini Resources - Babel and Nebo 2018 Site SUQ120A

Type Quadrat 50 x 50

Location

MGA Zone 52 385377 mE 7117295 mN 127.854136 E -26.058763 S

Habitat CCoW

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	+	0.4
Acacia aptaneura	0.75	5-6
Acacia kempeana	2	2-3
Acacia ligulata	1	2
Acacia pachyacra	+	2.5
Acacia pachyacra	+	1
Acacia pteraneura	Out	4
Acacia tetragonophylla	+	1.5
Amphipogon caricinus var. caricinus	+	0.4
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.3
Boerhavia repleta	+	0.05
Brachychiton gregorii	1	6
Cenchrus ciliaris	1	0.6
Chrysocephalum pterochaetum	+	0.2
Corymbia opaca	3	8
Cymbopogon ambiguus	+	0.5-0.8
Digitaria brownii	+	0.4
Einadia nutans subsp. eremaea	+	0.3
Enneapogon avenaceus	+	0.2
Enneapogon polyphyllus	+	0.2
Eragrostis eriopoda	4	0.4
Eremophila glabra subsp. glabra	1	1.8
Eriachne aristidea	+	0.2
Eucalyptus gamophylla	+	3-4
Euphorbia australis var. erythrantha	+	0.1
Goodenia triodiophila	+	1.2
Hakea lorea subsp. lorea	+	0.5
Hakea lorea subsp. lorea	1	4
Maireana villosa	+	0.3
Monachather paradoxus	+	0.4
Paraneurachne muelleri	+	0.3
Petalostylis cassioides	+	1
Portulaca intraterranea	+	0.05
Ptilotus obovatus	+	0.5
Ptilotus polystachyus	+	0.5
Ptilotus sessilifolius	+	0.3
Rhagodia eremaea	+	1.1
Roepera eremaea	+	0.3
Santalum lanceolatum		1
Scaevola parvifolia subsp. parvifolia	+	0.3
Scaevola spinescens	Out	1
Sclerolaena convexula	+	0.3
Sclerolaena cornishiana	+	0.3
Sclerolaena parviflora	+	0.3
Senna artemisioides subsp. x artemisioides	+	2
Senna artemisioides subsp. x artemisioides	1	1.3
Senna pleurocarpa var. pleurocarpa	+	1
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.3
Solanum centrale	+	0.2
Solanum lasiophyllum	+	0.5
Tribulus terrestris	+	0.05
Triodia basedowii	+	1
Triodia pungens	15	1

Triodia scariosa

+

1



Cassini Resources - Babel and Nebo 2018 Site WAQ01A

Type Quadrat 20 x 20

Location

MGA Zone 52 347692 mE 7122596 mN 127.478117 E -26.007432 S

Habitat SMS

SPECIES LIST:

Name	Cover	Height
Acacia aneura x ayersiana	Out	3
Acacia cuthbertsonii subsp. cuthbertsonii	Out	3
Acacia incurvaneura	+	0.3
Acacia incurvaneura	6	3-4
Acacia incurvaneura	1	0.6-1.7
Acacia minyura	Out	1.8
Acacia pruinocarpa	Out	6
Aristida contorta	+	0.15
Eragrostis eriopoda	8	0.3
Eremophila latrobei subsp. glabra	+	0.5
Eremophila serrulata	3	0.6-1.8
Eremophila serrulata	6	0.5
Eriachne mucronata desert form	1	0.2
Hakea lorea subsp. lorea	+	3
Hakea lorea subsp. lorea	+	0.3
Hibiscus burtonii	+	0.2
Maireana villosa	0.5	0.3
Monachather paradoxus	+	0.2
Ptilotus obovatus	+	0.4
Rhagodia eremaea	Out	1
Rhynchosperma linearis	+	1.8
Sida sp. L (A.M. Ashby 4202)	+	0.2
Solanum lasiophyllum	+	0.1
Teucrium teucriiflorum	+	0.4
Triodia basedowii	1	0.4



Cassini Resources - Babel and Nebo 2018 Site WAQ02A

Type Quadrat 20 x 20

Location

MGA Zone 52 347776 **mE** 7122804 **mN** 127.478980 **E** -26.005564 **S**

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Abutilon otocarpum	+	0.2
Acacia aptaneura	1	3
Acacia ayersiana (narrow phyllode form)	9	6-8
Acacia ayersiana (narrow phyllode form)	+	1.2
Acacia incurvaneura	+	1.6
Acacia tetragonophylla	1	1.8
Amaranthus centralis	+	0.2
Aristida contorta	8	0.2
Boerhavia repleta	+	0.1
Cenchrus ciliaris	+	0.5
Chrysocephalum pterochaetum	1	0.3
Cleome viscosa	3	0.5
Cymbopogon ambiguus	+	0.6
Dactyloctenium radulans	+	0.05
Digitaria brownii	1	0.4
Einadia nutans subsp. eremaea	+	0.3
Enneapogon polyphyllus	8	0.2
Eragrostis laniflora	Out	0.4
Eremophila latrobei subsp. glabra	Out	1.3
Eremophila longifolia	Out	2.5
Eriachne helmsii	Out	0.4
Euphorbia australis var. erythrantha	+	0.1
Evolvulus alsinoides var. villosicalyx	+	0.1
Hakea lorea subsp. lorea	Out	0.3-0.6
Heliotropium cunninghamii	2	0.2
Panicum decompositum	+	0.3
Portulaca intraterranea	+	0.1
Ptilotus obovatus	2	0.5
Rhagodia eremaea	0.25	1.3
Rhagodia eremaea	+	0.5
Salsola australis	+	0.1
Scaevola amblyanthera var. centralis	+	0.1
Sclerolaena cornishiana	+	0.3
Senna artemisioides subsp. petiolaris	Out	1.5
Senna artemisioides subsp. x artemisioides	0.25	1.6
Senna sp. Billabong (J.D. Alonzo 721)	+	0.2
Sida sp. L (A.M. Ashby 4202)	Out	0.2
Solanum centrale	+	0.25
Solanum lasiophyllum	+	0.5
Teucrium teucriiflorum	+	0.5
Tribulus astrocarpus	+	0.05
Tribulus terrestris	+	0.1
Tripogonella loliformis	+	0.05



Cassini Resources - Babel and Nebo 2018 Site WAQ03A**Type Quadrat 20 x 20****Location****MGA Zone 52 348377 mE 7121997 mN 127.484890 E -26.012911 S****Habitat AkS****SPECIES LIST:**

Name	Cover	Height
Abutilon cryptopetalum	1	0.4
Abutilon otocarpum	+	0.3
Acacia ayersiana (narrow phyllode form)	+	5
Acacia kempeana	1	1.5
Acacia kempeana	20	3-4
Acacia tetragonophylla	+	1.1
Acacia tetragonophylla	+	0.5
Amaranthus centralis	+	0.2
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.3
Boerhavia repleta	1	0.1
Cenchrus ciliaris	+	0.7
Chrysocephalum pterochaetum	+	0.4
Cleome viscosa	+	0.4
Cymbopogon ambiguus	+	0.7
Digitaria brownii	+	0.4
Dysphania melanocarpa forma leucocarpa	+	0.2
Enchytraea tomentosa var. tomentosa	+	0.1
Enneapogon polyphyllus	4	0.1
Enneapogon polyphyllus	+	0.2
Eragrostis laniflora	+	0.4
Eremopeha spinosa	+	0.1
Eremophila longifolia	+	2.5
Eremophila serrulata	+	0.6
Eremophila serrulata	4	1.5-2
Eriachne pulchella subsp. dominii	+	0.1
Eriachne pulchella subsp. dominii	+	
Euphorbia australis var. erythrantha	+	0.05
Evolvulus alsinoides var. villosicalyx	+	0.05
Heliotropium cunninghamii	+	0.1
Hibiscus burtonii	+	0.5
Maireana villosa	+	0.2
Panicum decompositum	+	0.3
Paraneurache muelleri	+	0.2
Paspalidium basicladum	+	0.2
Portulaca intraterranea	+	0.05
Ptilotus helipteroides	1	0.1
Ptilotus obovatus	1	0.5
Ptilotus polystachyus	+	0.3
Rhagodia eremaea	+	0.5
Rhagodia eremaea	1.5	1.5
Salsola australis	+	0.1-0.4
Sclerolaena convexula	+	0.2
Senna artemisioides subsp. x artemisioides	3	1.8
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.2
Sida sp. L (A.M. Ashby 4202)	+	0.2
Solanum cleistogamum	+	0.2
Solanum lasiophyllum	+	0.4
Tribulus astrocarpus	+	0.05
Tribulus terrestris	+	0.05
Tripogonella loliformis	+	0.1
Triraphis mollis	+	0.3



Cassini Resources - Babel and Nebo 2018 Site WAQ04A

Type Quadrat 20 x 20

Location

MGA Zone 52 349169 mE 7122036 mN 127.492807 E -26.012642 S

Habitat COG

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	Out	0.5
Acacia ayersiana (narrow phyllode form)	Out	5
Acacia kempeana	Out	0.8
Acacia kempeana	1	3
Acacia tetragonophylla	Out	2.5
Acacia victoriae subsp. victoriae	Out	2.5
Aristida contorta	+	0.2
Boerhavia repleta	+	0.2
Brassica tournefortii	Out	0.6
Cenchrus ciliaris	Out	0.5
Convolvulus clementii	Out	0.1
Dichanthium sericeum subsp. sericeum	Out	0.7
Dysphania melanocarpa forma leucocarpa	+	0.2
Enchytraea tomentosa var. tomentosa	Out	0.1
Enneapogon polyphyllus	10	0.2
Enneapogon polyphyllus	35	0.3
Eremopeha spinosa	1	0.2
Euphorbia australis var. erythrantha	Out	0.05
Euphorbia tannensis subsp. eremophila	Out	0.2
Malvastrum americanum	Out	0.4
Panicum decompositum	+	0.2
Portulaca intraterranea	+	0.1
Ptilotus obovatus	Out	0.5
Rhagodia eremaea	Out	0.1
Salsola australis	+	0.2
Sclerolaena convexula	+	0.1
Sclerolaena cornishiana	+	0.3
Sclerolaena patenticuspis	4	0.15
Senna artemisioides subsp. petiolaris (narrow petiole form)	Out	1
Sida sp. Excedentifolia (J.L. Egan 1925)	Out	0.2
Solanum centrale	Out	0.3
Solanum cleistogamum	Out	0.2
Solanum lasiophyllum	Out	0.6
Tribulus terrestris	Out	0.2
Tripogonella loliformis	Out	0.1



Cassini Resources - Babel and Nebo 2018 Site WAQ05A**Type** Quadrat 20 x 20**Location****MGA Zone** 52 349294 **mE** 7121160 **mN** 127.493955 **E** -26.020562 **S****Habitat** SS**SPECIES LIST:**

Name	Cover	Height
Acacia aptaneura	Out	5
Acacia incurvaneura	Out	4
Acacia pruinocarpa	1	5-6
Acacia tetragonophylla	Out	1
Amaranthus centralis	+	0.3
Aristida contorta	8	0.3
Aristida holathera var. holathera	+	0.3
Boerhavia repleta	+	0.2
Cenchrus ciliaris	+	0.5
Chrysocephalum pterochaetum	2	0.3
Cleome viscosa	+	0.4
Convolvulus clementii		0.2
Cymbopogon ambiguus	+	0.5
Digitaria brownii	+	0.4
Einadia nutans subsp. eremaea	+	0.6
Enneapogon polyphyllus	+	0.4
Enneapogon polyphyllus		0.3
Eragrostis laniflora	1	0.3
Eremophila latrobei subsp. glabra	+	0.5
Eulalia aurea	Out	0.3
Euphorbia australis var. erythrantha	+	0.1
Evolvulus alsinoides var. villosicalyx	+	0.05
Heliotropium cunninghamii	+	0.2
Hibiscus burtonii	+	1
Indigofera linnaei	+	0.1
Maireana villosa	+	0.1
Panicum decompositum	+	0.4
Paraneurachne muelleri	Out	0.4
Ptilotus obovatus	+	0.2
Salsola australis	+	0.2
Scaevola amblyanthera var. centralis	Out	0.1
Sclerolaena convexula	+	0.2
Senna artemisioides subsp. helmsii	Out	1
Senna artemisioides subsp. petiolaris (narrow petiole form)	Out	1
Senna sp. Billabong (J.D. Alonzo 721)	20	1-2
Sida calyxhymenia	+	1.2
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.2
Solanum lasiophyllum	+	0.4
Tephrosia sp. deserts (J.R. Maconochie 1403)	+	0.2
Tribulus astrocarpus	+	0.05



Cassini Resources - Babel and Nebo 2018 Site WAQ06A

Type Quadrat 20 x 20

Location

MGA Zone 52 349454 **mE** 7120952 **mN** 127.495529 **E** -26.022457 **S**

Habitat AcS

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	2	0.5
Abutilon otocarpum	+	0.3
Acacia aptaneura	Out	3
Acacia ayersiana (narrow phyllode form)	1	6-7
Acacia cuthbertsonii subsp. cuthbertsonii	12	3
Acacia cuthbertsonii subsp. cuthbertsonii	+	
Acacia kempeana	Out	1
Amaranthus centralis	+	0.2
Aristida contorta	8-10	0.2
Aristida holathera var. holathera	Out	0.4
Aristida inaequiglumis	+	1
Boerhavia repleta	+	0.2
Cenchrus ciliaris	Out	0.4
Citrullus colocynthis	Out	1
Cleome viscosa	+	0.4
Cymbopogon ambiguus	+	0.6
Dactyloctenium radulans	+	0.1
Digitaria brownii	+	0.4
Enneapogon polyphyllus	1	0.2
Eragrostis laniflora	Out	0.4
Eremophila latrobei subsp. glabra	Out	0.6-1.5
Eremophila latrobei subsp. glabra	+	0.3
Eremophila latrobei subsp. glabra	2	3
Eriachne pulchella subsp. dominii	+	0.1
Euphorbia tannensis subsp. eremophila	Out	0.2
Evolvulus alsinoides var. villosicalyx	1	0.1
Fimbristylis dichotoma	Out	0.3
Heliotropium cunninghamii	+	0.2
Hibiscus burtonii	+	0.8
Indigofera warburtonensis	2	0.6-0.8
Indigofera warburtonensis	1.5	0.4-0.4
Maireana planifolia	+	1
Monachather paradoxus	+	0.3
Paspalidium basicladum	+	0.3
Portulaca intraterranea	+	0.05
Ptilotus helipteroides	+	0.2
Ptilotus obovatus	+	0.5
Salsola australis	+	0.4
Scaevola parvifolia subsp. parvifolia	+	0.2
Sclerolaena cornishiana	Out	0.3
Senna artemisioides subsp. helmsii	3	0.8-1.8
Setaria reflexa	1	0.3
Sida calyxhymenia	+	0.3
Solanum lasiophyllum	+	0.4
Tribulus astrocarpus	+	0.05
Tripogonella loliformis	+	0.1



Cassini Resources - Babel and Nebo 2018 Site WAQ07A**Type Quadrat 20 x 20****Location****MGA Zone 52 349670 mE 7120148 mN 127.497595 E -26.029736 S****Habitat AcS****SPECIES LIST:**

Name	Cover	Height
Abutilon cryptopetalum	+	0.4
Acacia ayersiana (narrow phyllode form)	2 (Out)	5
Acacia cuthbertsonii subsp. cuthbertsonii	15	3-4
Acacia cuthbertsonii subsp. cuthbertsonii	+	0.3
Acacia cuthbertsonii subsp. cuthbertsonii	+	0.4
Acacia kempeana	Out	3
Acacia pruinocarpa	Out	5
Acacia tetragonophylla	Out	3
Amphipogon caricinus var. caricinus	Out	0.3
Aristida contorta	5	0.1
Boerhavia repleta	+	0.2
Cenchrus ciliaris	1	0.4
Cleome viscosa	+	0.5
Dactyloctenium radulans	+	0.05
Dactyloctenium radulans	Out	0.05
Digitaria brownii	2	0.4
Dysphania melanocarpa forma leucocarpa	+	0.1
Einadia nutans subsp. eremaea	Out	0.4
Enchytraea tomentosa var. tomentosa	+	0.3
Enneapogon polyphyllus	8	0.2
Eragrostis laniflora	+	0.4
Eremophila latrobei subsp. glabra	+	0.4
Eremophila latrobei subsp. glabra	1	1-2
Eriachne mucronata desert form	Out	0.3
Euphorbia australis var. erythrantha	+	0.1
Euphorbia tannensis subsp. eremophila	+	0.2
Evolvulus alsinoides var. villosicalyx	+	0.1
Heliotropium cunninghamii	+	0.2
Hibiscus burtonii	Out	0.3
Indigofera warburtonensis	2	0.8
Indigofera warburtonensis	3	0.5
Maireana planifolia	+	0.6
Maireana villosa	Out	0.2
Panicum decompositum	+	0.3
Ptilotus helipteroides	Out	0.1
Ptilotus obovatus	+	0.4
Rhagodia eremaea	Out	1
Rhynchosperma linearis	Out	1
Salsola australis	+	0.4
Sclerolaena convexula	+	0.2
Senna artemisioides subsp. helmsii	2	0.2
Senna artemisioides subsp. helmsii	1	0.4
Senna artemisioides subsp. x artemisioides	+	1.1
Setaria reflexa	1	0.3
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.3
Solanum lasiophyllum	+	0.4
Tribulus terrestris	Out	0.05
Tripogonella loliformis	Out	0.1



Cassini Resources - Babel and Nebo 2018 Site WAQ08A**Type** Quadrat 20 x 20**Location****MGA Zone** 52 349819 **mE** 7120153 **mN** 127.499084 **E** -26.029707 **S****Habitat** SS**SPECIES LIST:**

Name	Cover	Height
Abutilon cryptopetalum	+	0.3
Abutilon cryptopetalum	Out	0.4
Acacia ayersiana (narrow phyllode form)	Out	4-5
Acacia pruinocarpa	Out	6
Acacia tetragonophylla	Out	2.2
Amaranthus centralis	+	0.2
Amphipogon caricinus var. caricinus	Out	0.4
Aristida contorta	10	0.3
Aristida inaequiglumis	+	0.4
Boerhavia repleta	+	0.1
Brachyscome ciliaris	+	0.1
Cenchrus ciliaris	1	0.5
Chrysocephalum pterochaetum	Out	0.3
Cleome viscosa	+	0.6
Corymbia opaca	Out	6
Cymbopogon ambiguus	1	0.6
Dactyloctenium radulans	Out	0.05
Digitaria brownii	+	0.4
Einadia nutans subsp. eremaea	+	0.4
Enneapogon polypillus	+	0.3
Enneapogon polypillus	+	0.2
Eremophila longifolia	Out	1.2
Eulalia aurea	Out	0.6
Euphorbia australis var. erythrantha	+	0.1
Evolvulus alsinoides var. villosicalyx	+	0.1
Hakea lorea subsp. lorea	Out	3
Heliotropium cunninghamii	+	0.1
Heliotropium cunninghamii	+	0.1
Indigofera linnaei	+	0.1
Maireana villosa	+	0.1
Malvastrum americanum	Out	0.6
Panicum decompositum	+	0.4
Pterocaulon sphacelatum	Out	0.6
Ptilotus obovatus	1	0.5
Salsola australis	+	0.2
Scaevola amblyanthera var. centralis	+	0.1
Sclerolaena convexula	+	0.2
Senna artemisioides subsp. helmsii	1	1
Senna artemisioides subsp. helmsii	+	0.2
Senna sp. Billabong (J.D. Alonzo 721)	+	0.3
Senna sp. Billabong (J.D. Alonzo 721)	8-10	1-1.8
Setaria reflexa	+	0.2
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.2
Solanum lasiophyllum	Out	0.4
Tephrosia sp. Central (P.K. Latz 17037)	1	0.1
Tribulus terrestris	+	0.05



Cassini Resources - Babel and Nebo 2018 Site WAQ09A

Type Quadrat 20 x 20

Location

MGA Zone 52 350570 mE 7120456 mN 127.506622 E -26.027049 S

Habitat COG

SPECIES LIST:

Name	Cover	Height
Acacia kempeana	Out	4-5
Acacia tetragonophylla	Out	3
Acacia victoriae subsp. victoriae	Out	0.8
Amaranthus centralis	+	0.2
Aristida contorta	+	0.2
Boerhavia repleta	+	0.2
Brassica tournefortii	Out	0.5
Cucumis argenteus	Out	1
Enneapogon polyphyllus	35	0.2
Enneapogon polyphyllus	1	0.2
Eremopeha spinosa	Out	0.1
Euphorbia australis var. erythrantha	+	0.1
Malvastrum americanum	Out	0.5
Panicum decompositum	3	0.4
Ptilotus obovatus	+	0.3
Salsola australis	+	0.1
Sclerolaena convexula	Out	0.1
Sida sp. Excedentifolia (J.L. Egan 1925)	2	0.3
Solanum cleistogamum	+	0.2
Solanum lasiophyllum	Out	0.3
Tripogonella loliformis	Out	0.1



Cassini Resources - Babel and Nebo 2018 Site WAQ10A

Type Quadrat 20 x 20

Location

MGA Zone 52 352063 mE 7118839 mN 127.521356 E -26.041799 S

Habitat HPMWD

SPECIES LIST:

Name	Cover	Height
Abutilon otocarpum	Out	0.3
Acacia aptaneura	3-4	8
Acacia aptaneura	+	0.5-1
Amphipogon caricinus var. caricinus	Out	0.4
Aristida contorta	1	0.2
Aristida obscura	2	1
Boerhavia repleta	+	0.1
Chrysocephalum pterocheatum	+	0.2
Cleome viscosa	+	0.5
Cymbopogon ambiguus	1	0.6
Dactyloctenium radulans	+	0.1
Dichanthium sericeum subsp. sericeum	+	0.3
Digitaria brownii	1	0.6
Dysphania melanocarpa forma leucocarpa	+	0.2
Dysphania melanocarpa forma leucocarpa	+	0.3
Enneapogon polyphyllus	2	0.2
Eragrostis laniflora	1	0.3
Eremophila foliosissima	2	0.5
Eremophila latrobei subsp. glabra	Out	0.4
Eriachne helmsii	+	0.4
Eulalia aurea	1	0.6
Euphorbia australis var. erythrantha	+	0.1
Euphorbia drummondii	Out	0.1
Evolvulus alsinoides var. villosicalyx	+	0.1
Heliotropium cunninghamii	1	0.1
Hibiscus burtonii	+	0.5
Hibiscus sturtii var. grandiflorus	+	0.4
Maireana villosa	1	0.3
Monachather paradoxus	+	0.3
Paspalidium basicladum	+	0.2
Portulaca intraterranea	+	0.1
Ptilotus helipteroides	2	0.3
Ptilotus obovatus	1	0.5
Ptilotus polystachyus	+	0.5
Rhyncharrhena linearis	+	2
Salsola australis	+	0.3
Scaevola amblyanthera var. centralis	+	0.5
Sclerolaena convexula	+	0.2
Sclerolaena cornishiana	+	0.1
Senna artemisioides subsp. petiolaris	+	0.2
Senna artemisioides subsp. petiolaris (narrow petiole form)	Out	1
Senna pleurocarpa var. pleurocarpa	Out	0.3
Setaria reflexa	+	0.2
Solanum lasiophyllum	Out	0.4
Teucrium teucriiflorum	+	0.3
Tribulus astrocarpus	+	0.05
Yakirra australiensis var. australiensis	+	0.1



Cassini Resources - Babel and Nebo 2018 Site WAQ11A

Type Quadrat 20 x 20

Location

MGA Zone 52 353172 mE 7118309 mN 127.532378 E -26.046696 S

Habitat HPMWD

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	2	6
Acacia ayersiana (narrow phyllode form)	6	4-8
Acacia ayersiana (narrow phyllode form)	2	3
Acacia ayersiana (narrow phyllode form)	1	0.2-1
Acacia pachyacra	Out	2
Amphipogon caricinus var. caricinus	+	0.4
Androcalva loxophylla	Out	0.2
Aristida contorta	+	0.2
Aristida holathera var. holathera	+	0.3
Chrysocephalum pterochaetum	+	0.4
Cymbopogon ambiguus	1	1
Digitaria brownii	+	0.5
Enneapogon polyphyllus	+	0.1
Eragrostis laniflora	2	0.4
Eremophila foliosissima	8	0.5-1
Eremophila latrobei subsp. glabra	7	1-2
Eremophila latrobei subsp. glabra	1	3
Eremophila latrobei subsp. glabra	2	0.5-1
Eriachne helmsii	+	0.5
Eriachne mucronata desert form	Out	0.3
Eriachne pulchella subsp. dominii	+	0.05
Goodenia glabra	+	0.1
Goodenia peacockiana	+	0.1
Goodenia triodiophila	+	0.1
Hibiscus burtonii	Out	0.4
Maireana villosa	2	0.3
Monachather paradoxus	1	0.4
Panicum decompositum	+	0.5
Paraneurachne muelleri	+	0.4
Paspalidium basicladum	+	0.2
Psydrax suaveolens	+	2
Ptilotus obovatus	+	0.3
Ptilotus polystachyus	+	0.3
Salsola australis	+	0.3
Scaevola amblyanthera var. centralis	+	0.1
Sclerolaena convexula	+	0.1
Sclerolaena cornishiana	+	0.4
Senna artemisioides subsp. petiolaris (narrow petiole form)	+	0.9
Senna artemisioides subsp. x artemisioides	+	0.2-1.8
Solanum lasiophyllum	+	0.4
Solanum sturtianum	+	0.2
Teucrium teucriiflorum	+	1
Thyridolepis mitchelliana	+	0.2



Cassini Resources - Babel and Nebo 2018 Site WAQ12A

Type Quadrat 20 x 20

Location

MGA Zone 52 353986 mE 7117972 mN 127.540475 E -26.049821 S

Habitat AkS

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	+	0.4
Acacia ayersiana	+	2.5
Acacia kempeana	+	0.5
Acacia kempeana	6	2
Amphipogon caricinus var. caricinus	+	0.3
Androcalva loxophylla	Out	0.2
Aristida contorta	1	0.1
Aristida holathera var. holathera	+	0.5
Boerhavia repleta	+	0.1
Cenchrus ciliaris	Out	0.4
Chrysocephalum pterochaetum	+	0.2
Cymbopogon ambiguus	+	0.5
Digitaria brownii	+	0.4
Enchytraea tomentosa var. tomentosa	+	0.3
Enneapogon polyphyllus	+	0.2
Enneapogon polyphyllus	4	0.2
Eragrostis laniflora	Out	0.4
Eremophila longifolia	+	1.6
Eremophila serrulata	+	1
Eriachne pulchella subsp. dominii	+	0.1
Eulalia aurea	Out	0.4
Euphorbia australis var. erythrantha	Out	0.1
Hibiscus burtonii	+	0.4
Kennedia prorepens	Out	0.3
Paraneurachne muelleri	+	0.3
Paspalidium basicladum	+	0.4
Ptilotus obovatus	12	0.5
Ptilotus polystachyus	+	0.1
Ptilotus sessilifolius	+	0.2
Rhagodia eremaea	+	0.6
Rhyncharrena linearis	+	1.5
Salsola australis	+	0.4
Sclerolaena cornishiana	Out	0.2
Sclerolaena diacantha	+	0.15
Sclerolaena parviflora	Out	0.2
Senna artemisioides (TAT1)	10	1.8
Senna artemisioides (TAT1)	+	0.4
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.2
Solanum centrale	+	0.2
Teucrium teucriiflorum	+	0.5
Tribulus astrocarpus	+	0.05
Tribulus terrestris	+	0.1



Cassini Resources - Babel and Nebo 2018 Site WAQ13A

Type Quadrat 20 x 20

Location

MGA Zone 52 356432 mE 7115974 mN 127.564698 E -26.068102 S

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	Out	2
Acacia maitlandii	0.3	0.3
Acacia melleodora	0.2	0.2
Acacia pachyacra	+	1.2
Acacia walkeri	0.6	0.5
Amphipogon caricinus var. caricinus	0.3	0.3
Androcalva loxophylla	0.3	0.3
Bonamia erecta	0.3	0.3
Corymbia opaca	Out	4
Cymbopogon ambiguus	0.5	0.3
Dicrastylis exsuccosa	0.3	0.3
Eremophila forrestii subsp. forrestii	0.6	0.6
Goodenia mueckeana	0.1	0.1
Goodenia triodiophila	0.3	0.3
Grevillea eriostachya	1	1
Hakea lorea subsp. lorea	Out	3
Kennedia prorepens	0.4	0.4
Leptosema chambersii	0.4	0.4
Petalostylis cassioides	0.4	0.1
Ptilotus obovatus	0.2	0.2
Triodia basedowii	0.8	0.8
Triodia schinzii	1	1



Cassini Resources - Babel and Nebo 2018 Site WAQ14A

Type Quadrat 20 x 20

Location

MGA Zone 52 358490 **mE** 7114770 **mN** 127.585137 **E** -26.079173 **S**

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	Out	1.8
Acacia maitlandii	+	1
Acacia maitlandii	5	0.4
Acacia melleodora	Out	1
Acacia pachyacra	Out	1
Acacia sericophylla	+	0.3
Acacia walkeri	+	1
Amphipogon caricina var. caricina	Out	0.2
Amphipogon caricina var. caricina	+	0.3
Androcalva loxophylla	3	0.4
Bonamia erecta	+	0.2
Calytrix carinata	+	0.4
Chrysocephalum pterochaetum	+	0.3
Dicrastylis exsuccosa	Out	0.3
Eremophila platythamnos subsp. exotrichys	+	0.2
Eriachne helmsii	Out	0.5
Goodenia mueckeana	+	0.1
Goodenia triodiophila	+	0.3
Grevillea eriostachya	1	1.2
Hakea lorea subsp. lorea	Out	5-6
Kennedia prorepens	Out	0.2
Leptosema chambersii	1	0.3
Petalostylis cassioides	+	0.4
Prostanthera wilkieana	Out	0.3
Scaevola parvifolia subsp. parvifolia	Out	0.1
Triodia basedowii	10	0.8
Triodia schinzii	25	1.2



Cassini Resources - Babel and Nebo 2018 Site WAQ15A

Type Quadrat 20 x 20

Location

MGA Zone 52 359411 mE 7114029 mN 127.594264 E -26.085952 S

Habitat LMW/SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	1	1.2
Acacia maitlandii	+	1
Acacia melleodora	Out	1
Acacia pachyacra	Out	3
Acacia walkeri	Out	2
Alyogyne pinoniana	+	0.7
Androcalva loxophylla	+	0.3
Aristida holathera var. holathera	+	0.4
Bonamia erecta	+	0.3
Brachychiton gregorii	Out	6
Eragrostis laniflora	+	0.4
Eremophila glabra subsp. glabra	+	1
Eremophila longifolia	Out	2.5
Eremophila platythamnos subsp. exotrichys	+	0.5
Eucalyptus oxymitra	12	3-4
Exocarpos sparteus	Out	2.5
Grevillea eriostachya	Out	0.3
Hakea lorea subsp. lorea	Out	4
Halgania erecta	+	0.2
Haloragis uncatipila	+	0.2
Paraneurachne muelleri	+	0.4
Paspalidium reflexum	Out	0.4
Senna artemisioides subsp. petiolaris (narrow petiole form)	+	1
Senna pleurocarpa var. pleurocarpa	Out	0.4
Triodia basedowii	15	0.7
Triodia schinzii	12	1.2



Cassini Resources - Babel and Nebo 2018 Site WAQ16A

Type Quadrat 20 x 20

Location

MGA Zone 52 359785 mE 7113285 mN 127.597922 E -26.092705 S

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	Out	2.5
Acacia pachycra	+	2
Acacia pruinocarpa	Out	1.1
Acacia sericophylla	Out	3
Acacia walkeri	8	2.3
Alyogyne pinoniana	+	0.9
Amphipogon caricinus var. caricinus	+	0.1
Androcalva loxophylla	1	0.5
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.5
Bonamia erecta	+	0.3
Brachychiton gregorii	Out	1.1
Dicrastylis exsuccosa	+	0.3
Eremophila longifolia	Out	2
Eucalyptus oxymitra	Out	2
Goodenia triodiophila	+	0.3
Hakea lorea subsp. lorea	Out	3
Kennedia prorepens	+	0.3
Leptosema chambersii	1	0.3
Petalostylis cassioides	+	0.3
Solanum centrale	Out	0.4
Triodia basedowii	10	0.8
Triodia schinzii	50	1.5



Cassini Resources - Babel and Nebo 2018 Site WAQ17A

Type Quadrat 20 x 20

Location

MGA Zone 52 361610 **mE** 7112692 **mN** 127.616104 **E** -26.098234 **S**

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia melleodora	5	2
Acacia melleodora	+	0.2
Aluta maisonneuvei subsp. maisonneuvei	1	1.5
Androcalva loxophylla	1	0.4
Aristida contorta	+	0.1
Aristida holathera var. holathera	4	0.4
Brachyscome ciliaris	+	0.1
Chrysocephalum apiculatum subsp. glandulosum	Out	0.3
Corynotheca micrantha var. divaricata	Out	0.4
Crotalaria cunninghamii	+	0.6
Cymbopogon ambiguus	+	0.5
Dicrastylis doranii	Out	0.6
Dodonaea viscosa subsp. angustissima	2	2
Einadia nutans subsp. eremaea	+	0.2
Eragrostis eriopoda	+	0.3
Eriachne aristidea	1	0.3
Euphorbia drummondii	+	0.05
Grevillea stenobotrya	5	4-5
Grevillea stenobotrya	+	15
Paractaenum refractum	+	0.2
Ptilotus polystachyus	Out	0.3
Rutidosis helichrysoides	Out	0.4
Senna artemisioides subsp. petiolaris (narrow petiole form)	+	1.2
Senna pleurocarpa var. pleurocarpa	+	0.5
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	1	0.6
Sida spodochroma	+	0.3
Swainsona microphylla	Out	0.3
Tridia basedowii	4	0.8
Triodia schinzii	12	1.6



Cassini Resources - Babel and Nebo 2018 Site WAQ18A

Type Quadrat 20 x 20

Location

MGA Zone 52 361679 **mE** 7112506 **mN** 127.616774 **E** -26.099919 **S**

Habitat LMW

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	Out	0.3
Acacia ligulata	+	0.4
Acacia melleodora	+	1.2
Acacia pruinocarpa	Out	2
Acacia sericophylla	Out	6
Acacia walkeri	5	2.3
Amphipogon caricinus var. caricinus	+	0.4
Aristida contorta	+	0.1
Aristida holathera var. holathera	2	0.3
Dicrastylis exsuccosa	Out	0.4
Einadia nutans subsp. eremaea	+	0.2
Eremophila longifolia	3	2
Eucalyptus oxymitra	12	3.4
Hakea lorea subsp. lorea	Out	3-4
Maireana villosa	Out	0.2
Paraneurachne muelleri	1	0.4
Paspalidium reflexum	+	0.3
Ptilotus obovatus	1	0.6
Sida sp. Excedentifolia (J.L. Egan 1925)	Out	0.2
Sida spodochroma	1	
Solanum centrale	Out	0.4
Solanum lasiophyllum	+	0.4
Teucrium teucriiflorum	+	0.3
Tridia basedowii	12	0.8
Tridia schinzii	3	1.2



Cassini Resources - Babel and Nebo 2018 Site WAQ19A

Type Quadrat 20 x 20

Location

MGA Zone 52 363382 **mE** 7111637 **mN** 127.633709 **E** -26.107926 **S**

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia bivenosa	1	0.5-1.8
Acacia ligulata	1	1.5
Acacia melleodora	Out	2
Aluta maisonneuvei subsp. maisonneuvei	0.5	1
Alyogyne pinoniana	Out	0.5
Amphipogon caricinus var. caricinus	Out	0.4
Androcalva loxophylla	Out	0.3
Aristida contorta		
Aristida holathera var. holathera	3	0.4
Cenchrus ciliaris	+	0.3
Chrysocephalum apiculatum subsp. glandulosum	+	0.2
Corynotheca micrantha var. divaricata	Out	0.4
Crotalaria cunninghamii	Out	0.3
Cymbopogon ambiguus	Out	0.4
Dicrastylis doranii	Out	0.4
Dodonaea viscosa subsp. angustissima	3	2
Dodonaea viscosa subsp. angustissima	1	1-2
Enchytraea tomentosa var. tomentosa	+	0.3
Enneapogon polyphyllus	+	0.15
Eragrostis eriopoda	2	0.4
Eremophila willsii subsp. integrifolia	1	1-2
Eriachne aristidea	+	0.3
Grevillea stenobotrya	5	2-3
Paractaenum refractum	+	0.3
Ptilotus polystachyus	+	0.2
Rutidosis helichrysoides	+	0.3
Salsola australis	Out	0.4
Scaevola parvifolia subsp. parvifolia	+	0.2
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	+	0.3
Sida spodochroma	1	0.3
Solanum centrale	1	0.3
Solanum lasiophyllum	+	0.3
Triodia basedowii	1	0.8
Triodia schinzii	3	1.2



Cassini Resources - Babel and Nebo 2018 Site WAQ20A

Type Quadrat 20 x 20

Location

MGA Zone 52 363819 mE 7111832 mN 127.638099 E -26.106207 S

Habitat SMS

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	2	3
Acacia ayersiana	1	4
Acacia ayersiana	+	1
Aristida contorta	+	0.2
Convolvulus clementii	+	0.1
Cymbopogon ambiguus	+	0.6
Digitaria brownii	+	0.4
Enchytraea tomentosa var. tomentosa	+	0.3
Enneapogon polyphyllus	+	0.2
Eragrostis eriopoda	1	0.3
Eremophila hughesii subsp. hughesii	1	0.1
Eremophila latrobei subsp. glabra	Out	1.5
Eriachne mucronata desert form	20	0.3
Goodenia vilmoriniae	+	0.3
Hakea lorea subsp. lorea	+	0.5
Hakea lorea subsp. lorea	Out	3
Heliotropium cunninghamii	+	0.1
Hibiscus burtonii	+	0.8
Hibiscus sturtii var. grandiflorus	+	0.2
Indigofera warburtonensis	Out	1
Maireana villosa	+	0.2
Monachather paradoxus	+	0.3
Psydrax latifolia	+	1
Ptilotus helipteroides	Out	0.1
Ptilotus obovatus	1	0.3
Rhyncharrhena linearis	Out	0.3
Salsola australis	+	0.3
Sclerolaena cornishiana	Out	0.2
Senna artemisioides (TAT1)	Out	1.5
Sida sp.	+	0.2
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.3
Sida sp. Excedentifolia (J.L. Egan 1925)	1	0.2
Solanum centrale	+	0.2
Solanum lasiophyllum	Out	0.3



Cassini Resources - Babel and Nebo 2018 Site WAQ21A

Type Quadrat 20 x 20

Location

MGA Zone 52 364362 mE 7111649 mN 127.643509 E -26.107911 S

Habitat GRMU

SPECIES LIST:

Name	Cover	Height
Abutilon macrum	8	0.5
Acacia aptaneura	Out	6-8
Acacia incurvaneura	50	6-8
Acacia ligulata	Out	2.5
Acacia pachyacra	Out	1.6
Acacia tetragonophylla	+	1
Aristida contorta	10	0.2
Aristida inaequiglumis	+	0.6
Boerhavia repleta	+	0.1
Cenchrus ciliaris	Out	0.4
Cleome viscosa	+	1
Cymbopogon ambiguus	+	0.6
Digitaria brownii	1	0.4
Dysphania melanocarpa forma leucocarpa	+	0.2
Einadia nutans subsp. eremaea	+	0.3
Enchytraea tomentosa var. tomentosa	+	0.3
Enneapogon polyphyllus	+	0.3
Enneapogon polyphyllus	+	0.2
Eremophila latrobei subsp. glabra	3	1.2-1.8
Eremophila longifolia	Out	2
Eriachne pulchella subsp. dominii	+	0.05
Euphorbia australis var. erythrantha	Out	0.1
Euphorbia biconvexa	+	0.2
Euphorbia drummondii	+	0.05
Evolvulus alsinoides var. villosicalyx	+	0.1
Hakea lorea subsp. lorea	Out	4
Maireana villosa	+	0.3
Nicotiana occidentalis subsp. obliqua	+	0.2
Panicum decompositum	+	0.4
Paspalidium basicladum	1	0.2
Portulaca intraterranea	Out	0.1
Ptilotus obovatus	1	0.5
Ptilotus polystachyus	+	0.2
Rutidosis helichrysoides	Out	0.3
Salsola australis	+	0.2
Sclerolaena convexula	+	0.2
Sclerolaena cornishiana	+	0.3
Senna artemisioides (TAT1)	1	0.5
Senna artemisioides (TAT1)	+	1
Sida calyxhymenia	1	1.6
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.2
Solanum centrale	1	0.5
Solanum cleistogamum	1	0.2
Teucrium teucriiflorum	1	1.5
Tragus australianus	+	0.1
Tribulus terrestris	+	0.1



Cassini Resources - Babel and Nebo 2018 Site WAQ22A

Type Quadrat 20 x 20

Location

MGA Zone 52 363175 mE 7112288 mN 127.631708 E -26.102030 S

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Abutilon otocarpum	+	0.05
Acacia aptaneura	+	0.3
Acacia aptaneura	2	8-10
Acacia aptaneura	1	1-3
Acacia ayersiana	8	8-10
Acacia ayersiana	+	0.4
Acacia ayersiana	2	1-3
Acacia maitlandii	Out	0.3
Acacia tetragonophylla	+	1.2
Amaranthus centralis	+	0.2
Aristida contorta	10	0.2
Boerhavia repleta	+	0.2
Brachyscome ciliaris	+	0.1
Cenchrus ciliaris	+	0.5
Chrysocephalum pterochaetum	Out	0.2
Cleome viscosa	+	0.4
Cymbopogon ambiguus	10	0.6
Dactyloctenium radulans	+	0.1
Digitaria brownii	8	0.4
Einadia nutans subsp. eremaea	+	0.3
Enneapogon polyphyllus	2	0.2
Enneapogon polyphyllus	1	0.2
Euphorbia tannensis subsp. eremophila	+	0.3
Evolvulus alsinoides var. villosicalyx	+	0.1
Hakea lorea subsp. lorea	Out	1-3
Hakea lorea subsp. lorea	3	8-10
Heliotropium cunninghamii	+	0.1
Hibiscus burtonii	Out	0.4
Maireana villosa	+	0.2
Paspalidium basicladum	+	0.2
Portulaca intraterranea	+	0.1
Ptilotus helipteroides	+	0.2
Rhyncharrhena linearis	+	0.4
Salsola australis	+	0.2
Sclerolaena convexula	+	0.1
Sclerolaena cornishiana	+	0.2
Sida sp. Excedentifolia (J.L. Egan 1925)	Out	0.2
Solanum cleistogamum	+	0.2
Solanum lasiophyllum	+	0.4
Tribulus astrocarpus		0.1
Tribulus terrestris		0.1
Tripogonella loliformis	+	0.1



Cassini Resources - Babel and Nebo 2018 Site WFQ36A

Type Quadrat 20 x 20

Location

MGA Zone 52 374481 mE 7110981 mN 127.744623 E -26.114857 S

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
<i>Acacia ligulata</i>	1	2
<i>Acacia sericophylla</i>	1-2	5-6
<i>Aluta maisonneuvei</i> subsp. <i>maisonneuvei</i>	1	1.5
<i>Alyogyne pinoniana</i>	Out	0.4
<i>Aristida holathera</i> var. <i>holathera</i>	8-10	0.5
<i>Chrysocephalum eremaeum</i>	Out	0.2
<i>Chrysocephalum pterochaetum</i>	+	0.3
<i>Corynotheca micrantha</i> var. <i>divaricata</i>	+	0.4
<i>Cymbopogon ambiguus</i>	+	0.4
<i>Dicrastylis doranii</i>	3	1
<i>Digitaria brownii</i>	+	0.2
<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	3-4	3
<i>Enchytraea tomentosa</i> var. <i>tomentosa</i>	+	0.5
<i>Eragrostis laniflora</i>	+	0.4
<i>Eremophila platythamnos</i> subsp. <i>exotrichys</i>	+	0.3
<i>Eremophila willsii</i> subsp. <i>integrifolia</i>	Out	0.6
<i>Eriachne aristidea</i>	1	0.3
<i>Eriachne helmsii</i>	+	0.2
<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	+	0.1
<i>Goodenia peacockiana</i>	+	0.05
<i>Grevillea stenobotrya</i>	3-4	3-4
<i>Gyrostemon ramulosus</i>	Out	2
<i>Hannahordia bissillii</i> subsp. <i>bissillii</i>	Out	1.2
<i>Paractaenum refractum</i>	+	0.3
<i>Ptilotus sessilifolius</i>	Out	0.1
<i>Salsola australis</i>	+	0.5
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	+	1.6
<i>Sida calyxhymenia</i>	+	0.2
<i>Sida cardiophylla</i>	+	0.5
<i>Solanum centrale</i>	+	0.1
<i>Tridia basedowii</i>	+	0.6
<i>Tridia schinzii</i>	2	1.5



Cassini Resources - Babel and Nebo 2018 Site WFQ37A
Type Quadrat 20 x 20
Location
MGA Zone 52 374591 mE 7110493 mN 127.745676 E -26.119272 S
Habitat MgAkS

SPECIES LIST:

Name	Cover	Height
Acacia kempeana	18-20	2.5
Acacia ligulata	+	1.4
Acacia tetragonophylla	Out	0.5
Aristida contorta	+	0.15
Corymbia opaca	Out	4
Cymbopogon ambiguus	+	0.5
Digitaria brownii	+	0.1
Enneapogon polyphyllus	+	0.05
Eriachne mucronata desert form	1	0.3
Eucalyptus intertexta	+	3
Euphorbia tannensis subsp. eremophila	Out	0.1
Hakea lorea subsp. lorea	Out	3
Melaleuca glomerata	2	3
Paraneurachne muelleri	+	0.2
Petalostylis cassioides	+	0.5
Ptilotus obovatus	+	0.1
Salsola australis	Out	0.2
Senna artemisioides subsp. x artemisioides	+	1.2
Sida sp. Excedentifolia (J.L. Egan 1925)	Out	0.2
Solanum cleistogamum	Out	0.15
Solanum lasiophyllum	Out	0.2
Tridia pungens	1	0.7
Tridia scariosa	10	0.5
Tripogonella loliformis	+	0.15



Cassini Resources - Babel and Nebo 2018 Site WFQ38A
Type Quadrat 20 x 20
Location
MGA Zone 52 375243 **mE** 7111232 **mN** 127.752266 **E** -26.112658 **S**
Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia kempeana	Out	0.4
Acacia ligulata	+	0.3
Acacia tetragonophylla	Out	0.5
Alyogyne pinoniana	3	0.4
Aristida contorta	+	0.1
Cymbopogon ambiguus	Out	0.2
Hakea lorea subsp. lorea	Out	4
Kennedia prorepens	+	0.2
Melaleuca eleuterostachya	+	0.3
Melaleuca eleuterostachya	1	0.5
Minuria leptophylla	+	0.2
Paraneurachne muelleri	+	0.3
Petalostylis cassioides	1	0.4
Ptilotus clementii	+	0.3
Ptilotus obovatus	+	0.3
Ptilotus sessilifolius	+	0.2
Rutidosis helichrysoides	+	0.2
Salsola australis	+	0.1
Scaevola amblyanthera var. centralis	+	0.2
Sclerolaena johnsonii	+	0.1
Senna artemisioides subsp. x artemisioides	+	0.1
Solanum centrale	Out	0.2
Solanum cleistogamum	Out	0.2
Solanum lasiophyllum	Out	0.2
Tribulus terrestris	+	0.1
Triodia scariosa	20	0.5



Cassini Resources - Babel and Nebo 2018 Site WFQ46A

Type Quadrat 20 x 20

Location

MGA Zone 52 381305 mE 7114484 mN 127.813180 E -26.083811 S

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	Out	2
Acacia maitlandii	Out	2
Acacia melleodora	Out	0.3
Aluta maisonneuvei subsp. maisonneuvei	+	0.4
Androcalva loxophylla	1	0.3
Aristida holathera var. holathera	+	0.3
Bonamia erecta	1	0.3
Eriachne helmsii	Out	0.4
Goodenia triodiophila	+	0.3
Grevillea eriostachya	2	1.5-2
Grevillea stenobotrya	Out	2
Hakea lorea subsp. lorea	Out	4-5
Halgania erecta	1	0.2
Haloragis uncatipila	+	0.3
Kennedia prorepens	1	0.3
Prostanthera wilkieana	1	0.3
Scaevola parvifolia subsp. parvifolia	+	0.2
Sclerolaena johnsonii	Out	0.3
Senna pleurocarpa var. pleurocarpa	Out	0.5
Solanum centrale	+	0.1
Triodia basedowii	Out	0.4
Triodia schinzii	40	1.5



Cassini Resources - Babel and Nebo 2018 Site WFQ47A

Type Quadrat 20 x 20

Location

MGA Zone 52 381766 mE 7115052 mN 127.817840 E -26.078721 S

Habitat AmmS

SPECIES LIST:

Name	Cover	Height
Acacia brachystachya	Out	4-5
Acacia melleodora	Out	2.5
Acacia pachyacra	Out	0.3
Aluta maisonneuvei subsp. maisonneuvei	20	1.5
Amphipogon caricinus var. caricinus	Out	0.2
Androcalva loxophylla	1	0.3
Aristida contorta	Out	0.1
Aristida holathera var. holathera	+	0.4
Bonamia erecta	Out	0.2
Eragrostis laniflora	Out	0.3
Eriachne helmsii	Out	0.5
Hakea lorea subsp. lorea	Out	4
Kennedia prorepens	Out	0.3
Monachather paradoxus	Out	0.2
Sclerolaena parviflora	Out	0.1
Solanum centrale	+	0.2
Triodia basedowii	Out	0.4
Triodia schinzii	5	1.2



Cassini Resources - Babel and Nebo 2018 Site WFQ48A

Type Quadrat 20 x 20

Location

MGA Zone 52 380088 **mE** 7114405 **mN** 127.801006 **E** -26.084424 **S**

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	Out	0.1
Acacia aneura	8	5-6
Acacia aneura x ayersiana	Out	4
Acacia aptaneura	Out	4
Acacia aptaneura	+	0.4
Acacia pteraneura	Out	4
Aristida contorta	+	0.3
Aristida holathera var. holathera	+	0.2
Boerhavia repleta	+	0.05
Cleome viscosa	+	0.1
Cymbopogon ambiguus	+	0.3
Digitaria brownii	1	0.4
Dysphania melanocarpa forma leucocarpa	+	0.1
Einadia nutans subsp. eremaea	+	0.3
Enchytraea tomentosa var. tomentosa	+	0.3
Enneapogon polypillus	1	0.3
Eragrostis eriopoda	5	0.4
Eriachne helmsii	1	0.4
Eriachne pulchella subsp. dominii	+	0.05
Euphorbia tannensis subsp. eremophila	+	0.2
Hakea lorea subsp. lorea	Out	6
Heliotropium cunninghamii	+	0.1
Maireana planifolia	+	0.4
Maireana villosa	+	0.8
Monachather paradoxus	3	0.4
Paspalidium basicladum	+	0.1
Portulaca intraterranea		
Ptilotus helipteroides	+	0.3
Ptilotus obovatus	+	0.4
Ptilotus polystachyus	+	0.2
Rhynchosperma linearis	+	2.5
Sclerolaena convexula		
Sclerolaena cornishiana	3	0.3
Solanum centrale	+	0.2
Solanum cleistogamum	+	0.1
Solanum lasiophyllum	+	0.4
Tribulus astrocarpus	+	0.05
Tripogonella loliformis	Out	0.05
Yakirra australiensis var. australiensis	+	0.1



Cassini Resources - Babel and Nebo 2018 Site WFQ49A

Type Quadrat 20 x 20

Location

MGA Zone 52 379853 mE 7114469 mN 127.798663 E -26.083826 S

Habitat HPMWD

SPECIES LIST:

Name	Cover	Height
Acacia aneura x ayersiana	Out	3
Acacia aptaneura	+	1.5
Acacia aptaneura	+	0.3
Acacia ligulata	Out	1.5
Acacia pteraneura	8	8
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.2
Boerhavia repleta	+	0.2
Cleome viscosa	+	0.3
Cleome viscosa	Out	0.6
Cymbopogon ambiguus	+	0.4
Digitaria brownii	1	0.5
Enneapogon polyphyllus	+	0.2
Eragrostis eriopoda	4-6	0.4
Eremophila foliosissima	5	0.5
Eremophila latrobei subsp. glabra	+	0.4
Eremophila latrobei subsp. glabra	2	2
Eremophila longifolia	Out	2
Eriachne helmsii	1	0.4
Euphorbia australis var. erythrantha	+	0.1
Euphorbia tannensis subsp. eremophila	+	0.3
Heliotropium cunninghamii	+	0.1
Heliotropium cunninghamii	+	0.1
Hibiscus burtonii	Out	0.3
Maireana villosa	4	0.4
Monachather paradoxus	3-5	0.4
Portulaca intraterranea	+	0.05
Ptilotus obovatus	2	0.7
Ptilotus polystachyus	+	0.3
Rhagodia eremaea	+	1.5
Rhyncharrhena linearis	Out	1.2
Salsola australis	+	0.1
Sclerolaena convexula	Out	0.1
Sclerolaena cornishiana	+	0.2
Solanum centrale	Out	0.2
Solanum cleistogamum	Out	0.1
Solanum lasiophyllum	Out	0.4
Tribulus astrocarpus	+	0.1
Triodia schinzii	Out	0.6
Yakirra australiensis var. australiensis	+	0.1



Cassini Resources - Babel and Nebo 2018 Site WFQ50A

Type Quadrat 20 x 20

Location

MGA Zone 52 380419 mE 7113250 mN 127.804209 E -26.094878 S

Habitat AbTsS

SPECIES LIST:

Name	Cover	Height
Acacia aneura	Out	4
Acacia brachystachya	15	3-4
Acacia brachystachya	+	1.5
Aluta maisonneuvei subsp. maisonneuvei	1	1
Amphipogon caricinus var. caricinus	Out	0.3
Androcalva loxophylla	Out	0.3
Aristida contorta	+	0.2
Aristida holathera var. holathera	+	0.3
Chrysocephalum pterochaetum	+	0.1
Digitaria brownii	+	0.2
Enneapogon caerulescens	+	0.3
Eragrostis eriopoda	+	0.3
Eremophila platythamnos subsp. exotrichys	Out	0.5
Eriachne helmsii	+	0.4
Goodenia triodiophila	+	0.3
Gyrostemon ramulosus	Out	4
Monachather paradoxus	+	0.3
Paraneurache muelleri	+	0.4
Paspalidium reflexum	Out	0.2
Sclerolaena cornishiana	+	0.2
Sclerolaena parviflora	+	0.3
Senna pleurocarpa var. pleurocarpa	+	0.5
Solanum centrale	Out	0.2
Triodia schinzii	20	1.2



Cassini Resources - Babel and Nebo 2018 Site WFQ51A

Type Quadrat 20 x 20

Location

MGA Zone 52 380027 mE 7112605 mN 127.800231 E -26.100669 S

Habitat AmmS

SPECIES LIST:

Name	Cover	Height
Acacia ayersiana	Out	5-6
Acacia kempeana	Out	4
Aluta maisonneuvei subsp. maisonneuvei	20	1.5
Amphipogon caricinus var. caricinus	+	0.2
Anthotroche pannosa	1	0.5
Aristida holathera var. holathera	+	0.4
Bonamia erecta	+	0.2
Grevillea stenobotrya	1	3
Lysiana murrayi	Out	-
Maireana villosa	Out	0.4
Scaevola parvifolia subsp. parvifolia	+	0.2
Sclerolaena parviflora	+	0.2
Triodia basedowii	+	0.8
Triodia schinzii	15	1.4



Cassini Resources - Babel and Nebo 2018 Site WFQ52A

Type Quadrat 20 x 20

Location

MGA Zone 52 380113 **mE** 7112506 **mN** 127.801082 **E** -26.101570 **S**

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	Out	2
Acacia ligulata	4	2-3
Aluta maisonneuvei subsp. maisonneuvei	2	1
Anthotroche pannosa	1	0.5
Aristida holathera var. holathera	3	0.4
Chrysocephalum eremaeum	+	0.3
Corynotheca micrantha var. divaricata	Out	0.3
Cymbopogon ambiguus	+	0.2
Dicrastylis doranii	Out	0.4
Dodonaea viscosa subsp. angustissima	1	2
Enchytraea tomentosa var. tomentosa	+	0.1
Eragrostis eriopoda	Out	0.3
Eremophila longifolia	Out	1
Eriachne aristidea	Out	0.2
Eriachne helmsii	2	0.5
Goodenia peacockiana	+	0.1
Grevillea stenobotrya	8	3-4
Gyrostemon ramulosus	Out	1.8
Paractaenum refractum	+	0.4
Paraneurachne muelleri	+	0.3
Paspalidium reflexum	+	0.3
Salsola australis	+	0.4
Scaevola parvifolia subsp. parvifolia	+	0.3
Senna artemisioides subsp. pteolaris X artemisioides subsp. filifolia	Out	1
Sida cardiophylla	1	0.6
Sida spodochroma	+	0.2
Solanum centrale	+	0.3
Trichodesma zeylanicum	Out	0.5
Triodia schinzii	8	1.2



Cassini Resources - Babel and Nebo 2018 Site WFQ53A

Type Quadrat 20 x 20

Location

MGA Zone 52 379729 **mE** 7112867 **mN** 127.797275 **E** -26.098279 **S**

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Acacia aneura	+	1
Acacia aneura x ayersiana	Out	4
Acacia aptaneura	5	1-2
Acacia aptaneura	6	6
Acacia aptaneura	+	0.2
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.2
Boerhavia repleta	+	0.1
Calotis hispidula		
Cleome viscosa	+	0.2
Cymbopogon ambiguus	+	0.6
Digitaria brownii	1	0.3
Dysphania melanocarpa forma leucocarpa	+	0.1
Enneapogon avenaceus	+	0.2
Enneapogon polyphyllus	+	0.1
Eragrostis eriopoda	5	0.5
Eremophila latrobei subsp. glabra	+	0.5
Eriachne helmsii	+	0.4
Euphorbia tannensis subsp. eremophila	+	0.2
Hakea lorea subsp. lorea	Out	4-5
Heliotropium cunninghamii	Out	0.2
Hibiscus burtonii	+	0.3
Maireana villosa	+	0.3
Monachather paradoxus	8	0.4
Ptilotus obovatus	3	0.5
Ptilotus polystachyus	+	0.1
Sclerolaena convexula		
Sclerolaena cornishiana	3	0.3
Sclerolaena parviflora	+	0.1
Solanum cleistogamum	+	0.2
Solanum lasiophyllum	Out	0.5
Tribulus astrocarpus	+	0.05
Tribulus terrestris	+	0.05
Tripogonella loliformis	+	0.1



Cassini Resources - Babel and Nebo 2018 Site WFQ54A

Type Quadrat 20 x 20

Location

MGA Zone 52 377763 **mE** 7112052 **mN** 127.777542 **E** -26.105471 **S**

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia aneura	Out	3
Acacia ligulata	1	1
Acacia melleodora	+	0.3
Acacia pachyacra	+	1
Aluta maisonneuvei subsp. maisonneuvei	+	0.3
Alyogyne pinoniana	1	0.8
Amphipogon caricinus var. caricinus	Out	0.4
Androcalva loxophylla	Out	0.2
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.3
Bonamia erecta	1	0.3
Dicrastylis exsuccosa	5	0.5
Enchytraea tomentosa var. tomentosa	Out	0.3
Enneapogon caerulescens	Out	0.2
Eragrostis eriopoda	+	0.3
Eremophila forrestii subsp. forrestii	Out	0.5
Eriachne helmsii	+	0.6
Goodenia triodiophila	+	0.3
Hakea lorea subsp. lorea	1	2.5
Kennedia prorepens	2	0.4
Newcastelia bracteosa	+	0.2
Paraneurachne muelleri	1	0.5
Scaevola parvifolia subsp. parvifolia	1	0.2
Sida cardiophylla	Out	0.4
Triodia basedowii	10	0.6
Triodia schinzii	5	1.2



Cassini Resources - Babel and Nebo 2018 Site WFQ55A**Type** Quadrat 20 x 20**Location****MGA Zone** 52 377395 **mE** 7110822 **mN** 127.773747 **E** -26.116544 **S****Habitat** AmmS**SPECIES LIST:**

Name	Cover	Height
Acacia melleodora	Out	1.1
Aluta maisonneuvei subsp. maisonneuvei	25-30	1.5
Amphipogon caricinus var. caricinus	Out	0.3
Androcalva loxophylla	2	0.4
Aristida holathera var. holathera	+	0.4
Bonamia erecta	Out	0.1
Cymbopogon ambiguus	+	0.5
Goodenia triodiophila	+	0.3
Hakea lorea subsp. lorea	Out	0.6
Prostanthera wilkieana	Out	0.3
Triodia basedowii	5	0.8
Triodia schinzii	5	1.2



Cassini Resources - Babel and Nebo 2018 Site WFQ56A

Type Quadrat 20 x 20

Location

MGA Zone 52 376210 mE 7110964 mN 127.761910 E -26.115160 S

Habitat MgAkS

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	+	0.3
Abutilon otocarpum	+	0.3
Acacia aneura	Out	1.5
Acacia kempeana	Out	2
Acacia ligulata	+	1.5
Acacia tetragonophylla	Out	1.2
Alyogyne pinoniana	Out	0.4
Amphipogon caricinus var. caricinus	+	0.3
Aristida contorta	Out	0.1
Aristida holathera var. holathera	+	0.3
Chrysocephalum eremaeum	+	0.2
Corymbia opaca	Out	8-10
Cymbopogon ambiguus	+	0.6
Digitaria brownii	+	0.4
Enneapogon polyphyllus	+	0.2
Eragrostis eriopoda	+	0.3
Eremophila glabra subsp. glabra	+	1.5
Eremophila longifolia	1	3
Eucalyptus intertexta	Out	4
Euphorbia tannensis subsp. eremophila	+	0.3
Goodenia triodiophila	+	0.2
Hakea lorea subsp. lorea	Out	4
Halgnania cyanea var. Allambi Stn (B.W. Strong 676)	+	0.1
Melaleuca glomerata	15	2-3
Monachather paradoxus	+	0.3
Paraneurachne muelleri	+	0.5
Paspalidium reflexum	+	0.3
Pittosporum angustifolium	+	1
Ptilotus obovatus	1	0.5
Rhyncharrhena linearis	+	2
Roepera eremaea	+	0.4
Salsola australis	+	0.3
Scaevola spinescens	Out	1
Senna artemisioides subsp. x artemisioides	Out	1.8
Senna pleurocarpa var. pleurocarpa	+	0.2
Solanum orbiculatum subsp. orbiculatum	+	0.6
Triodia basedowii	35	0.8
Triodia pungens	Out	0.6
Triodia scariosa	+	0.5
Tiraphis mollis	+	0.4



Cassini Resources - Babel and Nebo 2018 Site WFQ57A

Type Quadrat 20 x 20

Location

MGA Zone 52 375638 mE 7110514 mN 127.756148 E -26.119173 S

Habitat MgAkS

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	+	0.3
Abutilon otocarpum	+	0.1
Acacia kempeana	4	2
Aristida contorta	+	0.2
Aristida holathera var. holathera	+	0.3
Cenchrus ciliaris	Out	0.3
Chrysocephalum eremaeum	Out	0.3
Cymbopogon ambiguus	+	0.4
Digitaria brownii	+	0.3
Enchytraea tomentosa var. tomentosa	+	0.6
Enneapogon polyphyllus	+	0.2
Eremophila glabra subsp. glabra	+	1.3
Eremophila longifolia	+	1
Eremophila longifolia	+	2
Eucalyptus intertexta	Out	3-4
Euphorbia tannensis subsp. eremophila	+	0.5
Goodenia triodiophila	+	0.2
Hakea lorea subsp. lorea	Out	4
Maireana villosa	+	0.3
Melaleuca glomerata	8	2-3
Paraneurachne muelleri	+	0.4
Ptilotus obovatus	2	0.5
Ptilotus sessilifolius	+	0.3
Rhyncharrhena linearis	+	1.8
Roepera eremaea	+	0.4
Salsola australis	Out	0.2
Scaevola amblyanthera var. centralis	Out	0.2
Sclerolaena cornishiana	+	0.3
Senna pleurocarpa var. pleurocarpa	+	0.8
Sida calyxhymenia	+	1
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.2
Solanum centrale	Out	0.2
Solanum cleistogamum	+	0.1
Solanum lasiophyllum	+	0.3
Tridia pungens	1	0.6
Tridia scariosa	8	0.5
Tripogonella loliformis	Out	0.1



Cassini Resources - Babel and Nebo 2018 Site WFQ58A

Type Quadrat 20 x 20

Location

MGA Zone 52 375623 mE 7110847 mN 127.756029 E -26.116166 S

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	2	2-2.5
Aristida holathera var. holathera	+	0.3
Chrysocephalum eremaeum	+	0.3
Cymbopogon ambiguus	Out	0.3
Cymbopogon ambiguus	+	0.2
Enneapogon polyphyllus	+	0.1
Goodenia asteriscus	+	0.05
Hakea lorea subsp. lorea	1	1.5
Melaleuca eleuterostachya	1	1
Minuria leptophylla	+	0.05
Panicum decompositum	Out	0.2
Paraneurachne muelleri	1	0.3
Petalostylis cassioides	1	0.4
Ptilotus clementii	+	0.2
Ptilotus obovatus	+	0.3
Ptilotus sessilifolius		
Salsola australis	+	0.1
Scaevola amblyanthera var. centralis	+	0.2
Senna artemisioides subsp. x artemisioides	+	1.2
Tridia scariosa	40	0.8



Cassini Resources - Babel and Nebo 2018 Site WFQ59A

Type Quadrat 20 x 20

Location

MGA Zone 52 375490 mE 7111973 mN 127.754807 E -26.105990 S

Habitat LMW

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	1	1.5
Acacia pachyacra	+	1.5
Alyogyne pinoniana	+	0.8
Amphipogon caricinus var. caricinus	Out	0.2
Aristida holathera var. holathera	+	0.3
Bonamia erecta	Out	0.3
Chrysocephalum eremaeum	+	0.2
Cymbopogon ambiguus	+	0.1
Enneapogon polyphyllus	Out	0.1
Eragrostis eriopoda	+	0.3
Eragrostis eriopoda	+	0.1
Eremophila platythamnos subsp. exotrichys	+	0.3
Eucalyptus oxymitra	10	2-4
Exocarpos sparteus	Out	1
Goodenia triodiophila	+	0.3
Grevillea stenobotrya	Out	0.6
Hakea lorea subsp. lorea	+	1
Hannafordia bissillii subsp. bissillii	2	0.8
Kennedia prorepens	+	0.2
Monachather paradoxus	Out	0.3
Paraneurachne muelleri	+	0.4
Paspalidium reflexum	+	0.2
Petalostylis cassioides	+	0.3
Ptilotus clementii	Out	0.2
Ptilotus obovatus	Out	0.8
Ptilotus sessilifolius	+	0.2
Scaevola parvifolia subsp. parvifolia	+	0.2
Sclerolaena johnsonii	1	0.3
Senna artemisioides subsp. x artemisioides	Out	1.2
Solanum centrale	+	0.3
Triodia basedowii	9	1
Triodia scariosa	12	0.8
Triodia schinzii	Out	1



Cassini Resources - Babel and Nebo 2018 Site WFQ60A

Type Quadrat 20 x 20

Location

MGA Zone 52 375595 mE 7112890 mN 127.755945 E -26.097720 S

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	1	1.5
Acacia maitlandii	Out	0.4
Acacia pruinocarpa	Out	0.4
Alyogyne pinoniana	Out	0.4
Amphipogon caricinus var. caricinus	+	0.3
Androcalva loxophylla	Out	0.3
Chrysocephalum eremaeum	+	0.1
Eremophila platythamnos subsp. exotrichys	Out	0.5
Goodenia triodiophila	+	0.2
Hakea lorea subsp. lorea	+	1.3
Kennedia prorepens	Out	0.3
Melaleuca eleuterostachya	3	1.5
Paraneurachne muelleri	+	0.3
Petalostylis cassioides	1	0.4
Ptilotus clementii	+	0.2
Ptilotus obovatus	+	0.4
Ptilotus sessilifolius	+	0.2
Sclerolaena parviflora	+	0.4
Senna artemisioides subsp. filifolia	Out	0.5
Senna pleurocarpa var. pleurocarpa	Out	0.5
Triodia scariosa	35	0.8



Cassini Resources - Babel and Nebo 2018 Site WFQ61A

Type Quadrat 20 x 20

Location

MGA Zone 52 375760 mE 7113148 mN 127.757619 E -26.095405 S

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
<i>Acacia ligulata</i>	Out	2
<i>Acacia maitlandii</i>	1	2
<i>Acacia melleodora</i>	+	1.2
<i>Acacia pachyacra</i>	Out	0.8
<i>Acacia tetragonophylla</i>	Out	2
<i>Aluta maisonneuvei</i> subsp. <i>maisonneuvei</i>	Out	0.4
<i>Amphipogon caricinus</i> var. <i>caricinus</i>	Out	0.3
<i>Androcalva loxophylla</i>	3	0.1
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Bonamia erecta</i>	3	0.3
<i>Chrysocephalum eremaeum</i>	+	0.3
<i>Cymbopogon ambiguus</i>	Out	0.9
<i>Duboisia hopwoodii</i>	Out	1.5
<i>Eriachne helmsii</i>	Out	0.4
<i>Euphorbia drummondii</i>	Out	0.1
<i>Goodenia mueckeana</i>	+	0.3
<i>Goodenia triodiophila</i>	+	0.2
<i>Grevillea eriostachya</i>	2	2-2.5
<i>Hakea lorea</i> subsp. <i>loreia</i>	Out	4.5
<i>Halgnania erecta</i>	+	0.2
<i>Kennedia prorepens</i>	+	0.5
<i>Paraneurachne muelleri</i>	Out	0.3
<i>Paspalidium reflexum</i>	Out	0.2
<i>Petalostylis cassioides</i>	1	0.4
<i>Scaevola parvifolia</i> subsp. <i>parvifolia</i>	Out	0.1
<i>Solanum centrale</i>	Out	0.3
<i>Stackhousia megaloptera</i>	+	0.4
<i>Tridia schinzii</i>	45	1.6
<i>Waitzia acuminata</i> var. <i>acuminata</i>	Out	0.2



Cassini Resources - Babel and Nebo 2018 Site WFQ62A

Type Quadrat 20 x 20

Location

MGA Zone 52 373674 mE 7113000 mN 127.736749 E -26.096560 S

Habitat LMW

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	4	2
Acacia maitlandii	Out	1
Acacia pachyacra	+	0.5
Acacia pachyacra	Out	0.5
Acacia tetragonophylla	1	1.5
Alyogyne pinoniana	+	0.2
Androcalva loxophylla	1	0.3
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.3
Chrysocephalum eremaeum	+	0.2
Cymbopogon ambiguus	Out	0.6
Dicrastylis exsuccosa	Out	1
Enchytraea tomentosa var. tomentosa	Out	0.2
Eragrostis eriopoda	Out	0.2
Eremophila glabra subsp. glabra	+	0.6
Eremophila platythamnos subsp. exotrichys	+	0.7
Eriachne helmsii	+	0.5
Eucalyptus gamophylla	10-15	4-5
Eucalyptus gamophylla	+	1
Goodenia triodiophila	+	0.3
Grevillea eriostachya	Out	1.6
Grevillea juncifolia subsp. juncifolia	Out	4
Hakea lorea subsp. lorea	Out	4
Halgaenia cyanea var. Allambi Stn (B.W. Strong 676)	Out	0.1
Leptosema chambersii	+	0.3
Maireana villosa	+	0.3
Melaleuca eleuterostachya	Out	0.6
Paraneurachne muelleri	+	0.3
Paspalidium reflexum	+	0.3
Petalostylis cassioides	1	0.4
Ptilotus clementii	Out	0.2
Ptilotus obovatus	+	0.5
Ptilotus sessilifolius	+	0.2
Rhagodia eremaea	+	1
Scaevola parvifolia subsp. parvifolia	+	0.2
Sclerolaena convexula	+	0.2
Sclerolaena johnsonii	Out	0.1
Sclerolaena parviflora	Out	0.2
Solanum centrale	+	0.2
Tridia basedowii	18	1
Tridia scariosa	3	0.6
Tridia schinzii	+	1.2



Cassini Resources - Babel and Nebo 2018 Site WFQ63A

Type Quadrat 20 x 20

Location

MGA Zone 52 376634 mE 7113279 mN 127.766370 E -26.094298 S

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	Out	1.8
Acacia pachyacra	+	0.6
Acacia pachyacra	+	1.5
Acacia pruinocarpa	Out	1.5
Alyogyne pinoniana	+	0.3
Amphipogon caricinus var. caricinus	+	0.4
Androcalva loxophylla	1	0.4
Aristida holathera var. holathera	+	0.3
Bonamia erecta	Out	0.1
Chrysocephalum apiculatum subsp. glandulosum	Out	0.2
Cymbopogon ambiguus	+	0.2
Dicrastylis exsuccosa	+	0.5
Eragrostis eriopoda	+	0.3
Goodenia triodiophila	+	0.2
Grevillea eriostachya	Out	1.8
Hakea lorea subsp. lorea	Out	2
Halgnania erecta	2	0.2
Kennedia prorepens	1	0.3
Petalostylis cassioides	+	0.4
Ptilotus obovatus	Out	0.5
Ptilotus sessilifolius	+	0.1
Scaevola amblyanthera var. centralis	+	0.5
Senna artemisioides subsp. petiolaris X artemisioides subsp. x artemisioides	Out	0.6
Solanum centrale	+	0.3
Tridia basedowii	45-55	0.7
Tridia scariosa	Out	0.6
Tridia schinzii	2	1-1.2



Cassini Resources - Babel and Nebo 2018 Site WFQ64A

Type Quadrat 20 x 20

Location

MGA Zone 52 377320 mE 7112907 mN 127.773193 E -26.097715 S

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	1	2-5
Acacia sericophylla	+	1.2-5
Aluta maisonneuvei subsp. maisonneuvei	+	0.5
Anthotroche pannosa	1	0.5
Aristida holathera var. holathera	6	0.5
Dicrastylis doranii	Out	0.4
Dodonaea viscosa subsp. angustissima	4	2-3
Eragrostis eriopoda	Out	0.3
Eragrostis laniflora	+	0.3
Eremophila willsii subsp. integrifolia	Out	0.8
Eriachne aristidea	+	0.3
Grevillea stenobotrya	3	1.5-3
Paractaenum refractum	Out	0.3
Paraneurachne muelleri	Out	0.2
Salsola australis	+	0.4
Santalum lanceolatum	2	1.5
Scaevola parvifolia subsp. parvifolia	Out	0.2
Senna artemisioides subsp. filifolia	+	1
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.2
Sida spodochroma	+	0.1
Solanum centrale	Out	0.2
Swainsona microphylla	+	0.4
Triodia schinzii	2-3	1.1



Cassini Resources - Babel and Nebo 2018 Site WFQ65A

Type Quadrat 20 x 20

Location

MGA Zone 52 381012 **mE** 7113767 **mN** 127.810185 **E** -26.090260 **S**

Habitat AbTsS

SPECIES LIST:

Name	Cover	Height
Acacia aneura	Out	4
Acacia brachystachya	10	3-4
Acacia ligulata	1	2
Acacia pachyacra	Out	1.7
Acacia pteraneura	Out	4
Acacia tetragonophylla	+	2
Aluta maisonneuvei subsp. maisonneuvei	+	0.5
Androcalva loxophylla	1	0.3
Aristida contorta	+	0.2
Aristida holathera var. holathera	+	0.3
Boerhavia repleta	+	0.1
Bonamia erecta	Out	0.3
Cenchrus ciliaris	Out	0.4
Chrysocephalum eremaeum	+	0.2
Cymbopogon ambiguus	+	0.5
Digitaria brownii	+	0.4
Enchytraea tomentosa var. tomentosa	1	0.2
Enneapogon polyphyllus	+	0.2
Eragrostis laniflora	4	0.4
Eremophila longifolia	+	1-2
Eriachne helmsii	1	0.4
Euphorbia australis var. erythrantha	+	0.1
Euphorbia drummondii	+	0.01
Goodenia triodiophila	+	0.2
Hakea lorea subsp. lorea	+	0.5
Hakea lorea subsp. lorea	1	5
Kennedia prorepens	Out	0.1
Maireana villosa	+	0.1
Monachather paradoxus	+	0.3
Paraneurachne muelleri	+	0.4
Ptilotus obovatus	+	0.3
Salsola australis	+	0.5
Santalum lanceolatum	Out	0.3
Sclerolaena cornishiana	+	0.2
Sclerolaena johnsonii	+	0.2
Sclerolaena parviflora	+	0.2
Senna artemisioides subsp. filifolia	+	1.2
Senna artemisioides subsp. pteolaris X artemisioides subsp. filifolia	+	0.5
Solanum centrale	+	0.2
Solanum cleistogamum	+	0.1
Solanum lasiophyllum	Out	0.3
Triodia basedowii	Out	0.5
Triodia schinzii	12	1.1



Cassini Resources - Babel and Nebo 2018 Site WFQ93A

Type Quadrat 20 x 20

Location

MGA Zone 52 373811 mE 7109692 mN 127.737798 E -26.126435 S

Habitat LMW/CPHG

SPECIES LIST:

Name	Cover	Height
Acacia acanthoclada subsp. acanthoclada	+	0.5
Acacia ligulata	1	3
Alyogyne pinoniana	Out	1
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.4
Bonamia erecta	Out	0.2
Chrysocephalum eremaeum	+	0.4
Cymbopogon ambiguus	+	0.4
Eriachne mucronata desert form	1	0.4
Eucalyptus oxymitra	8	4
Goodenia asteriscus	+	0.1
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	1	0.3
Haloragis uncatipila	+	0.4
Hannafordia bissillii subsp. bissillii	+	0.5
Kennedia prorepens	+	0.3
Melaleuca eleuterostachya	Out	1.2
Minuria leptophylla	+	0.1
Paraneurachne muelleri	+	0.4
Paspalidium reflexum	+	0.2
Ptilotus clementii	+	0.4
Ptilotus obovatus	+	0.3
Roepera eremaea	+	0.1
Salsola australis	+	0.4
Scaevola amblyanthera var. centralis	+	0.3
Sclerolaena parviflora	+	0.2
Triodia scariosa	25	1



Cassini Resources - Babel and Nebo 2018 Site YAQ102A

Type Quadrat 20 x 20

Location

MGA Zone 52 378753 **mE** 7114767 **mN** 127.787694 **E** -26.081044 **S**

Habitat COG

SPECIES LIST:

Name	Cover	Height
Acacia pachyacra	Out	4
Alyogyne pinoniana	Out	0.4
Aristida contorta	+	0.2
Aristida holathera var. holathera	2	0.3
Boerhavia repleta	+	0.1
Cenchrus ciliaris	1	0.5
Cymbopogon ambiguus	+	0.5
Dodonaea viscosa subsp. angustissima	Out	1
Enchytraea tomentosa var. tomentosa	Out	0.2
Enneapogon avenaceus	5	0.2
Enneapogon polyphyllus	+	0.1
Hakea lorea subsp. lorea	+	0.4
Heliotropium cunninghamii	+	0.1
Maireana villosa	Out	0.3
Paraneurachne muelleri	+	0.4
Ptilotus helipteroides	+	0.1
Ptilotus obovatus	+	0.8
Ptilotus sessilifolius	+	0.2
Salsola australis	+	0.2
Sclerolaena convexula	Out	0.2
Sclerolaena cornishiana	+	0.1
Sclerolaena eriacantha	7	0.2
Sclerolaena parviflora	+	0.2
Sida sp. Excedentifolia (J.L. Egan 1925)	1	0.1
Solanum centrale	+	0.2
Solanum lasiophyllum	+	0.1
Triodia pungens	Out	0.8



Cassini Resources - Babel and Nebo 2018 Site YAQ103A

Type Quadrat 20 x 20

Location

MGA Zone 52 378881 **mE** 7114815 **mN** 127.788978 **E** -26.080622 **S**

Habitat CPP

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	+	1.5
Aristida contorta	1	0.1
Aristida holathera var. holathera	+	0.3
Atriplex elachophylla	+	0.2
Boerhavia repleta	+	0.1
Cenchrus ciliaris	+	0.5
Cleome viscosa	+	0.4
Cymbopogon ambiguus	+	0.5
Dactyloctenium radulans	1	0.1
Dysphania melanocarpa forma leucocarpa	+	0.05
Einadia nutans subsp. eremaea	Out	1
Enchytraea tomentosa var. tomentosa	+	0.1
Enneapogon avenaceus	1	0.2
Eragrostis setifolia	10	0.4
Eulalia aurea	2	0.5
Euphorbia drummondii	+	0.05
Marsilea hirsuta	+	0.1
Portulaca intraterranea	Out	0.05
Pterocaulon sphacelatum	+	0.3
Ptilotus obovatus	+	0.4
Salsola australis	+	0.1
Sclerolaena convexula	+	0.1
Sclerolaena cornishiana	1	0.4
Sclerolaena eriacantha	+	0.3
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.1
Solanum lasiophyllum	+	0.4
Trianthema triquetrum	+	0.1
Tripogonella loliformis	Out	0.05



Cassini Resources - Babel and Nebo 2018 Site YAQ104A

Type Quadrat 20 x 20

Location

MGA Zone 52 377942 mE 7114850 mN 127.779594 E -26.080227 S

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	1	3
Acacia maitlandii	Out	2
Aristida latifolia	4	0.4
Chrysocephalum eremaeum	+	0.3
Chrysocephalum puteale	1	0.4
Dodonaea viscosa subsp. angustissima	2	2
Eremophila longifolia	Out	1
Eremophila willsii subsp. integrifolia	Out	0.6
Eriachne helmsii	+	0.3
Goodenia peacockiana	+	0.1
Grevillea stenobotrya	3	3.5
Gyrostemon ramulosus	Out	3
Ptilotus obovatus	Out	0.4
Ptilotus sessilifolius	Out	0.3
Rhagodia eremaea	+	0.3
Salsola australis	1	0.3
Scaevola parvifolia subsp. parvifolia	+	0.3
Sclerolaena johnsonii	Out	0.3
Senna artemisioides subsp. filifolia	+	1.3
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	+	0.4
Sida spodochroma	+	0.3
Solanum centrale	1	0.3
Swainsona microphylla	Out	0.3
Triodia schinzii	5	1.2



Cassini Resources - Babel and Nebo 2018 Site YAQ105A

Type Quadrat 20 x 20

Location

MGA Zone 52 377558 mE 7114833 mN 127.775754 E -26.080348 S

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia maitlandii	+	1.3
Acacia melleodora	+	1.3
Amphipogon caricinus var. caricinus	+	0.2
Androcalva loxophylla	3	0.4
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.3
Bonamia erecta	Out	0.3
Chrysocephalum apiculatum subsp. glandulosum	Out	0.2
Cymbopogon ambiguus	+	0.8
Einadia nutans subsp. eremaea	Out	0.3
Eragrostis eriopoda	+	0.3
Eriachne mucronata desert form	+	0.4
Goodenia triodiophila	+	0.4
Hakea lorea subsp. lorea	Out	3
Kennedia prorepens	+	0.3
Paraneurachne muelleri	+	0.3
Solanum centrale	+	0.2
Swainsona flavicarinata	+	0.05
Tridia basedowii	+	0.4
Tridia schinzii	40	1.1



Cassini Resources - Babel and Nebo 2018 Site YAQ106A**Type Quadrat 20 x 20****Location****MGA Zone 52 377037 mE 7114589 mN 127.770522 E -26.082506 S****Habitat CPHG****SPECIES LIST:**

Name	Cover	Height
Acacia tetragonophylla	Out	1
Acacia victoriae subsp. victoriae	1	1.7
Chrysocephalum pterochaetum	+	0.3
Enneapogon polyphyllus	+	0.1
Goodenia triodiophila	Out	0.2
Hakea lorea subsp. lorea	+	0.6
Paraneurachne muelleri	+	0.3
Petalostylis cassioides	1	0.5
Ptilotus obovatus	1	0.4
Salsola australis	+	0.2
Sclerolaena parviflora	+	0.1
Senna artemisioides subsp. x artemisioides	Out	0.8
Sida sp. calcrete (WB39979)	+	0.2
Sida sp. Excedentifolia (J.L. Egan 1925)	Out	0.2
Triodia scariosa	25	0.5



Cassini Resources - Babel and Nebo 2018 Site YAQ107A

Type Quadrat 20 x 20

Location

MGA Zone 52 378360 mE 7115498 mN 127.783833 E -26.074412 S

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	5	7
Acacia aptaneura	+	0.2
Acacia tetragonophylla	Out	0.8
Amyema gibberula var. gibberula	Out	-
Amyema maidenii subsp. maidenii	+	0.2
Aristida contorta	2	0.1
Boerhavia repleta	+	0.1
Cenchrus ciliaris	+	0.4
Cleome viscosa	+	0.3
Cymbopogon ambiguus	+	0.6
Dactyloctenium radulans	+	0.1
Digitaria brownii	+	0.3
Einadia nutans subsp. eremaea	+	0.2
Enchytraea tomentosa var. tomentosa	+	0.1
Enneapogon avenaceus	6	0.2
Enneapogon polyphyllus	+	0.1
Enteropogon ramosus	Out	0.2
Hakea lorea subsp. lorea	1	5
Heliotropium cunninghamii	+	0.1
Maireana villosa	1	0.3
Paraneurachne muelleri	+	0.2
Portulaca intraterranea	+	0.1
Ptilotus helipteroides	+	0.1
Ptilotus obovatus	+	0.3
Ptilotus sessilifolius	+	0.3
Salsola australis	+	0.2
Sclerolaena convexula	+	0.1
Sclerolaena cornishiana	1	0.2
Sclerolaena johnsonii	Out	0.2
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.1
Solanum lasiophyllum	+	0.3
Tragus australianus	+	0.05
Tribulus astrocarpus	+	0.1
Tripogonella loliformis	Out	0.05



Cassini Resources - Babel and Nebo 2018 Site 01JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 370690 mE 7121801 mN 127.707787 E -26.016845 S

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
<i>Acacia melleodora</i>	Out	2
<i>Aluta maisonneuvei</i> subsp. <i>maisonneuvei</i>	0.25	1
<i>Aristida holathera</i> var. <i>holathera</i>	15-25	0.3
<i>Bonamia erecta</i>	Out	0.3
<i>Cenchrus ciliaris</i>	Out	1
<i>Chrysocephalum eremaeum</i>	3	0.4
<i>Cymbopogon ambiguus</i>	Out	0.8
<i>Dicrastylis doranii</i>	0.25	0.5
<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	Out	0.5
<i>Enneapogon polyphyllus</i>	0.025	0.3
<i>Enteropogon ramosus</i>	0.025	0.5
<i>Eragrostis eriopoda</i>	0.025	0.3
<i>Eragrostis eriopoda</i>	Out	0.5
<i>Eremophila willsii</i> subsp. <i>integrifolia</i>	0.025	0.3
<i>Eremophila willsii</i> subsp. <i>integrifolia</i>	1.5	1.8
<i>Eriachne aristidea</i>	0.025	0.3
<i>Eriachne helmsii</i>	0.025	0.6
<i>Grevillea stenobotrya</i>	10	2.5
<i>Monachather paradoxus</i>	0.025	0.3
<i>Panicum decompositum</i>	0.025	0.5
<i>Paractaenum refractum</i>	+	0.2
<i>Paraneurachne muelleri</i>	Out	0.3
<i>Paspalidium reflexum</i>	0.1	0.3
<i>Rhagodia eremaea</i>	0.25	0.7
<i>Salsola australis</i>	0.025	0.4
<i>Scaevola parvifolia</i> subsp. <i>parvifolia</i>	Out	0.2
<i>Sida cardiophylla</i>	0.3	0.3
<i>Sida</i> sp. Golden calyces pubescent (G.J. Leach 1966)	Out	0.5
<i>Sida spodochroma</i>	Out	0.5
<i>Swainsona microphylla</i>	+	0.2
<i>Trichodesma zeylanicum</i>	Out	0.5
<i>Tridia basedowii</i>	Out	1
<i>Tridia schinzii</i>	+	1.5



Cassini Resources - Babel and Nebo 2018 Site 02JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 370650 mE 7121838 mN 127.707391 E -26.016508 S

Habitat AmmS

SPECIES LIST:

Name	Cover	Height
<i>Acacia ramulosa</i> var. <i>linophylla</i>	Out	4
<i>Acacia tetragonophylla</i>	Out	1.1
<i>Aluta maisonneuvei</i> subsp. <i>maisonneuvei</i>	40	1-1.2
<i>Aristida holathera</i> var. <i>holathera</i>	Out	0.4
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Cenchrus ciliaris</i>	Out	0.4
<i>Cymbopogon ambiguus</i>	Out	0.5
<i>Eragrostis laniflora</i>	Out	0.4
<i>Grevillea eriostachya</i>	1	1.2
<i>Monachather paradoxus</i>	+	0.2
<i>Paspalidium reflexum</i>	Out	0.2
<i>Salsola australis</i>	Out	0.03
<i>Sida spodochroma</i>	Out	0.2
<i>Triodia schinzii</i>	3	1.5



Cassini Resources - Babel and Nebo 2018 Site 03JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 370225 mE 7124225 mN 127.703382 E -25.994921 S

Habitat GRMU

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	+	0.2
Acacia aneura	15	6-7
Acacia aneura	0.5	2
Acacia aptaneura	Out	3
Acacia ayersiana	Out	2.5
Acacia tetragonophylla	+	1.3
Aristida contorta	Out	0.1
Aristida contorta	0.025	0.3
Aristida holathera var. holathera	+	0.2
Aristida jerichoensis var. subspinulifera	+	1.2
Boerhavia repleta	Out	0.1
Cheilanthes sieberi subsp. sieberi	0.025	0.3
Cymbopogon ambiguus	0.025	0.8
Digitaria brownii	0.5	0.5
Einadia nutans subsp. eremaea	Out	1.2
Enchytraea tomentosa var. tomentosa	Out	0.4
Enneapogon cylindricus	+	0.4
Eragrostis eriopoda	20	0.5
Eremophila latrobei subsp. glabra	18	1.5
Eriachne helmsii	10	0.8
Erodium sp.	0.025	0.3
Euphorbia biconvexa	0.025	0.3
Hibiscus burtonii	0.025	1.2
Maireana villosa	Out	0.4
Monachather paradoxus	1	0.4
Paraneurache muelleri	0.5	0.4
Psydrax suaveolens	Out	2.2
Ptilotus obovatus	0.025	0.4
Rhagodia eremaea	Out	1.5
Salsola australis	Out	0.3
Sclerolaena convexula	Out	0.3
Sclerolaena cornishiana	Out	0.3
Sida sp. L (A.M. Ashby 4202)	0.025	0.1
Solanum cleistogamum	Out	1.1
Solanum lasiophyllum	Out	0.3
Teucrium teucriiflorum	1	0.8
Thyridolepis mitchelliana	1.5	0.3
Triodia basedowii	1	0.8
Tripogonella loliformis		



Cassini Resources - Babel and Nebo 2018 Site 04JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 368892 mE 7127715 mN 127.690415 E -25.963295 S

Habitat AkS

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	0.25	0.4-0.8
Abutilon leucopetalum	+	0.6
Acacia kempeana	18	3.5
Acacia kempeana	4	0.4-1
Acacia pteraneura	Out	6-7
Acacia tetragonophylla	0.025	0.6
Aristida holathera var. holathera	Out	0.3
Austrostipa ?nitida	0.025	0.4
Cenchrus ciliaris	Out	0.4
Cenchrus ciliaris	0.025	0.5
Chrysocephalum pterocheatum	Out	0.3
Cleome viscosa	Out	0.2
Cymbopogon ambiguus	+	0.2
Digitaria brownii	0.025	0.4
Enchytraea tomentosa var. tomentosa	0.025	0.4
Enneapogon avenaceus	Out	0.1
Enneapogon caerulescens	0.025	0.3
Enneapogon polyphyllus	0.025	0.2
Enteropogon ramosus	0.025	0.5
Eremopeea spinosa	+	0.2
Euphorbia centralis	0.025	0.1
Heliotropium cunninghamii	+	0.1
Maireana integra	Out	
Maireana integra	0.025	0.4
Maireana planifolia	+	0.4
Maireana villosa	+	0.2
Neurachne munroi	1	0.5
Panicum decompositum	Out	0.4
Ptilotus helipteroides	0.025	0.1
Ptilotus obovatus	2	0.4
Rhagodia eremaea	1	1.7
Rhyncharrhena linearis	+	3
Salsola australis	Out	0.3
Sclerolaena convexula	Out	0.2
Sclerolaena cornishiana	0.025	0.4
Senna artemisioides subsp. x artemisioides	Out	1.5
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.2
Solanum ferocissimum	0.025	0.2
Solanum lasiophyllum	+	0.5
Teucrium teucriiflorum	+	0.4
Tribulus terrestris	0.025	0.1



Cassini Resources - Babel and Nebo 2018 Site 05JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 369833 mE 7123860 mN 127.699429 E -25.998181 S

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	3	2.4
Acacia maitlandii	+	1.1
Aenictophyton anomalum	Out	0.1
Aluta maisonneuvei subsp. maisonneuvei	+	1
Alyogyne pinoniana	Out	0.5
Aristida holathera var. holathera	8	0.5
Cenchrus ciliaris	Out	0.5
Chrysocephalum apiculatum subsp. glandulosum	0.025	0.4
Chrysocephalum eremaeum	3	0.4
Cymbopogon ambiguus	0.025	0.8
Digitaria brownii	Out	0.3
Dodonaea viscosa subsp. angustissima	0.25	5
Enneapogon polyphyllus	+	0.1
Eragrostis laniflora	0.025	0.5
Eremophila willsii subsp. integrifolia	0.025	1.4
Eriachne aristidea	0.25	0.4
Eriachne helmsii	0.025	0.4
Grevillea stenobotrya	5	3.5
Paractaenum refractum	Out	0.2
Ptilotus obovatus	Out	0.6
Salsola australis	Out	0.5
Scaevola parvifolia subsp. parvifolia	Out	0.5
Scaevola parvifolia subsp. parvifolia	+	0.2
Senna artemisioides subsp. filifolia	4	1.5
Senna pleurocarpa var. pleurocarpa	Out	0.8
Sida cardiophylla	0.25	0.6
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	+	0.4
Sida spodochroma	+	0.2
Solanum lasiophyllum	Out	0.3
Swainsona microphylla	Out	0.3
Trichodesma zeylanicum	Out	0.3
Triodia basedowii	+	0.4
Triodia schinzii	1	1.5
Triraphis mollis	Out	0.4

No photo available.

Cassini Resources - Babel and Nebo 2018 Site 06JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 367592 mE 7128610 mN 127.677523 E -25.955098 S

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
<i>Acacia victoriae</i> subsp. <i>victoriae</i>	+	1.6
<i>Aristida contorta</i>	+	0.1
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.3
<i>Brachyscome ciliaris</i>	Out	0.15
<i>Chrysocephalum pterocheatum</i>	Out	0.3
<i>Cymbopogon ambiguus</i>	0.25	0.7
<i>Digitaria brownii</i>	+	0.1
<i>Einadia nutans</i> subsp. <i>eremaea</i>	Out	1
<i>Enneapogon avenaceus</i>	0.025	0.3
<i>Enneapogon caerulescens</i>	Out	0.15
<i>Eragrostis</i> sp. limestone (P.K. Latz 5921)	Out	0.15
<i>Eremophila longifolia</i>	Out	1
<i>Goodenia asteriscus</i>	+	0.1
<i>Goodenia mueckeana</i>	0.025	0.05
<i>Paraneurachne muelleri</i>	Out	0.3
<i>Pterocaulon sphacelatum</i>	+	0.3
<i>Pterocaulon sphacelatum</i>	Out	0.2
<i>Ptilotus obovatus</i>	0.05	0.4
<i>Ptilotus sessilifolius</i>	Out	
<i>Scaevola amblyanthera</i> var. <i>centralis</i>	Out	0.2
<i>Sclerolaena cornishiana</i>	Out	0.3
<i>Senna artemisioides</i> subsp. <i>petiolaris</i> X <i>artemisioides</i> subsp. <i>x artemisioides</i>	Out	1
<i>Senna pleurocarpa</i> var. <i>pleurocarpa</i>	Out	0.4
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	0.025	0.2-0.4
<i>Solanum centrale</i>	Out	0.1
<i>Solanum sturtianum</i>	Out	0.4
<i>Swainsona flavigarinata</i>	0.025	0.1
<i>Triodia scariosa</i>	40	0.4



Cassini Resources - Babel and Nebo 2018 Site 07JRQB

Type Quadrat 20 x 20

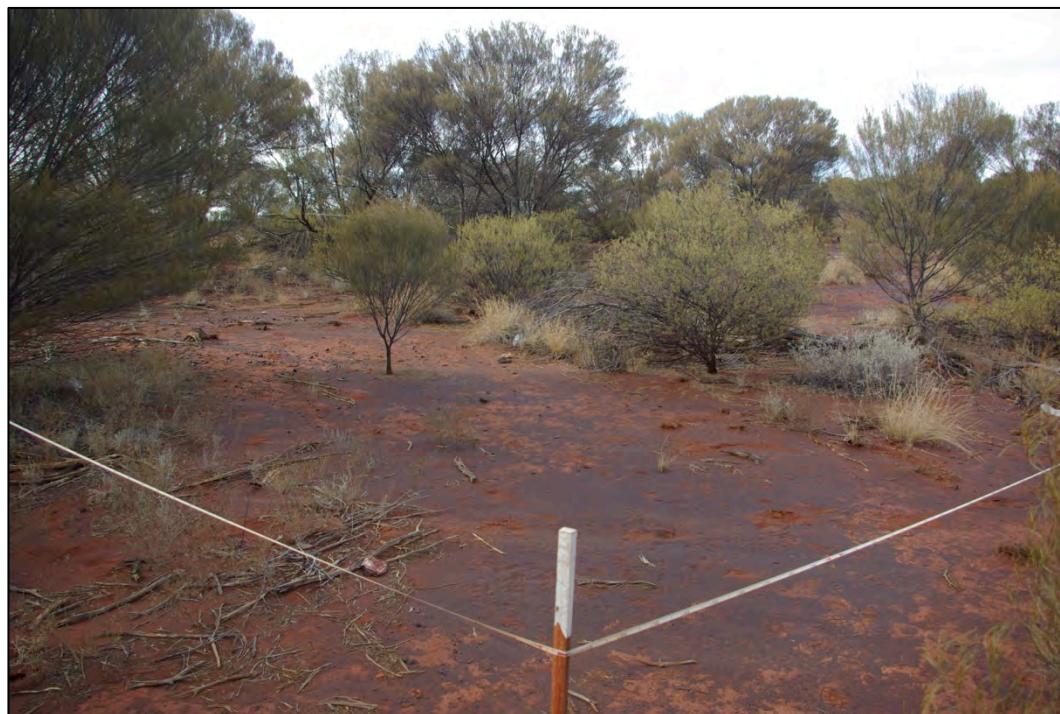
Location

MGA Zone 52 366243 mE 7137844 mN 127.664991 E -25.871614 S

Habitat MUWA

SPECIES LIST:

Name	Cover	Height
Acacia aneura	14	2-6
Acacia aptaneura	+	1.5
Acacia ayersiana	1	5-6
Acacia incurvaneura	+	1.5
Cheilanthes sieberi subsp. sieberi	Out	0.2
Cymbopogon ambiguus	+	0.4
Eragrostis eriopoda	2	0.6
Eremophila latrobei subsp. glabra	5	1.5
Hibiscus burtonii	Out	0.4
Maireana integrifolia	0.05	0.4
Maireana villosa	6	0.4
Monachather paradoxus	0.025	0.4
Ptilotus obovatus	+	0.5
Rhagodia eremaea	+	0.2
Rhyncharrhena linearis	+	0.5
Salsola australis	Out	0.3
Sclerolaena cornishiana	+	0.3
Sclerolaena eriacantha	+	0.2
Sida sp. calcrete (WB39979)	0.025	0.3
Solanum lasiophyllum	+	0.3
Teucrium teucriiflorum	+	0.5
Thyridolepis mitchelliana	0.25	0.4



Cassini Resources - Babel and Nebo 2018 Site 08JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 366702 mE 7137451 mN 127.669532 E -25.875204 S

Habitat AvS

SPECIES LIST:

Name	Cover	Height
Acacia aneura	Out	5-6
Acacia aptaneura	1	6
Acacia aptaneura	0.025	0.3
Acacia tetragonophylla	Out	1.6
Aristida contorta	0.025	0.2
Atriplex vesicaria	3	0.5
Cenchrus ciliaris	0.5	0.6
Digitaria brownii	+	0.4
Enneapogon polyphyllus	0.025	0.2
Eremophila clarkei	1	1.2
Eremophila latrobei subsp. glabra	Out	1
Euphorbia tannensis subsp. eremophila	Out	0.4
Maireana sp. Indet.	0.025	0.5
Maireana triptera	13	0.5
Maireana villosa	0.5	0.3
Neurachne munroi	0.25	0.3
Ptilotus obovatus	+	0.4
Salsola australis	0.025	0.3
Sclerolaena cuneata	Out	0.3
Sclerolaena eriacantha	+	0.2
Senna artemisioides subsp. helmsii	Out	1.2
Senna artemisioides subsp. x artemisioides	Out	0.5
Sida calyxhymenia	Out	0.8
Themeda triandra	Out	0.8



Cassini Resources - Babel and Nebo 2018 Site 09JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 366969 mE 7137547 mN 127.672206 E -25.874362 S

Habitat CPN-G

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	Out	0.5-2.5
Aristida latifolia	0.25	0.7
Astrebla pectinata	0.5	0.7
Chrysocephalum pterocheatum	0.5	0.3
Chrysocephalum pterocheatum	+	0.15
Dichanthium sericeum subsp. humilis	0.025	0.2
Enneapogon cylindricus	0.025	0.4
Enneapogon polyphyllus	0.025	0.25
Eragrostis setifolia	40	0.5
Eragrostis setifolia	5	0.2
Eragrostis xerophila	1	0.5
Eulalia aurea	+	0.15
Euphorbia biconvexa	0.025	0.4
Euphorbia centralis	0.025	0.1
Heliotropium cunninghamii	+	0.3
Maireana integra	Out	0.4
Pterocaulon sphacelatum	0.025	0.4
Pterocaulon sphacelatum	+	0.5
Rhynchosia minima	0.025	0.3
Salsola australis	+	0.2
Sclerolaena cornishiana	+	
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.15
Streptoglossa latroides	1	0.2
Themeda triandra	+	0.5



Cassini Resources - Babel and Nebo 2018 Site 10JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 366760 mE 7136753 mN 127.670040 E -25.881511 S

Habitat AvS

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	Out	3-4
Aristida contorta	1	0.2
Atriplex vesicaria	8	0.5
Boerhavia repleta	0.025	0.05
Cenchrus ciliaris	1	0.5
Cleome viscosa	+	0.4
Dactyloctenium radulans	+	0.15
Digitaria brownii	+	0.1
Dissocarpus paradoxus	4	0.2
Enchytraea tomentosa var. tomentosa	+	0.2
Enneapogon avenaceus	+	0.2
Enneapogon polyphyllus	2	0.3
Eragrostis dielsii	Out	0.1
Eremophila longifolia	Out	1.8
Maireana villosa	0.25	0.3
Portulaca intraterranea	Out	
Ptilotus obovatus	Out	0.4
Salsola australis	0.25	0.4
Scaevola amblyanthera var. centralis	0.025	0.2
Sclerolaena cuneata	0.025	0.2
Sclerolaena eriacantha	+	0.3
Sclerolaena eriacantha	1	0.3
Solanum lasiophyllum	Out	0.3
Trianthema triquetrum	+	0.1
Tribulus terrestris	0.025	0.05
Tripogonella loliformis	+	0.1



Cassini Resources - Babel and Nebo 2018 Site 11JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 366303 mE 7134356 mN 127.665236 E -25.903108 S

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	+	1.2
Acacia pteraneura	10	2-5
Acacia tetragonophylla	0.25	0.8
Amaranthus centralis	Out	0.5
Aristida contorta	40	0.3
Aristida jerichoensis var. subspinulifera	0.025	0.8
Boerhavia repleta	1	0.2
Calotis hispidula	+	0.1
Cenchrus ciliaris	0.25	0.8
Chrysocephalum pterocheatum	0.025	0.3
Chrysocephalum pterocheatum	+	0.3
Cleome viscosa	0.025	0.4
Cymbopogon ambiguus	0.025	0.8
Dichanthium sericeum subsp. humilis	+	0.3
Einadia nutans subsp. eremaea	Out	0.4
Enchytraea tomentosa var. tomentosa	Out	0.4
Enneapogon avenaceus	1	0.4
Enneapogon polypyllus	+	0.2
Enteropogon ramosus	0.025	0.7
Eragrostis xerophila	2	0.4
Euphorbia centralis	0.025	0.25
Euphorbia tannensis subsp. eremophila	Out	0.6
Evolvulus alsinoides var. villosicalyx	+	0.2
Hakea lorea subsp. lorea	+	0.2
Heliotropium moorei	+	0.2
Iseilema membranaceum	Out	0.2
Maireana villosa	+	0.3
Panicum decompositum	+	0.4
Ptilotus helipteroides	+	
Ptilotus nobilis	0.025	0.4
Ptilotus obovatus	+	0.7
Rhagodia eremaea	Out	1
Salsola australis	0.025	0.3
Sclerolaena convexula	+	0.2
Sclerolaena cornishiana	0.025	0.4
Sclerolaena eriacantha	+	0.15
Sclerolaena johnsonii	0.025	
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.15
Sida sp. Indeterminate	0.025	0.3
Solanum lasiophyllum	0.025	0.4
Tribulus terrestris	+	0.05
Tripogonella loliformis	Out	0.1



Cassini Resources - Babel and Nebo 2018 Site 12JRQB

Type Quadrat 20 x 20

Location

MGA Zone 52 366218 **mE** 7129677 **mN** 127.663911 **E** -25.945339 **S**

Habitat MUWA

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	Out	0.3
Abutilon macrum	0.025	0.4
Acacia aptaneura	Out	0.8
Acacia aptaneura	1	5
Acacia aptaneura	1	5
Acacia aptaneura	+	0.6
Acacia ayersiana	Out	0.4
Acacia ligulata	Out	1.5
Acacia pachyacra	Out	2.5
Acacia tetragonophylla	Out	0.4
Amphipogon caricinus var. caricinus	Out	0.3
Aristida contorta	0.25	0.25
Aristida holathera var. holathera	+	0.2
Boerhavia repleta	+	0.1
Cenchrus ciliaris	0.025	0.5
Chrysocephalum pterochaetum	Out	0.4
Cymbopogon ambiguus	0.025	0.8
Dactyloctenium radulans	0.025	0.2
Digitaria brownii	0.5	0.5
Enchytraea tomentosa var. tomentosa	+	0.4
Enneapogon polyphyllus	2	0.4
Eragrostis eriopoda	40	0.5
Eremophila longifolia	Out	0.1
Eriachne helmsii	5	0.6
Euphorbia tannensis subsp. eremophila	Out	0.4
Hakea lorea subsp. lorea	+	0.5
Heliotropium cunninghamii	+	0.1
Maireana villosa	0.025	0.4
Ptilotus obovatus	1	0.5
Ptilotus polystachyus	+	0.2
Salsola australis	0.025	0.3
Sclerolaena convexula	1	0.2
Sclerolaena cornishiana	0.025	0.2
Sclerolaena johnsonii	0.5	0.3
Senna artemisioides subsp. helmsii	Out	1.5
Solanum lasiophyllum	0.025	0.3
Teucrium teucriiflorum	Out	0.4
Tragus australanus	+	0.2



Cassini Resources - Babel and Nebo 2018 Site 13EBQB

Type Quadrat 20 x 20

Location

MGA Zone 52 383124 **mE** 7115981 **mN** 127.831499 **E** -26.070445 **S**

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	1.5	2.4
Acacia pachyacra	Out	
Aluta maisonneuvei subsp. maisonneuvei	0.025	0.5
Androcalva loxophylla	0.75	0.4
Aristida holathera var. holathera	0.025	0.4
Bonamia erecta	2	0.3
Corymbia opaca	Out	
Eriachne helmsii	0.025	0.4
Goodenia triodiophila	0.025	0.4
Hakea lorea subsp. lorea	0.25	1.2
Hakea lorea subsp. lorea	Out	
Paraneurachne muelleri	0.025	0.6
Senna pleurocarpa var. pleurocarpa	Out	
Solanum centrale	0.025	0.3
Tridia basedowii	Out	
Tridia schinzii	50	1.5



Cassini Resources - Babel and Nebo 2018 Site 14EBQB

Type Quadrat 20 x 20

Location

MGA Zone 52 381365 mE 7123993 mN 127.814643 E -25.997970 S

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Acacia ayersiana	5	2.5
Acacia pruinocarpa	Out	5
Acacia pteraneura	1.5	2.5
Acacia tetragonophylla	0.5	1.8
Aristida contorta	2	0.3
Chrysocephalum eremaeum	0.25	0.4
Cymbopogon ambiguus	0.5	1
Digitaria brownii	1.5	0.6
Enneapogon avenaceus	30	0.3
Eragrostis eriopoda	0.5	0.4
Eremophila foliosissima	0.25	0.5
Eremophila latrobei subsp. glabra	0.5	1.5
Euphorbia centralis	0.025	0.1
Hakea lorea subsp. lorea	Out	8
Hibiscus sp.	0.025	0.7
Maireana villosa	0.25	0.4
Monachather paradoxus	0.025	0.3
Paraneurachne muelleri	0.25	0.4
Ptilotus obovatus	2	0.5
Ptilotus polystachyus	0.025	0.4
Sclerolaena cornishiana	0.025	0.3
Senna artemisioides subsp. filifolia	0.25	1.2
Solanum centrale	0.25	0.25
Solanum lasiophyllum	Out	0.5
Tribulus terrestris	Out	0.1
Triodia pungens	Out	1.2

No photo available.

Cassini Resources - Babel and Nebo 2018 Site 15EBQB

Type Quadrat 20 x 20

Location

MGA Zone 52 389839 mE 7114396 mN 127.898490 E -26.085282 S

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	0.025	0.3
Acacia tetragonophylla	Out	1.2
Acacia victoriae subsp. victoriae	Out	0.8
Anthobolus leptomerioides	Out	1.2
Aristida contorta	0.025	0.2
Corymbia opaca	Out	4
Corymbia opaca	Out	8
Cymbopogon ambiguus	0.025	0.8
Eremophila glabra subsp. glabra	Out	1
Eucalyptus gamophylla	Out	3
Hakea lorea subsp. lorea	1.75	2
Minuria leptophylla	0.025	0.1
Monachather paradoxus	0.025	0.3
Paraneurachne muelleri	Out	
Petalostylis cassioides	3	0.5
Ptilotus clementii	0.025	0.4
Ptilotus obovatus	1	0.4
Santalum lanceolatum	Out	1.5
Scaevola spinescens (narrow leaf, spiny form)	0.75	1.2
Sclerolaena parviflora	0.025	0.2
Senna artemisioides subsp. petiolaris X artemisioides subsp. x artemisioides	Out	1.2
Senna artemisioides subsp. x artemisioides	0.25	1.5
Solanum orbiculatum subsp. orbiculatum	Out	0.8
Triodia pungens	0.025	0.3(1)
Triodia scariosa	30	0.4(0.8)



Cassini Resources - Babel and Nebo 2018 Site 16EBQB

Type Quadrat 20 x 20

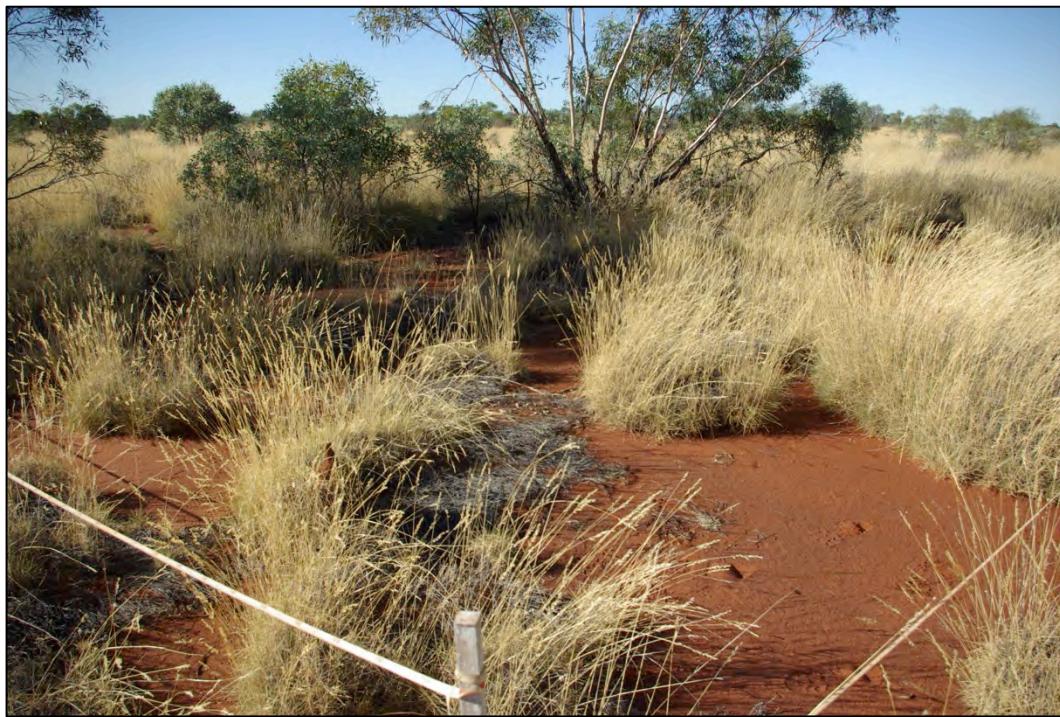
Location

MGA Zone 52 384892 **mE** 7120203 **mN** 127.849545 **E** -26.032471 **S**

Habitat LMW

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	0.05	1.7
Acacia maitlandii	0.25	1
Acacia maitlandii	Out	
Aristida holathera var. holathera	0.025	0.3
Bonamia erecta	0.25	0.3
Cucumis argenteus	Out	
Cymbopogon ambiguus	0.025	0.8
Dicrastylis doranii	Out	
Dicrastylis exsuccosa	Out	
Eremophila longifolia	0.25	2.1
Eucalyptus mannensis subsp. mannensis	30	5
Eucalyptus oxymitra	Out	
Euphorbia tannensis subsp. eremophila	0.025	0.3
Hannahfordia bissillii subsp. bissillii	Out	
Paspalidium reflexum	0.025	0.5
Petalostylis cassioides	Out	
Pittosporum angustifolium	Out	
Santalum lanceolatum	1	1.7
Solanum centrale	Out	
Triodia basedowii	30	0.4(0.9)
Triodia pungens	2	0.4-1



Cassini Resources - Babel and Nebo 2018 Site 17EBQB

Type Quadrat 20 x 20

Location

MGA Zone 52 388106 **mE** 7115527 **mN** 127.881262 **E** -26.074938 **S**

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
<i>Acacia ligulata</i>	4-5	2.5
<i>Acacia maitlandii</i>	0.25	1
<i>Alyogyne pinomiana</i>	0.05	1
<i>Aristida holathera</i> var. <i>holathera</i>	0.25	0.4
<i>Chrysocephalum eremaeum</i>	0.25	0.4
<i>Corymbia opaca</i>	Out	8
<i>Eragrostis eriopoda</i>	0.025	0.3
<i>Eriachne aristidea</i>	0.025	0.3
<i>Hakea lorea</i> subsp. <i>loreia</i>	1.5	3
<i>Melaleuca glomerata</i>	Out	3
<i>Newcastelia bracteosa</i>	0.025	0.5
<i>Scaevola amblyanthera</i> var. <i>centralis</i>	Out	0.3
<i>Sclerolaena parviflora</i>	Out	
<i>Senna pleurocarpa</i> var. <i>pleurocarpa</i>	0.025	0.6
<i>Solanum centrale</i>	0.25	0.3
<i>Triodia basedowii</i>	10	0.4-0.8
<i>Triodia pungens</i>	15	0.4-1.2



Cassini Resources - Babel and Nebo 2018 Site 18EBQB

Type Quadrat 20 x 20

Location

MGA Zone 52 388026 **mE** 7113248 **mN** 127.880266 **E** -26.095507 **S**

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia acanthoclada subsp. acanthoclada	1	1
Acacia kempeana	Out	
Acacia pruinocarpa	0.025	0.5
Chrysocephalum eremaeum	0.025	0.4
Corymbia opaca	Out	
Eriachne sp.	0.25	0.4
Hakea lorea subsp. lorea	0.25	1
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	2.5	0.4
Haloragis uncatipila	0.025	0.4
Petalostylis cassioides	2	0.6
Ptilotus clementii	0.025	0.3
Ptilotus obovatus	0.25	0.4
Santalum lanceolatum	Out	
Scaevola spinescens	Out	
Sclerolaena parviflora	0.025	0.2
Triodia scariosa	25	0.4(0.8)



Cassini Resources - Babel and Nebo 2018 Site 19EBQB

Type Quadrat 20 x 20

Location

MGA Zone 52 391280 mE 7114651 mN 127.912918 E -26.083089 S

Habitat LMW

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	3	2
Acacia melleodora	0.5	1.8
Alyogyne pinoniana	0.25	0.8
Amphipogon caricinus var. caricinus	0.125	0.4
Aristida holathera var. holathera	0.5	0.4
Cenchrus ciliaris	1	0.8
Chrysocephalum eremaeum	0.125	0.3
Cymbopogon ambiguus	0.125	0.8
Dodonaea viscosa subsp. angustissima	0.25	1.5
Enneapogon avenaceus	0.025	0.3
Eriachne aristidea	0.025	0.3
Eucalyptus gamophylla	2	3.5
Eucalyptus socialis	12	35
Euphorbia tannensis subsp. eremophila	0.025	0.5
Paraneurachne muelleri	1	0.4
Paspalidium reflexum	0.025	0.4
Ptilotus obovatus	0.125	0.5
Salsola australis	0.025	0.3
Senna pleurocarpa var. pleurocarpa	0.25	0.6
Solanum orbiculatum subsp. orbiculatum	0.025	0.5
Triodia basedowii	15	0.4-0.8
Triodia pungens	4	0.4-1



Cassini Resources - Babel and Nebo 2018 Site 20EBQB

Type Quadrat 20 x 20

Location

MGA Zone 52 386800 **mE** 7118455 **mN** 127.868460 **E** -26.048403 **S**

Habitat SAMU

SPECIES LIST:

Name	Cover	Height
Acacia aneura x ayersiana	2	4
Acacia aneura x ayersiana	0.5	1-2
Acacia pachyacra	0.25	1.2
Acacia pteraneura	4.5	2-4
Amphipogon caricina var. caricina	Out	
Amyema gibberula var. gibberula	Out	
Digitaria brownii	0.25	0.4
Enchytraea tomentosa var. tomentosa	Out	
Enneapogon polyphyllus	Out	
Eragrostis eriopoda	2	0.4
Eremophila latrobei subsp. glabra	0.25	0.5
Goodenia triodiophila	0.125	0.2
Hakea lorea subsp. lorea	Out	
Hibiscus sp.	Out	
Monachather paradoxus	0.25	0.4
Paraneurachne muelleri	Out	
Ptilotus polystachyus	Out	
Sclerolaena cornishiana	0.125	0.4
Solanum lasiophyllum	0.125	0.5
Tribulus astrocarpus	Out	
Tribulus terrestris	Out	
Triodia basedowii	25	1
Yakirra australiensis var. australiensis	0.125	0.1



Cassini Resources - Babel and Nebo 2018 Site 21EBQB

Type Quadrat 20 x 20

Location

MGA Zone 52 389613 mE 7120486 mN 127.896746 E -26.030284 S

Habitat LMW/CPHG

SPECIES LIST:

Name	Cover	Height
Acacia kempeana	0.025	0.2
Acacia ligulata	0.125	0.6
Acacia maitlandii	0.025	0.1
Alyogyne pinoniana	2	0.8
Eragrostis sp. limestone (P.K. Latz 5921)	0.025	0.3
Eucalyptus oxymitra	0.125	0.4
Eucalyptus oxymitra	10	1.5
Paraneurachne muelleri	0.125	0.4
Petalostylis cassioides	0.125	0.3
Ptilotus obovatus	0.25	0.3
Ptilotus sessilifolius	0.025	0.2
Scaevola amblyanthera var. centralis	0.025	0.4
Scaevola parvifolia subsp. parvifolia	0.025	0.3
Sclerolaena parviflora	0.025	0.3
Triodia scariosa	20	0.3



Cassini Resources - Babel and Nebo 2018 Site 22EBQB**Type Quadrat 20 x 20****Location****MGA Zone 52 390790 mE 7120698 mN 127.908525 E -26.028459 S****Habitat LMW****SPECIES LIST:**

Name	Cover	Height
Acacia maitlandii	0.25	0.8
Acacia melleodora	0.5	1
Aluta maisonneuvei subsp. maisonneuvei	0.025	0.15
Androcalva loxophylla	2	0.4
Bonamia erecta	2	0.3
Brachychiton gregorii	Out	7
Dicrastylis doranii	0.025	0.2
Eragrostis eriopoda	Out	0.3
Eucalyptus gamophylla	Out	3
Eucalyptus oxymitra	3.5	2.5
Grevillea eriostachya	0.025	0.3
Grevillea eriostachya	0.75	1.8
Scaevola parvifolia subsp. parvifolia	Out	0.3
Triodia basedowii	0.25	0.3-0.8
Triodia schinzii	20	0.3-1.1



Cassini Resources - Babel and Nebo 2018 Site 23EBQB

Type Quadrat 20 x 20

Location

MGA Zone 52 392637 mE 7121441 mN 127.927043 E -26.021890 S

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Acacia aneura	Out	8
Acacia aptaneura	Out	8
Acacia pachyacra	Out	3
Acacia pteraneura	Out	8
Acacia sp. (unknown mulga)	0	0
Aristida contorta	4	0.3
Boerhavia repleta	0.25	
Chrysocephalum eremaeum	0.125	0.3
Cymbopogon ambiguus	0.25	0.8
Enneapogon polyphyllus	4	0.25
Eragrostis eriopoda	15	0.5
Eremophila latrobei subsp. glabra	1.75	1.2
Eremophila longifolia	0.25	1.2
Euphorbia centralis	0.125	0.1
Hibiscus sp.	Out	
Maireana villosa	0.75	0.4
Ptilotus helipteroides	0.025	0.2
Ptilotus obovatus	1	0.8
Ptilotus polystachyus	Out	0.5
Ptilotus sessilifolius	0.025	0.3
Salsola australis	0.025	0.3
Sclerolaena cornishiana	0.025	0.3
Sclerolaena johnsonii	0.025	0.25
Senna sp.	Out	1.2
Sida sp.	0.025	0.3
Solanum centrale	0.5	0.4
Solanum lasiophyllum	Out	
Tribulus astrocarpus	Out	

No photo available.

Cassini Resources - Babel and Nebo 2018 Site 24EBQB

Type Quadrat 20 x 20

Location

MGA Zone 52 394607 mE 7124095 mN 127.946942 E -25.998073 S

Habitat SASP

SPECIES LIST:

Name	Cover	Height
Amphipogon caricinus var. caricinus	Out	0.3
Androcalva loxophylla	2	0.4
Bonamia erecta	Out	0.3
Brachychiton gregorii	Out	4-6
Corymbia opaca	Out	6-8
Dicrastylis exsuccosa	Out	0.3
Eremophila forrestii subsp. forrestii	1	1
Eremophila longifolia	Out	
Hakea lorea subsp. lorea	Out	2
Kennedia prorepens	0.75	0.4
Leptosema chambersii	0.125	0.5
Paraneurachne muelleri	0.125	0.4
Solanum centrale	0.125	0.3
Solanum lasiophyllum	Out	0.3
Triodia basedowii	5	0.4(0.8)
Triodia schinzii	20	0.4(1.2)



Cassini Resources - Babel and Nebo 2018 Site 25EBQB**Type Quadrat 20 x 20****Location****MGA Zone 52 396141 mE 7124596 mN 127.962307 E -25.993661 S****Habitat SASP****SPECIES LIST:**

Name	Cover	Height
<i>Amphipogon caricinus</i> var. <i>caricinus</i>	0.75	0.4
<i>Androcalva loxophylla</i>	3	0.4
<i>Dicrastylis exsuccosa</i>	0.125	0.3
<i>Grevillea eriostachya</i>	Out	1.8
<i>Kennedia prorepens</i>	Out	0.4
<i>Leptosema chambersii</i>	25	05
<i>Ptilotus schwartzii</i>	0.125	0.3
<i>Solanum lasiophyllum</i>	0.125	0.4
<i>Triodia basedowii</i>	20	0.4(0.8)
<i>Triodia schinzii</i>	0.5	0.5(1.2)



Cassini Resources - Babel and Nebo 2018 Site SBQ25B**Type Quadrat 20 x 20****Location****MGA Zone 52 357356 mE 7093370 mN 127.571449 E -26.272235 S****Habitat SAWS****SPECIES LIST:**

Name	Cover	Height
Acacia abrupta	2.5	0.8
Acacia pruinocarpa	Out	8
Acacia sericophylla	Out	4
Acacia sericophylla	Out	4
Androcalva loxophylla	0.1	0.3
Bonamia erecta	0.1	0.3
Grevillea eriostachya	1	0.4
Grevillea eriostachya	3	2
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	0.1	
Leptosema chambersii	0.1	0.3
Micromyrtus flaviflora	0.5	0.7
Santalum lanceolatum	Out	1
Santalum lanceolatum	0.1	
Triodia basedowii	25	0.4(0.9)
Triodia schinzii	0.25	0.4(1.2)



Cassini Resources - Babel and Nebo 2018 Site WF45**Date** 30/05/2019 **Type** Quadrat 20 x 20**Location****MGA Zone** 52 377869 mE 7109472 mN 127.778360 E -26.128771 S**Habitat** MgAkS**SPECIES LIST:**

Name	Cover	Height
Acacia ayersiana (hybrid)	Out	0.3
Acacia kempeana	+	0.5
Acacia ligulata	1	1-1.25
Acacia tetragonophylla	+	0.8
Alyogyne pinomiana	+	1
Amphipogon caricinus var. caricinus	+	0.4
Aristida contorta	+	0.15
Aristida holathera var. holathera	+	0.3
Codonocarpus cotinifolius	Out	0.5
Corymbia opaca	Out	6-7
Cymbopogon ambiguus	+	0.5
Digitaria brownii	+	0.2
Eragrostis eriopoda	+	0.3
Eremophila glabra subsp. glabra	Out	1
Eremophila longifolia	+	1
Eremophila platythamnos subsp. exotrichys	+	0.4
Goodenia triodiophila	+	0.3
Hakea lorea subsp. lorea	Out	3
Melaleuca eleuterostachya	Out	1.4
Melaleuca glomerata	1-2	1.2
Monachather paradoxus	+	0.3
Paraneurachne muelleri	+	0.2
Ptilotus obovatus	+	0.6
Senna artemisioides subsp. filifolia	+	0.4
Solanum centrale	+	0.4
Solanum orbiculatum subsp. orbiculatum	+	0.4
Triodia basedowii	30	0.4-1
Triodia pungens	2-3	0.4-1.2



Cassini Resources - Babel and Nebo 2018 Site WF46

Date 30/05/2019 Type Quadrat 20 x 20

Location

MGA Zone 52 378169 mE 7110653 mN 127.781471 E -26.118135 S

Habitat MgAkS

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	1	2-5
Acacia kempeana	5-6	2
Acacia ligulata	1	1.75
Alyogyne pinomiana	1	0.7
Amphipogon caricinus var. caricinus	+	0.3
Aristida holathera var. holathera	+	0.3
Corymbia opaca	Out+	10-12
Cymbopogon ambiguus	+	0.5
Digitaria brownii	+	0.3
Eragrostis eriopoda	+	0.4-0.6
Eremophila longifolia	Out	1.2
Eriachne helmsii	+	0.4
Goodenia triodiophila	+	0.3
Hakea lorea subsp. lorea	+	0.5
Paraneurachne muelleri	1	0.3
Petalostylis cassioides	+	0.4
Ptilotus obovatus	Out	-
Sclerolaena cornishiana	Out	0.1
Triodia basedowii	10	-
Triodia pungens	+	0.4-0.8



Cassini Resources - Babel and Nebo 2018 Site WF47
Date 30/05/2019 **Type** Quadrat 20 x 20
Location
MGA Zone 52 379867 mE 7109959 mN 127.798387 E -26.124543 S
Habitat CPP
Notes All 'IN' species are located on fringe of claypan. Claypan itself is empty. 'Out' species represent mostly those not on the claypan fringe, may represent vegetation of separate vegetation associations.

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	+	0.3
Acacia aptaneura	Out	1.5
Acacia ayersiana (narrow phyllode variant)	Out	3.5
Acacia ligulata	+	1.8
Acacia tetragonophylla	1	2.25
Alyogyne pinoniana	Out	0.4
Aristida contorta	+	0.15
Boerhavia repleta	+	0.02
Dactyloctenium radulans	+	0.05
Enchytraea tomentosa var. tomentosa	+	0.1
Enneapogon avenaceus	+	0.2
Enteropogon ramosus	1	0.3
Eremophila glabra subsp. glabra	Out	0.6
Eremophila longifolia	1	2.5
Eriachne helmsii	Out	0.5
Euphorbia biconvexa	+	0.1
Melaleuca glomerata	Out	2.5
Melaleuca glomerata	+	1.25
Psydrax suaveolens	Out	0.2
Ptilotus obovatus	+	0.6
Rhagodia eremaea	Out	1
Sclerolaena cornishiana	1	0.2
Sclerolaena parviflora	+	0.1
Sida fibulifera	+	0.2
Solanum lasiophyllum	+	0.6
Swainsona sp. indet. (OB08-03)	+	0.02
Teucrium teucriiflorum	+	0.3
Triodia scariosa	+	0.4



Cassini Resources - Babel and Nebo 2018 Site WF48
Date 30/05/2019 **Type** Quadrat 50 x 50
Location
MGA Zone 52 379390 mE 7111151 mN 127.793727 E -26.113742 S
Habitat CCoW
Notes CPHG in NW corner.

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	1	1.75-3
Acacia ligulata	+	1
Acacia maitlandii	Out	1.25
Acacia pruinocarpa	1	1.75
Acacia tetragonophylla	1	1-2
Alyogyne pinoniana	+	0.2
Amphipogon caricinus var. caricinus	Out	0.3
Aristida contorta	2-3	0.3
Aristida holathera var. holathera	2	0.4
Bonamia erecta	+	0.2
Chrysoccephalum pterochaetum	+	0.4
Chrysoccephalum pterochaetum	+	0.3
Corymbia opaca	2	12
Cymbopogon ambiguus	1	1
Digitaria brownii	+	0.4
Enchytraea tomentosa var. tomentosa	+	0.5
Enneapogon avenaceus	+	0.4
Eragrostis eriopoda	+	0.3
Eremophila latrobei subsp. glabra	Out	1
Eremophila longifolia	+	0.75
Eriachne helmsii	+	0.3
Euphorbia biconvexa	+	0.1
Euphorbia biconvexa	+	0.15
Hakea lorea subsp. lorea	+	0.6-3
Maireana planifolia	+	0.2
Panicum decompositum	+	0.2
Paraneurachne muelleri	+	0.3
Petalostylis cassioides	+	0.5
Ptilotus obovatus	+	0.4
Ptilotus sessilifolius	+	0.15
Santalum lanceolatum	+	1.75
Sclerolaena cornishiana	+	0.2
Senna artemisioides subsp. x artemisioides	+	1
Senna pleurocarpa var. pleurocarpa	+	0.3
Sida fibulifera	+	0.3
Solanum centrale	Out	0.2
Solanum cleistogamum	+	0.2
Solanum lasiophyllum	+	0.4
Solanum orbiculatum subsp. orbiculatum	+	0.4
Triodia basedowii	+	0.4-0.8
Triodia scariosa	20	0.4-0.7



Cassini Resources - Babel and Nebo 2018 Site WF49
Date 31/05/2019 **Type** Quadrat 20 x 20
Location
MGA Zone 52 380330 mE 7111144 mN 127.803126 E -26.113883 S
Habitat SAMU

SPECIES LIST:

Name	Cover	Height
Acacia aneura	1.5-2	4.5
Acacia ligulata	+	1.7
Acacia pteraneura	1-2	7-8
Aluta maisonneuvei subsp. maisonneuvei	Out	0.6
Aristida contorta	1	0.2
Cleome viscosa	+	0.3
Digitaria brownii	+	0.4
Einadia nutans subsp. eremaea	+	0.3
Enchytraea tomentosa var. tomentosa	+	0.4
Enneapogon polypyllus	+	0.2
Eragrostis eriopoda	+	0.4
Eremophila longifolia	+	0.6
Eriachne helmsii	+	0.4
Euphorbia australis var. erythrantha	+	0.1
Hibiscus sp.	Out	0.4
Maireana planifolia	+	0.4
Maireana villosa	Out	0.2
Monachather paradoxus	1	0.3
Panicum decompositum	+	0.3
Ptilotus obovatus	+	0.5
Ptilotus polystachyus	Out	0.4
Ptilotus polystachyus	+	0.1
Sclerolaena cornishiana	+	0.3
Solanum cleistogamum	+	0.2
Solanum lasiophyllum	+	0.2
Triodia basedowii	15	0.4-1.2
Triodia schinzii	2	0.4-1.6
Vincetoxicum lineare	+	0.4



Cassini Resources - Babel and Nebo 2018 Site WF50
Date 31/05/2019 **Type** Quadrat 20 x 20
Location
MGA Zone 52 380443 mE 7111471 mN 127.804286 E -26.110941 S
Habitat GRMU

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	+	0.4
Acacia aptaneura	1	8
Acacia incurvaneura	20	6-8
Aristida contorta	+	0.2
Aristida holathera var. holathera	+	0.4
Cymbopogon ambiguus	+	0.5
Digitaria brownii	+	0.2
Eragrostis eriopoda	2	0.4
Eriachne helmsii	Out	0.4
Hakea lorea subsp. lorea	+	3.5
Maireana planifolia	+	0.2
Maireana villosa	+	0.2
Monachather paradoxus	3-4	0.4
Ptilotus polystachyus	+	0.3
Sclerolaena cornishiana	+	0.3
Solanum lasiophyllum	+	0.3
Triodia basedowii	4-5	0.3
Triodia schinzii	+	0.4-1.2



Cassini Resources - Babel and Nebo 2018 Site WF51**Date** 31/05/2019 **Type** Quadrat 20 x 20**Location****MGA Zone** 52 380665 mE 7112022 mN 127.806556 E -26.105985 S**Habitat** AbTsS**SPECIES LIST:**

Name	Cover	Height
Acacia aneura	Out	4
Acacia ayersiana (hybrid)	Out	1.5
Acacia brachystachya	5-7	3-4
Acacia ligulata	Out	1.25
Acacia tetragonophylla	Out	1.5
Amphipogon caricinus var. caricinus	Out	0.3
Androcalva loxophylla	1	0.25
Androcalva loxophylla	+	0.3
Aristida contorta	+	0.2
Aristida holathera var. holathera	+	0.3
Bonamia erecta	+	0.3
Chrysocephalum pterochaetum	Out	0.2
Dodonaea viscosa subsp. angustissima	Out	1.75
Eragrostis eriopoda	Out	0.3
Eremophila longifolia	Out	1.25
Eremophila platythamnos subsp. exotrichys	Out	0.5
Eriachne helmsii	Out	0.4
Goodenia triodiophila	+	0.1
Hakea lorea subsp. lorea	Out	4.5
Hibiscus solanifolius	Out	.5
Paraneurachne muelleri	+	0.3
Ptilotus obovatus	+	0.5
Sclerolaena cornishiana	+	0.3
Senna pleurocarpa var. pleurocarpa	Out	0.4
Solanum centrale	+	0.3
Triodia basedowii	1	0.4-1
Triodia schinzii	10-12	0.3-1.4

Photo unavailable.

Cassini Resources - Babel and Nebo 2018 Site WF52
Date 31/05/2019 **Type** Quadrat 20 x 20
Location
MGA Zone 52 381854 mE 7111923 mN 127.818436 E -26.106976 S
Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	+	
Acacia melleodora	+	
Acacia tetragonophylla	+	
Aluta maisonneuvei subsp. maisonneuvei	1	
Aristida holathera var. holathera	+	
Aristida holathera var. holathera	1-2	
Chrysocephalum eremaeum	Out	
Corynotheca micrantha var. divaricata	1-2	
Cymbopogon ambiguus	+	
Dodonaea viscosa subsp. angustissima	2-3	
Eriachne helmsii	+	
Goodenia glabra	+	
Grevillea stenobotrya	6	
Ptilotus obovatus	Out	
Rhagodia eremaea	+	
Sida cardiophylla	+	
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	+	
Solanum centrale	+	
Triodia schinzii	Out	



Cassini Resources - Babel and Nebo 2018 Site WF53**Date 31/05/2019 Type Quadrat 20 x 20****Location****MGA Zone 52 381884 mE 7111853 mN 127.818730 E -26.107611 S****Habitat AmmS****SPECIES LIST:**

Name	Cover	Height
Acacia ligulata	Out	3
Aluta maisonneuvei subsp. maisonneuvei	10	1.5-1.75
Aristida contorta	+	0.1
Eriachne helmsii	+	0.4
Grevillea eriostachya	+	2
Gyrostemon ramulosus	Out	1.2
Paraneurachne muelleri	+	0.4
Triodia basedowii	4-6	0.4-1
Triodia schinzii	2.5	0.4-1.4



Cassini Resources - Babel and Nebo 2018 Site WF54
Date 31/05/2019 **Type** Quadrat 20 x 20
Location
MGA Zone 52 382047 mE 7113142 mN 127.820477 E -26.095987 S
Habitat AbTsS

SPECIES LIST:

Name	Cover	Height
Acacia brachystachya	4-5	2.5-3.5
Acacia kempeana	Out	0.8
Acacia ligulata	1	3
Aluta maisonneuvei subsp. maisonneuvei	Out	0.6
Alyogyne pinoniana	1	0.6
Amphipogon caricinus var. caricinus	+	0.2
Androcalva loxophylla	+	0.8
Aristida contorta	+	0.1
Aristida holathera var. holathera	+	0.25
Bonamia erecta	+	0.2
Chrysoccephalum pterochaetum	Out	0.3
Cymbopogon ambiguus	+	0.6
Cymbopogon ambiguus	Out	0.4
Digitaria brownii	+	0.2
Enneapogon polyphyllus	+	0.2
Eremophila longifolia	Out	0.75
Euphorbia tannensis subsp. eremophila	+	0.5
Hakea lorea subsp. lorea	+	0.6
Hannafordia bissillii subsp. bissillii	Out	0.3
Paraneurachne muelleri	+	0.2
Ptilotus obovatus	+	0.5
Sclerolaena johnsonii	+	0.25
Solanum centrale	+	0.2
Solanum lasiophyllum	+	0.5
Triodia basedowii	12-15	0.3
Triodia schinzii	Out	0.3-0.6



Cassini Resources - Babel and Nebo 2018 Site WF55

Date 31/05/2019 Type Quadrat 20 x 20

Location

MGA Zone 51 381815 mE 7113232 mN 121.818165 E -26.095156 S

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	+	0.6
Alyogyne pinoniana	1-2	0.6
Aristida holathera var. holathera	+	0.2
Chrysocephalum pterochaetum	+	0.2
Eremophila longifolia	+	0.7
Goodenia asteriscus	Out	0.05
Hakea lorea subsp. lorea	+	0.5
Hibiscus solanifolius	+	0.6
Minuria leptophylla	+	0.05
Paraneurachne muelleri	+	0.3
Ptilotus obovatus	+	0.4
Ptilotus sessilifolius	+	0.2
Salsola australis	-	-
Sclerolaena johnsonii	+	0.15
Senna pleurocarpa var. pleurocarpa	+	0.4
Solanum centrale	+	0.3
Triodia scariosa	20	0.4-0.6



Cassini Resources - Babel and Nebo 2018 Site WF56**Date** 31/05/2019 **Type** Quadrat 20 x 20**Location****MGA Zone** 51 381126 mE 7112992 mN 121.811255 E -26.097266 S**Habitat** HPMW**SPECIES LIST:**

Name	Cover	Height
<i>Abutilon otocarpum</i>	Out	0.2
<i>Acacia aneura</i>	9-10	6-8
<i>Acacia tetragonophylla</i>	+	0.6
<i>Aristida contorta</i>	6	0.2
<i>Boerhavia repleta</i>	+	0.15
<i>Cenchrus ciliaris</i>	+	0.5
<i>Chrysocephalum pterochaetum</i>	+	0.25
<i>Cleome viscosa</i>	+	0.4
<i>Cymbopogon ambiguus</i>	+	0.6
<i>Digitaria brownii</i>	1	0.25
<i>Einadia nutans</i> subsp. <i>eremaea</i>	+	0.3
<i>Enneapogon avenaceus</i>	3	0.3
<i>Enneapogon polyphyllus</i>	+	0.25
<i>Enteropogon ramosus</i>	+	0.35
<i>Eremopeha spinosa</i>	1	0.15
<i>Eremophila longifolia</i>	+	0.3
<i>Euphorbia australis</i> var. <i>erythrantha</i>	+	0.05
<i>Euphorbia biconvexa</i>	+	0.1
<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	+	0.3
<i>Maireana villosa</i>	+	0.15
<i>Maireana villosa</i>	Out	0.2
<i>Monachather paradoxus</i>	+	0.3
<i>Paraneurachne muelleri</i>	+	0.3
<i>Ptilotus helipteroides</i>	+	0.3
<i>Ptilotus obovatus</i>	+	0.5
<i>Salsola australis</i>	+	0.2
<i>Sclerolaena cornishiana</i>	+	0.2
<i>Sclerolaena johnsonii</i>	+	0.35
<i>Sclerolaena parviflora</i>	1	0.25
<i>Senna artemisioides</i> subsp. x <i>artemisioides</i>	+	1.4
<i>Sida calyxhymenia</i>	Out	1.2
<i>Sida fibulifera</i>	+	0.4
<i>Solanum cleistogamum</i>	+	0.1
<i>Solanum lasiophyllum</i>	Out	0.3
<i>Triraphis mollis</i>	+	0.5



Cassini Resources - Babel and Nebo 2018 Site WF57
Date 31/05/2019 **Type** Quadrat 20 x 20
Location
MGA Zone 51 383205 mE 7115037 mN
Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	+	1
Acacia maitlandii	Out	0.5
Acacia melleodora	+	0.4
Acacia pruinocarpa	Out	1.3
Aluta maisonneuvei subsp. maisonneuvei	+	0.3
Alyogyne pinoniana	+	1
Androcalva loxophylla	+	0.4
Bonamia erecta	1	0.2
Chrysocephalum pterochaetum	Out	0.3
Cymbopogon ambiguus	+	0.6
Dicrastylis exsuccosa	+	0.6
Eremophila longifolia	+	1.1
Hakea lorea subsp. lorea	+	1.2
Halgania cyanea var. cyanea	1	0.2
Paraneurachne muelleri	+	0.3
Ptilotus obovatus	+	0.5
Ptilotus sessilifolius	+	0.3
Scaevola parvifolia subsp. parvifolia	Out	0.4
Senna artemisioides subsp. filifolia	Out	0.6
Solanum centrale	Out	0.3
Triodia basedowii	30	0.4-0.9
Triodia schinzii	1	-
Vincetoxicum lineare	2	0.4



Cassini Resources - Babel and Nebo 2018 Site ARR01A**Type Relevé****Location****MGA Zone 52 347630 mE 7123086 mN 127.477555 E -26.003003 S****Habitat HPMW****SPECIES LIST:**

Name	Cover	Height
Abutilon macrum	+	0.3
Abutilon macrum	+	0.4
Abutilon otocarpum	+	0.15
Acacia aptaneura	+	1
Acacia ayersiana	1-2	4
Acacia incurvaneura	2	4
Acacia kempeana	+	1.8
Acacia pruinocarpa	+	5
Acacia tetragonophylla	+	1.8
Acacia victoriae subsp. victoriae	+	1.2
Aristida contorta	15-20	0.15
Aristida inaequiglumis	+	1.5
Aristida obscura	+	0.4
Boerhavia repleta	+	0.05
Cenchrus ciliaris	+	0.5
Chloris virgata	+	0.7
Chrysocephalum pterochaetum	+	0.3
Citrullus colocynthis	+	0.05
Cleome viscosa	0.5	0.3
Convolvulus clementii	+	0.05
Corymbia opaca	+	6
Cymbopogon ambiguus	2	0.5
Digitaria brownii	+	0.2
Einadia nutans subsp. eremaea	+	0.5
Enchytraea tomentosa var. tomentosa	+	0.3
Enneapogon avenaceus	+	0.1
Enneapogon polyphyllus	3	0.15
Enneapogon robustissimus	+	0.4
Enteropogon ramosus	+	0.4
Eragrostis eriopoda	+	0.2
Eremophila glabra subsp. glabra	+	1.8
Eremophila latrobei subsp. glabra	+	1.5
Eremophila longifolia	+	1.8
Eremophila serrulata	+	1.2
Eriachne aristidea	+	0.15
Eriachne helmsii	2-3	0.5
Eriachne pulchella subsp. dominii	+	0.15
Euphorbia australis var. erythrantha	+	0.05
Hakea lorea subsp. lorea	0.5	4-5
Heliotropium cunninghamii	+	0.2
Hibiscus burtonii	+	0.2
Indigofera linnaei	+	0.05
Lepidium phlebopetalum	+	0.1
Maireana villosa	+	0.3
Maireana villosa	+	0.3

<i>Monachather paradoxus</i>	+	0.3
<i>Panicum decompositum</i>	+	0.4
<i>Paraneurachne muelleri</i>	+	0.4
<i>Portulaca intraterranea</i>	+	0.05
<i>Psydrax suaveolens</i>	+	2
<i>Ptilotus helipteroides</i>	+	0.2
<i>Ptilotus obovatus</i>	0.25	0.5
<i>Ptilotus polystachyus</i>	+	0.3
<i>Rhagodia eremaea</i>	+	0.6
<i>Rhyncharrhena linearis</i>	+	1
<i>Salsola australis</i>	+	0.2
<i>Scaevola amblyanthera</i> var. <i>centralis</i>	+	0.1
<i>Scaevola spinescens</i> (broad leaf spineless form)	+	1
<i>Sclerolaena convexula</i>	+	0.2
<i>Sclerolaena cornishiana</i>	2	0.2
<i>Senna artemisioides</i> (TAT1)	+	1.2
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	+	1.6
<i>Senna artemisioides</i> subsp. <i>petiolaris</i>	+	0.8
<i>Senna</i> sp. Billabong (J.D. Alonzo 721)	+	1.5
<i>Sida platycalyx</i>	+	0.3
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	+	0.2
<i>Sida</i> sp. L (A.M. Ashby 4202)	+	0.1
<i>Solanum centrale</i>	+	0.5
<i>Solanum lasiophyllum</i>	+	0.5
<i>Swainsona phacoides</i>	+	0.2
<i>Swainsona tenuis</i>	+	0.2
<i>Teucrium teucriiflorum</i>	+	0.8
<i>Tribulus astrocarpus</i>	+	0.05
<i>Tribulus terrestris</i>	+	0.1
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.1

Cassini Resources - Babel and Nebo 2018 Site ARR02A

Type Relevé

Location

MGA Zone 52 347419 **mE** 7122677 **mN** 127.475400 **E** -26.006673 **S**

Habitat SMS

SPECIES LIST:

Name	Cover	Height
Abutilon otocarpum	+	0.2
Acacia aptaneura	5-10	3-4
Acacia ayersiana	+	4
Acacia pruinocarpa	+	5
Chrysocephalum pterochaetum	+	2
Eragrostis eriopoda	15	0.4
Eremophila latrobei subsp. glabra	+	1.5
Eremophila serrulata	2	1-1.5
Eriachne helmsii	+	0.3
Eriachne mucronata	5	0.2
Hibiscus burtonii	+	0.2
Maireana villosa	+	0.3
Monachather paradoxus	+	0.2
Ptilotus obovatus	+	0.3
Rhagodia eremaea	+	1.2
Solanum lasiophyllum	+	0.2
Teucrium teucriiflorum	+	0.5
Triodia schinzii	+	0.3

Cassini Resources - Babel and Nebo 2018 Site ARR03A

Type Releve

Location

MGA Zone 52 348635 **mE** 7122634 **mN** 127.487542 **E** -26.007188 **S**

Habitat AkS

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	0.5	0.5
Acacia aptaneura	+	3-4
Acacia kempeana	15	3-4
Acacia tetragonophylla	2	3-3.5
Aristida contorta	+	0.2
Boerhavia repleta	+	0.2
Cenchrus ciliaris	+	0.5
Chrysocephalum pterochaetum	+	0.3
Cleome viscosa	+	0.4
Cymbopogon ambiguus	+	0.5
Dactyloctenium radulans	+	0.1
Dichanthium sericeum subsp. sericeum	+	0.6
Einadia nutans subsp. eremaea	+	0.5
Enchytraea tomentosa var. tomentosa	0.5	0.3
Enneapogon polyphyllus	+	0.2
Enneapogon polyphyllus	+	0.1
Eremophea spinosa	+	0.2
Eremophila longifolia	+	1.2
Euphorbia australis var. erythrantha	+	0.1
Hibiscus burtonii	+	0.3
Hibiscus sturtii var. grandiflorus	+	0.4
Malvastrum americanum	+	0.5
Panicum decompositum	+	0.4
Paspalidium basicladum	0.5	0.15
Ptilotus helipteroides	+	0.1
Ptilotus obovatus	3	0.4
Rhagodia eremaea	1	1.5
Salsola australis	+	0.3
Sclerolaena cornishiana	+	0.3
Senna artemisioides subsp. helmsii	+	0.5
Senna artemisioides subsp. x artemisioides	15	1-1.5
Sida sp. Excedentifolia (J.L. Egan 1925)	0.5	0.2
Teucrium teucriiflorum	+	0.4

Cassini Resources - Babel and Nebo 2018 Site ARR04A

Type Relevé

Location

MGA Zone 52 349213 **mE** 7122023 **mN** 127.493245 **E** -26.012764 **S**

Habitat COG

SPECIES LIST:

Name	Cover	Height
Acacia kempeana	1-2	3
Acacia tetragonophylla	+	3
Boerhavia repleta	+	0.2
Cenchrus ciliaris	+	0.5
Cleome viscosa	+	0.4
Dichanthium sericeum subsp. sericeum	+	0.6
Dysphania cristata	+	0.2
Enneapogon polyphyllus	30	0.2
Enneapogon polyphyllus	5	0.2
Eremophea spinosa	2	0.15
Euphorbia australis var. erythrantha	+	0.1
Malvastrum americanum	+	0.4
Panicum decompositum	+	0.5
Ptilotus obovatus	+	0.4
Rhagodia eremaea	+	1.5
Salsola australis	+	0.4
Sclerolaena patenticuspis	4-5	0.1
Senna artemisioides subsp. petiolaris (narrow petiole form)	+	1.6
Solanum cleistogamum	+	0.2
Solanum lasiophyllum	+	0.3
Triraphis mollis	+	0.5

Cassini Resources - Babel and Nebo 2018 Site ARR05A

Type Releve

Location

MGA Zone 52 349346 **mE** 7121035 **mN** 127.494460 **E** -26.021696 **S**

Habitat AcS

SPECIES LIST:

Name	Cover	Height
Abutilon cryptopetalum	0.5	0.4
Acacia ayersiana	1	4
Acacia cuthbertsonii subsp. cuthbertsonii	5-10	3
Acacia pruinocarpa	2	4
Acacia tetragonophylla	+	2
Aristida contorta	+	0.2
Boerhavia repleta	+	0.2
Cenchrus ciliaris	+	0.5
Chrysocephalum pterochaetum	+	0.3
Cleome viscosa	1	0.4
Cymbopogon ambiguus	+	0.5
Dactyloctenium radulans	+	0.1
Digitaria brownii	+	0.3
Dysphania cristata	+	0.2
Enchytraea tomentosa var. tomentosa	+	0.3
Enneapogon polypillus	+	0.1
Eremophila latrobei subsp. glabra	4	2
Eriachne pulchella subsp. dominii	+	0.1
Euphorbia tannensis subsp. eremophila	+	0.2
Evolvulus alsinoides var. villosicalyx	+	0.1
Heliotropium cunninghamii	+	0.1
Hibiscus burtonii	+	0.2
Indigofera warburtonensis	+	0.6
Maireana planifolia	+	0.6
Maireana villosa	+	0.2
Ptilotus obovatus	+	0.3
Rhagodia eremaea	+	2
Salsola australis	+	0.3
Sclerolaena convexula	+	0.1
Senna artemisioides subsp. helmsii	3	1
Senna sp. Billabong (J.D. Alonso 721)	+	1.5
Setaria reflexa	+	0.2
Teucrium teucriiflorum	+	0.6
Tribulus astrocarpus	+	0.05
Tribulus terrestris	+	0.1

Cassini Resources - Babel and Nebo 2018 Site ARR06A**Type** Relevé**Location****MGA Zone** 52 349266 **mE** 7121113 **mN** 127.493670 **E** -26.020984 **S****Habitat** SS**SPECIES LIST:**

Name	Cover	Height
Acacia aptaneura	+	1.8
Acacia pruinocarpa	1	4
Acacia tetragonophylla	+	0.5
Aristida contorta	15	0.2
Aristida obscura	+	0.4
Boerhavia repleta	+	0.2
Brachyscome ciliaris	+	0.1
Cenchrus ciliaris	+	0.8
Chrysocephalum apiculatum subsp. racemosum	+	0.2
Chrysocephalum pterochaetum	+	0.3
Cleome viscosa	+	0.4
Cymbopogon ambiguus	+	0.5
Dactyloctenium radulans	+	0.1
Einadia nutans subsp. eremaea	+	0.4
Enchytraea tomentosa var. tomentosa	+	0.1
Enneapogon polyphyllus	+	0.2
Eragrostis laniflora	+	0.3
Eremophila latrobei subsp. glabra	1	1.5
Euphorbia centralis	+	0.1
Evolvulus alsinoides var. villosicalyx	+	0.1
Hakea lorea subsp. lorea	+	1-3
Heliotropium cunninghamii	+	0.2
Panicum decompositum	+	0.5
Paraneurachne muelleri	+	0.5
Ptilotus obovatus	+	0.2
Rutidosis helichrysoides	+	0.2
Salsola australis	+	0.2
Scaevola amblyanthera var. centralis	+	0.15
Sclerolaena convexula	+	0.1
Senna artemisioides subsp. petiolaris (narrow petiole form)	+	1.5
Senna sp. Billabong (J.D. Alonzo 721)	15-20	1.5
Sida calyxhymenia	+	1.2
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.2
Solanum lasiophyllum	+	0.4
Swainsona tenuis	+	0.1
Tephrosia sp. Central (P.K. Latz 17037)	+	0.1
Yakirra australiensis var. australiensis	+	0.1

Cassini Resources - Babel and Nebo 2018 Site ARR07A

Type Relevé

Location

MGA Zone 52 355766 **mE** 7116255 **mN** 127.558073 **E** -26.065499 **S**

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	+	1.4
Acacia maitlandii	+	1.5
Acacia pachyacra	+	2
Acacia walkeri	+	1.5
Amphipogon caricinus var. caricinus	+	0.3
Bonamia erecta	+	0.3
Dicrastylis exsuccosa	3	0.4
Eragrostis eriopoda/laniflora	1	0.3
Goodenia glandulosa	+	0.1
Goodenia mueckeana	+	0.15
Goodenia triodiophila	+	0.3
Grevillea eriostachya	+	1
Hakea lorea subsp. lorea	+	4
Kennedia prorepens	+	0.3
Leptosema chambersii	2	0.3
Paspalidium reflexum	+	0.4
Petalostylis cassioides	2	0.4
Scaevola parvifolia subsp. parvifolia	+	0.15
Tridia basedowii	5-10	1
Tridia schinzii	30	1.5
Tripogonella loliformis	+	0.1

Cassini Resources - Babel and Nebo 2018 Site ARR08A

Type Relevé

Location

MGA Zone 52 359200 **mE** 7113811 **mN** 127.592131 **E** -26.087899 **S**

Habitat LMW/SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	4	2
Acacia maitlandii	+	1
Acacia melleodora	+	1.5
Alyogyne pinoniana	+	0.6
Androcalva loxophylla	5	0.3
Aristida holathera var. holathera	+	0.4
Bonamia erecta	+	0.3
Digitaria brownii	+	0.4
Eragrostis laniflora	+	0.3
Eremophila platythamnos subsp. exotrichys	1	0.5
Eucalyptus oxymitra	10-12	3-4
Goodenia glandulosa	+	0.2
Hakea lorea subsp. lorea	1	3
Halgania erecta	+	0.2
Haloragis uncatipila	+	0.3
Paraneurachne muelleri	+	0.3
Senna pleurocarpa var. pleurocarpa	+	0.5
Triodia basedowii	5	1
Triodia schinzii	30	1.4

Cassini Resources - Babel and Nebo 2018 Site ARR09A

Type Releve

Location

MGA Zone 52 361151 **mE** 7113178 **mN** 127.611567 **E** -26.093803 **S**

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia melleodora	1	3
Aluta maisonneuvei subsp. maisonneuvei	3-5	1.2
Aristida holathera var. holathera	2	0.4
Chrysocephalum eremaeum	+	0.3
Crotalaria cunninghamii	+	0.5
Cymbopogon ambiguus	+	0.5
Dodonaea viscosa subsp. angustissima	12	3
Enneapogon polyphyllus	+	0.1
Eragrostis laniflora	+	0.4
Eremophila willsii subsp. integrifolia	+	1.3
Eriachne aristidea	1	0.4
Grevillea stenobotrys	3	3
Paractaenum refractum	+	0.4
Ptilotus obovatus	1	0.8
Scaevola basedowii	1	0.3
Senna artemisioides subsp. petiolaris (narrow petiole form)	+	1.5
Sida spodochroma	+	0.2
Solanum lasiophyllum	+	0.5
Tridia basedowii	2	1
Tridia schinzii	2	1.5

Cassini Resources - Babel and Nebo 2018 Site ARR10A

Type Relevé

Location

MGA Zone 52 363819 **mE** 7111624 **mN** 127.638077 **E** -26.108085 **S**

Habitat SMS

SPECIES LIST:

Name	Cover	Height
Acacia aneura	3-4	4-5
Acacia kempeana	1	3
Amphipogon caricinus var. caricinus	+	0.3
Aristida contorta	+	0.1
Cheilanthes lasiophylla	+	0.1
Cheilanthes sieberi subsp. sieberi	+	0.15
Cleome viscosa	+	0.4
Cymbopogon ambiguus	+	0.6
Digitaria brownii	+	0.2
Enneapogon polyphyllus	+	0.15
Eragrostis eriopoda	+	0.3
Eragrostis eriopoda	3	0.3
Eremophila hughesii subsp. hughesii	0.5	0.8
Eremophila latrobei subsp. glabra	2	1
Eriachne mucronata	15	0.2
Goodenia vilmoriniae	+	0.2
Indigofera warburtonensis	+	0.6
Maireana planifolia	+	0.5
Monachather paradoxus	+	0.3
Ptilotus helipteroides	+	0.1
Ptilotus obovatus	+	0.4
Sclerolaena convexula	+	0.05
Senna artemisioides subsp. oligophylla	+	1.8
Senna glaucifolia	3	1.5
Sida sp. Excedentifolia (J.L. Egan 1925)	+	0.3
Solanum lasiophyllum	+	0.5
Teucrium teucriiflorum	+	0.5

Cassini Resources - Babel and Nebo 2018 Site ARR11A

Type Releve

Location

MGA Zone 52 366764 **mE** 7112829 **mN** 127.667647 **E** -26.097482 **S**

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia pachyacra	1	2
Acacia victoriae subsp. victoriae	+	1.6
Alyogyne pinoniana	+	0.8
Aristida contorta	+	0.1
Cymbopogon ambiguus	+	0.5
Enneapogon avenaceus	+	0.1
Enneapogon polyphyllus	+	0.1
Eremophila longifolia	+	2
Euphorbia tannensis subsp. eremophila	+	0.2
Hakea lorea subsp. lorea	+	4
Paraneurachne muelleri	+	0.3
Ptilotus obovatus	+	0.3
Triodia scariosa	40	0.7

Cassini Resources - Babel and Nebo 2018 Site CJR05B

Type Relevé

Location

MGA Zone 52 366551 **mE** 7137624 **mN** 127.668042 **E** -25.873628 **S**

Habitat AvS

SPECIES LIST:

Name	Cover	Height
<i>Atriplex vesicaria</i>	5	0.6
<i>Cenchrus ciliaris</i>	3	0.5
<i>Maireana triptera</i>	10	0.6
<i>Maireana villosa</i>	10	0.3

Cassini Resources - Babel and Nebo 2018 Site CJR06B**Type** Relevé**Location****MGA Zone** 52 366851 **mE** 7137745 **mN** 127.671048 **E** -25.872564 **S****Habitat** CPN-G**SPECIES LIST:**

Name	Cover	Height
Acacia pteraneura	0.1	2-5
Aristida latifolia	10	1
Astrebla pectinata	1	0.7
Cenchrus ciliaris	0.1	0.5
Chrysocephalum pterocheatum	0.01	0.3
Enneapogon caerulescens	5	0.4
Enteropogon ramosus	0.1	0.5
Eragrostis setifolia	50	0.4
Eremophila longifolia	0.1	2
Iseilema membranaceum	5	0.3
Panicum decompositum	0.5	0.6
Pterocaulon sphacelatum	0.1	1
Rhynchosia minima	2	0.4

Cassini Resources - Babel and Nebo 2018 Site CJR09B**Type Relevé****Location****MGA Zone 52 367287 mE 7136750 mN 127.675299 E -25.881586 S****Habitat CPN-G****SPECIES LIST:**

Name	Cover	Height
Aristida contorta	20	0.25
Aristida latifolia	5	1.2
Boerhavia repleta	0.1	0.1
Chrysocephalum apiculatum subsp. racemosum	0.1	0.3
Chrysocephalum pterochaetum	0.1	0.4
Diplachne fusca subsp. muelleri	0.1	0.4
Enneapogon avenaceus	0.1	0.25
Enteropogon ramosus	1	0.2
Eragrostis eriopoda	0.1	0.4
Eriachne mucronata desert form	0.1	0.3
Sida sp. Excedentifolia (J.L. Egan 1925)	0.1	0.3
Streptoglossa liatroides	0.5	0.3
Triraphis mollis	0.5	0.5

Cassini Resources - Babel and Nebo 2018 Site CJR10B

Type Releve

Location

MGA Zone 52 366484 **mE** 7136722 **mN** 127.667282 **E** -25.881765 **S**

Habitat AvS

SPECIES LIST:

Name	Cover	Height
Aristida contorta	2	0.2
Atriplex vesicaria	5-30	0.5
Calandrinia sp.	0.01	0.05
Cenchrus ciliaris	0.1	0.5
Dactyloctenium radulans	0.01	0.1
Dissocarpus paradoxus	2	0.2
Eremophila battii	1	0.4
Euphorbia biconvexa	0.01	0.6
Maireana integra	1	1
Maireana villosa	1	1
Maireana villosa	2	0.3
Portulaca intraterranea	0.1	0.1
Sclerolaena cuneata	0.5	0.2
Sclerolaena diacantha	2	0.2
Tribulus astrocarpus	0.1	0.1
Tribulus terrestris	0.1	0.1

Cassini Resources - Babel and Nebo 2018 Site CJR11B**Type** Relevé**Location****MGA Zone** 52 366452 **mE** 7135093 **mN** 127.666798 **E** -25.896468 **S****Habitat** AvS**SPECIES LIST:**

Name	Cover	Height
Acacia pteraneura	5	3
Aristida contorta	1	0.2
Enneapogon avenaceus	1	0.2
Maireana triptera	15	0.3
Maireana villosa	10	0.3

Cassini Resources - Babel and Nebo 2018 Site CJR12B**Type** Relevé**Location****MGA Zone** 52 366156 **mE** 7134677 **mN** 127.663801 **E** -25.900196 **S****Habitat** MUWA**SPECIES LIST:**

Name	Cover	Height
Acacia ayersiana	2	6.0
Acacia pteraneura	3-8	6
Aristida latifolia	1	0.7
Cucumis argenteus	0.01	1
Eragrostis eriopoda	20	0.4
Eriachne helmsii	2	0.6
Eriachne mucronata desert form	1	0.3
Maireana villosa	5	0.3
Ptilotus obovatus	0.1	0.5
Solanum lasiophyllum	0.5	0.7
Thyridolepis mitchelliana	2	0.6

Cassini Resources - Babel and Nebo 2018 Site CJR14B

Type Relevé

Location

MGA Zone 52 366729 mE 7134943 mN 127.669547 E -25.897848 S

Habitat CPN-G

SPECIES LIST:

Name	Cover	Height
Aristida contorta	10	0.2
Aristida latifolia	15	1
Boerhavia repleta	0.5	0.1
Cenchrus ciliaris	0-5	0.5
Chrysocephalum pterochaetum	0.1	0.3
Cleome viscosa	0.01	0.3
Cymbopogon ambiguus	0.1	0.4
Dichanthium sericeum subsp. humilis	0.1	0.3
Enneapogon caerulescens	2	0.25
Eragrostis setifolia	30	0.4
Eragrostis setifolia	30	0.4
Euphorbia biconvexa	0.01	0.6
Heliotropium moorei	0.01	0.4
Iseilema membranaceum	0.5	0.2
Portulaca intraterranea	0.01	0.10
Ptilotus aervoides	0.1	0.05
Rutidosis helichrysoides	0.1	0.4
Sclerolaena cornishiana	0.1	0.4
Sida sp. Excedentifolia (J.L. Egan 1925)	0.01	0.4
Tribulus terrestris	0.1	0.05

Cassini Resources - Babel and Nebo 2018 Site CJR18B

Type Relevé

Location

MGA Zone 52 366112 **mE** 7130111 **mN** 127.662897 **E** -25.941412 **S**

Habitat MUWA

SPECIES LIST:

Name	Cover	Height
Acacia aneura	4	1.5-3
Acacia aptaneura	4	2-4
Acacia ligulata	0.1	1.8
Aristida contorta	0.01	0.2
Aristida holathera var. holathera	0.25	0.4
Aristida latifolia	0.1	1
Atriplex elachophylla	0.1	0.4
Cenchrus ciliaris	0.1	0.5
Enneapogon polyphyllus	0.1	0.3
Eragrostis laniflora	10	0.5
Eriachne helmsii	20	0.6
Maireana integra	0.5	0.8
Maireana villosa	1	0.3
Ptilotus polystachyus	0.1	0.3
Sclerolaena convexula	0.1	0.4
Sclerolaena cornishiana	2	0.4
Teucrium teucriiflorum	0.25	0.8

Cassini Resources - Babel and Nebo 2018 Site CJR19B

Type Relevé

Location

MGA Zone 52 367612 mE 7128662 mN 127.677728 E -25.954630 S

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia kempeana	0.1	2
Acacia victoriae subsp. victoriae	0.1	1.5
Aristida contorta	0.1	0.3
Cymbopogon ambiguus	0.1	0.8
Enneapogon avenaceus	0.1	0.3
Enneapogon caerulescens	0.1	0.3
Eragrostis eriopoda	0.1	0.4
Eragrostis sp. limestone (P.K. Latz 5921)	0.1	0.3
Eremophila latrobei subsp. glabra	0.5	1.5
Eremophila longifolia	0.1	1.5
Euphorbia centralis	0.1	0.2
Hakea lorea subsp. lorea	0.1	2.4
Paraneurachne muelleri	0.1	0.4
Poaceae sp. Indet.	0.1	0.3
Pterocaulon sphacelatum	0.1	0.5
Ptilotus obovatus	0.1	0.5
Sclerolaena cornishiana	0.1	0.5
Senna artemisioides subsp. helmsii	0.1	0.8
Senna artemisioides subsp. petiolaris	0.5	1.5
Senna pleurocarpa var. pleurocarpa	0.1	0.5
Sida sp.	0.1	0.3
Solanum centrale	0.1	0.2
Triodia scariosa	35	0.5

Cassini Resources - Babel and Nebo 2018 Site CJR24B**Type** Releve**Location****MGA Zone** 52 369145 **mE** 7126221 **mN** 127.692793 **E** -25.976805 **S****Habitat** SDAGS**SPECIES LIST:**

Name	Cover	Height
Acacia ligulata	0.1	2
Acacia melleodora	1	2
Aluta maisonneuvei subsp. maisonneuvei	10	0.6
Aristida holathera var. holathera	1	0.4
Cenchrus ciliaris	1	0.6
Cymbopogon ambiguus	0.5	0.8
Dodonaea viscosa subsp. angustissima	1	2
Eragrostis laniflora	2	0.5
Eriachne helmsii	1	0.6
Senna artemisioides subsp. filifolia (TB releve)	0.1	1.8
Triodia schinzii	50	1.2

Cassini Resources - Babel and Nebo 2018 Site DER12A

Type Relevé

Location

MGA Zone 52 372173 mE 7117283 mN 127.722162 E -26.057763 S

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	3-5	3-4
Acacia ayersiana	3	3
Acacia tetragonophylla	1.5	1.5
Aristida contorta	5	0.2
Boerhavia repleta	1	0.3
Cenchrus ciliaris	0.4	0.4
Chrysocephalum pterochaetum	0.2	0.2
Cleome viscosa	2	0.4
Cymbopogon ambiguus	1	0.4
Digitaria brownii	1	0.4
Enchytraea tomentosa var. tomentosa	0.4	0.4
Enneapogon polyphyllus	0.1	0.1
Eragrostis eriopoda	3	0.4
Eremophila latrobei subsp. glabra	1.2	1.2
Eremophila longifolia	1	2
Euphorbia australis var. erythrantha	0.1	0.1
Euphorbia tannensis subsp. eremophila	2-3	0.2
Hakea lorea subsp. lorea	6	6
Heliotropium cunninghamii	0.2	0.2
Hibiscus burtonii	0.4	0.4
Maireana villosa	1	0.3
Panicum decompositum	0.3	0.3
Paraneurachne muelleri	3	0.5
Portulaca intraterranea	0.2	0.2
Ptilotus helipteroides	0.1	0.1
Ptilotus obovatus	6	0.4
Ptilotus polystachyus	0.4	0.4
Salsola australis	0.3	0.3
Scaevola amblyanthera var. centralis	0.1	0.1
Sclerolaena convexula	0.2	0.2
Sclerolaena cornishiana	2	0.3
Sida sp. Excedentifolia (J.L. Egan 1925)	0.3	0.3
Solanum centrale	0.3	0.3
Solanum cleistogamum	0.3	0.3
Solanum lasiophyllum	0.4	0.4
Teucrium teucriiflorum	1	1
Tragus australianus	0.1	0.1
Tribulus astrocarpus	0.1	0.1
Tribulus terrestris	0.1	0.1

Cassini Resources - Babel and Nebo 2018 Site DER13A

Type Relevé

Location

MGA Zone 52 371000 mE 7117474 mN 127.710457 E -26.055935 S

Habitat HPMWD

SPECIES LIST:

Name	Cover	Height
<i>Acacia aptaneura</i>	2-3	3
<i>Acacia ayersiana</i>	1-2	2-3
<i>Acacia ligulata</i>	+	2
<i>Acacia minyura</i>	1	2
<i>Acacia tetragonophylla</i>	+	1.6
<i>Aristida contorta</i>	1	0.1
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.3
<i>Cenchrus ciliaris</i>	+	0.3
<i>Chrysocephalum pterochaetum</i>	+	0.3
<i>Cymbopogon ambiguus</i>	+	0.4
<i>Duboisia hopwoodii</i>	+	2.5
<i>Einadia nutans</i> subsp. <i>eremaea</i>	+	0.5
<i>Enchytraea tomentosa</i> var. <i>tomentosa</i>	+	0.3
<i>Eragrostis eriopoda</i>	5-8	0.4
<i>Eremophila foliosissima</i>	2-5	0.4
<i>Eremophila latrobei</i> subsp. <i>glabra</i>	+	1
<i>Eriachne helmsii</i>	1-2	0.4
<i>Maireana villosa</i>	12	0.3
<i>Monachather paradoxus</i>	3	0.3
<i>Ptilotus obovatus</i>	+	0.4
<i>Ptilotus polystachyus</i>	+	0.4
<i>Rhyncharrena linearis</i>	+	1.5
<i>Sclerolaena convexula</i>	+	0.2
<i>Senna pleurocarpa</i> var. <i>pleurocarpa</i>	+	0.5
<i>Solanum centrale</i>	+	0.3
<i>Solanum lasiophyllum</i>	+	0.2
<i>Teucrium teucriiflorum</i>	+	0.5
<i>Thyridolepis mitchelliana</i>	1	0.4
<i>Yakirra australiensis</i> var. <i>australiensis</i>	+	0.1

Cassini Resources - Babel and Nebo 2018 Site DER14A

Type Relevé

Location

MGA Zone 52 368166 mE 7118018 mN 127.682188 E -26.050768 S

Habitat HPMWD

SPECIES LIST:

Name	Cover	Height
Acacia aneura	15-20	5-6
Acacia aptaneura	+	2
Acacia aptaneura	1	5
Acacia ayersiana	2	4-5
Acacia ayersiana	+	2
Aristida contorta	+	0.2
Cleome viscosa	+	0.3
Eragrostis eriopoda	5-8	0.4
Eremophila foliosissima	10-15	0.5
Eremophila latrobei subsp. glabra	+	1.2
Eriachne helmsii	2	0.4
Hibiscus burtonii	+	0.4
Maireana villosa	3	0.4
Monachather paradoxus	1	0.4
Paspalidium basicladum	+	0.1
Ptilotus helipteroides	+	0.1
Rhyncharrhena linearis	+	1.2
Solanum lasiophyllum	+	0.1
Teucrium teucriiflorum	+	0.8
Thyridolepis mitchelliana	7	0.3

Cassini Resources - Babel and Nebo 2018 Site DER15A

Type Relevé

Location

MGA Zone 52 369419 **mE** 7115262 **mN** 127.694435 **E** -26.075762 **S**

Habitat CPP

SPECIES LIST:

Name	Cover	Height
Acacia aneura	+	2
Acacia aptaneura	3	2
Acacia tetragonophylla	+	3 to 0.8
Aristida contorta	2	0.1
Boerhavia repleta	+	0.1
Cymbopogon ambiguus	+	0.4
Dactyloctenium radulans	1	0.1
Diplachne fusca subsp. muelleri	+	0.3
Enneapogon polyphyllus	+	0.1
Enteropogon ramosus	2	0.4
Eragrostis dielsii	+	0.05
Eragrostis exigua	+	0.3
Eragrostis pergracilis	5	0.1
Eragrostis xerophila	+	0.3
Eremophila longifolia	+	2
Fimbristylis dichotoma	+	0.1
Fimbristylis dichotoma	+	0.05
Panicum decompositum	+	0.4
Portulaca intraterranea	+	0.05
Ptilotus obovatus	+	0.5
Salsola australis	+	0.2
Sclerolaena convexula	+	0.1
Sclerolaena cornishiana	+	0.2
Sclerolaena eriacantha	+	0.1
Trianthema triquetrum	+	0.05
Tripogonella loliformis	+	0.05

Cassini Resources - Babel and Nebo 2018 Site DER16A

Type Relevé

Location

MGA Zone 52 367223 mE 7110412 mN 127.671989 E -26.119344 S

Habitat AmmS

SPECIES LIST:

Name	Cover	Height
Acacia melleodora	+	1.8
Aluta maisonneuvei subsp. maisonneuvei	25-30	1.3
Amphipogon caricinus var. caricinus	+	0.3
Aristida contorta	+	0.2
Aristida holathera var. holathera	+	0.3
Cymbopogon ambiguus	+	0.6
Dodonaea viscosa subsp. angustissima	+	2
Eragrostis laniflora	+	0.3
Eriachne helmsii	+	0.4
Grevillea eriostachya	+	1.8
Paraneurachne muelleri	+	0.3
Salsola australis	+	0.3
Scaevola parvifolia subsp. parvifolia	+	0.2
Triodia basedowii	15	1
Triodia schinzii	2	1.3

Cassini Resources - Babel and Nebo 2018 Site DER17A

Type Relevé

Location

MGA Zone 52 371774 mE 7109470 mN 127.717405 E -26.128259 S

Habitat LMW

SPECIES LIST:

Name	Cover	Height
<i>Acacia ligulata</i>	1	2
<i>Alyogyne pinoniana</i>	+	0.8
<i>Aristida contorta</i>	+	0.2
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.2
<i>Corymbia opaca</i>	+	6-8
<i>Cymbopogon ambiguus</i>	+	0.6
<i>Enneapogon polyphyllus</i>	+	0.1
<i>Eragrostis laniflora</i>	+	0.3
<i>Eriachne aristidea</i>	+	0.2
<i>Eriachne helmsii</i>	+	0.3
<i>Eucalyptus oxymitra</i>	15	4
<i>Eucalyptus socialis</i>	1-2	3-4
<i>Goodenia cycloptera</i>	1	0.5
<i>Haloragis uncatipila</i>	+	0.2
<i>Kennedia prorepens</i>	+	0.4
<i>Melaleuca glomerata</i>	1	2
<i>Paraneurachne muelleri</i>	+	0.3
<i>Paspalidium reflexum</i>	+	0.1
<i>Pittosporum angustifolium</i>	+	1
<i>Ptilotus obovatus</i>	+	0.4
<i>Ptilotus sessilifolius</i>	+	0.2
<i>Salsola australis</i>	+	0.2
<i>Sclerolaena convexula</i>	+	0.1
<i>Solanum cleistogamum</i>	+	0.2
<i>Solanum orbiculatum</i> subsp. <i>orbiculatum</i>	+	0.4
<i>Tridia pungens</i>	15	1.2
<i>Tridia schinzii</i>	1	1.3
<i>Tripogonella loliformis</i>	+	0.05

Cassini Resources - Babel and Nebo 2018 Site DER18A**Type Relevé****Location****MGA Zone 52 372185 mE 7109495 mN 127.721518 E -26.128070 S****Habitat CPHG****SPECIES LIST:**

Name	Cover	Height
Acacia maitlandii	+	0.4
Acacia pruinocarpa	+	1
Chrysocephalum pterochaetum	+	0.2
Eriachne mucronata	+	0.2
Hakea lorea subsp. lorea	+	3-4
Kennedia prorepens	+	0.3
Melaleuca eleuterostachya	5-8	1.5
Petalostylis cassioides	+	0.4
Triodia scariosa	40	0.6

Cassini Resources - Babel and Nebo 2018 Site DER19A

Type Relevé

Location

MGA Zone 52 376654 mE 7111436 mN 127.766395 E -26.110937 S

Habitat MgAkS

SPECIES LIST:

Name	Cover	Height
Abutilon otocarpum	+	0.4
Acacia aptaneura	+	2-5
Acacia kempeana	5	2
Acacia ligulata	+	1.5
Acacia tetragonophylla	+	1
Aristida contorta	+	0.2
Aristida holathera var. holathera	+	0.3
Chrysocephalum pterochaetum	+	0.3
Cymbopogon ambiguus	+	0.4
Enneapogon polyphyllus	+	0.2
Eragrostis eriopoda	+	0.4
Eremophila latrobei subsp. glabra	+	0.6
Euphorbia tannensis subsp. eremophila	+	0.3
Goodenia triodiophila	+	0-4
Hakea lorea subsp. lorea	+	3
Hannahordia bissillii subsp. bissillii	+	0.5
Melaleuca glomerata	12-15	3
Paraneurachne muelleri	+	0.3
Paspalidium basicladum	+	0.3
Paspalidium reflexum	+	0.3
Ptilotus obovatus	+	0.4
Senna artemisioides subsp. x artemisioides	0.5	2
Tiodia pungens	25	1
Tiodia scariosa	5	0.8

Cassini Resources - Babel and Nebo 2018 Site EBR25B**Type** Relevé**Location****MGA Zone** 52 383149 **mE** 7116002 **mN** 127.831751 **E** -26.070257 **S****Habitat** SAWS**SPECIES LIST:**

Name	Cover	Height
Acacia ligulata	10	2
Acacia pachyacra	1	2.4
Aluta maisonneuvei subsp. maisonneuvei	0.1	0.4
Amphipogon caricinus var. caricinus	0.1	0.6
Androcalva loxophylla		0.4
Aristida holathera var. holathera	0.1	0.4
Bonamia erecta	0.1	0.4
Grevillea eriostachya	0.5	2
Paspalidium reflexum	0.1	0.4
Paspalidium reflexum	0.1	0.4
Solanum centrale	0.1	0.4
Triodia schinzii	40	1.7

Cassini Resources - Babel and Nebo 2018 Site EBR26B

Type Releve

Location

MGA Zone 52 382819 mE 7116004 mN 127.828453 E -26.070213 S

Habitat HPMW

SPECIES LIST:

Name	Cover	Height
Acacia aptaneura	4	6
Acacia ayersiana	1	6
Acacia pachyacra	1	1.5
Aristida contorta	0.1	0.5
Aristida latifolia	1	0.25
Brachychiton gregorii	1	8
Corymbia opaca	0.1	8
Cymbopogon ambiguus	2	1
Dicrastylis exsuccosa	0.1	1
Digitaria brownii	0.5	0.4
Enteropogon ramosus	0.1	0.5
Eragrostis eriopoda	20	0.6
Eremophila latrobei subsp. glabra	1	1.5
Eremophila longifolia	0.1	1
Eriachne aristidea	0.1	0.3
Eriachne helmsii	5	0.6
Euphorbia centralis	0.1	0.1
Monachather paradoxus	1	0.4
Paraneurachne muelleri	0.5	0.5
Ptilotus aervoides	0.1	0.5
Ptilotus obovatus	5	0.6
Ptilotus sessilifolius	0.1	0.3
Sclerolaena cornishiana	2	0.4
Senna pleurocarpa var. pleurocarpa	0.1	1
Sida calyxhymenia	0.1	0.7
Sida sp. Indeterminate	0.1	0.3
Solanum centrale	0.5	0.4
Tridia basedowii	1	1

Cassini Resources - Babel and Nebo 2018 Site EBR28B

Type Relevé

Location

MGA Zone 52 383409 **mE** 7116153 **mN** 127.834364 **E** -26.068915 **S**

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	5	2
Acacia melleodora	2	2
Aluta maisonneuvei subsp. maisonneuvei	1	1
Aristida holathera var. holathera	2	0.4
Chrysocephalum eremaeum	0.5	0.4
Dicrastylis doranii	0.1	0.7
Eriachne aristidea	0.5	0.3
Goodenia peacockiana	0.1	0.1
Grevillea stenobotrya	7	2.5
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	0.5	0.2
Sida sp. Excedentifolia (J.L. Egan 1925)	0.5	0.4
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	0.1	0.6
Trichodesma zeylanicum	0.01	0.25
Triodia schinzii	1	1.2

Cassini Resources - Babel and Nebo 2018 Site EBR30B**Type** Relevé**Location****MGA Zone** 52 387287 **mE** 7118331 **mN** 127.873316 **E** -26.049560 **S****Habitat** SDAGS**SPECIES LIST:**

Name	Cover	Height
Acacia ligulata	5	2
Aristida holathera var. holathera	3	0.4
Dicrastylis exsuccosa	0.1	1
Eremophila willsii subsp. integrifolia	0.5	1
Eriachne aristidea	0.5	0.3
Grevillea stenobotrya	10	2.5
Salsola australis	0.1	0.4
Sida intricata	0.1	0.4
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	0.1	0.8
Solanum centrale	1	0.4

Cassini Resources - Babel and Nebo 2018 Site EBR32B

Type Relevé

Location

MGA Zone 52 385400 mE 7117824 mN 127.854412 E -26.053989 S

Habitat GRMU

SPECIES LIST:

Name	Cover	Height
Acacia ayersiana	5	6
Acacia pteraneura	15	8
Aristida holathera var. holathera	1	0.4
Cymbopogon ambiguus	0.1	1
Digitaria brownii	0.1	0.4
Eragrostis eriopoda	5	0.4
Eremophila latrobei subsp. glabra	2	1.2
Hakea lorea subsp. lorea	1	4
Maireana villosa	1	0.4
Monachather paradoxus	1	0.4
Ptilotus helipteroides	0.1	0.2
Ptilotus obovatus	1	0.4
Sclerolaena cornishiana	0.1	0.4
Solanum lasiophyllum	0.1	0.5
Triodia basedowii	25	1

Cassini Resources - Babel and Nebo 2018 Site EBR33B

Type Releve

Location

MGA Zone 52 386304 **mE** 7118482 **mN** 127.863505 **E** -26.048120 **S**

Habitat LMW

SPECIES LIST:

Name	Cover	Height
Acacia maitlandii	5	1
Aluta maisonneuvei subsp. maisonneuvei	0.1	1
Bonamia erecta	0.1	0.4
Chrysocephalum eremaeum	0.01	0.3
Corymbia opaca	0.1	6
Cymbopogon ambiguus	0.1	1
Eragrostis eriopoda	1	0.5
Eucalyptus gamophylla	2	4
Eucalyptus oxymitra	10	4
Exocarpos sparteus	0.1	1.5
Hakea lorea subsp. lorea	0.1	5
Haloragis uncatipila	0.1	0.4
Hannafordia bissillii subsp. bissillii	0.1	1
Kennedia prorepens	1	0.3
Paraneurachne muelleri	0.5	0.5
Ptilotus obovatus	0.1	0.5
Salsola australis	0.1	0.3
Sclerolaena parviflora	0.1	0.2
Solanum centrale	0.1	0.3
Triodia basedowii	15	1
Triodia schinzii	15	1.5

Cassini Resources - Babel and Nebo 2018 Site EBR34B

Type Relevé

Location

MGA Zone 52 386304 **mE** 7118482 **mN** 127.863505 **E** -26.048120 **S**

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia pruinocarpa	0.1	3
Bonamia erecta	1	0.2
Petalostylis cassioides	1	1
Triodia scariosa	25	0.8

Cassini Resources - Babel and Nebo 2018 Site EBR36B

Type Releve

Location

MGA Zone 52 389489 mE 7116977 mN 127.895210 E -26.061954 S

Habitat LMW

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	1	1
Acacia maitlandii	1	1
Acacia melleodora	1	1.5
Alyogyne pinoniana	10	0.7
Chrysocephalum pterochaetum	0.1	0.3
Codonocarpus cotinifolius	0.01	1
Corymbia opaca	0.5	8
Eremophila platythamnos subsp. exotrichys	0.5	0.6
Eriachne helmsii	0.5	0.5
Eucalyptus gamophylla	3	2
Eucalyptus oxymitra	5	1
Grevillea eriostachya	0.5	1.5
Grevillea stenobotrya	0.1	1
Gyrostemon ramulosus	0.1	1.5
Hakea lorea subsp. lorea	0.1	3
Halgania cyanea var. Allambi Stn (B.W. Strong 676)	5	0.2
Haloragis uncatipila	0.1	0.5
Hannafordia bissillii subsp. bissillii	0.1	0.5
Melaleuca glomerata	3-5	
Newcastelia bracteosa	0.1	0.6
Paraneurachne muelleri	1	0.4
Petalostylis cassioides	1	0.6
Ptilotus obovatus	0.1	0.4
Scaevola parvifolia subsp. parvifolia	0.1	0.3
Scaevola spinescens (narrow leaf, spiny form)	0.1	0.7
Senna artemisioides subsp. x artemisioides	0.1	0.6
Tridia basedowii	5	0.8
Tridia pungens	15	0.6
Tridia scariosa	5	1

Cassini Resources - Babel and Nebo 2018 Site EBR37B**Type** Relevé**Location****MGA Zone** 52 392556 **mE** 7122942 **mN** 127.926357 **E** -26.008332 **S****Habitat** LMW**SPECIES LIST:**

Name	Cover	Height
Androcalva loxophylla	5	0.4
Eremophila forrestii subsp. forrestii	1	0.6
Eucalyptus gamophylla	5	3
Kennedia prorepens	5	0.4
Leptosema chambersii	10	0.4
Prostanthera wilkieana	1	0.6
Triodia schinzii	20	1.2

Cassini Resources - Babel and Nebo 2018 Site WFR20A**Type Releve****Location****MGA Zone 52 376654 mE 7111436 mN 127.766395 E -26.110937 S****Habitat SAWS****SPECIES LIST:**

Name	Cover	Height
<i>Acacia ligulata</i>	8	2
<i>Amphipogon caricinus</i> var. <i>caricinus</i>	+	0.3
<i>Aristida contorta</i>	+	0.2
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.4
<i>Bonamia erecta</i>	1	0.3
<i>Cenchrus ciliaris</i>	+	0.4
<i>Chrysocephalum pterocheatum</i>	+	0.2
<i>Cymbopogon ambiguus</i>	+	0.8
<i>Digitaria brownii</i>	+	0.4
<i>Einadia nutans</i> subsp. <i>eremaea</i>	+	0.3
<i>Enchytraea tomentosa</i> var. <i>tomentosa</i>	+	0.3
<i>Enneapogon polyphyllus</i>	+	0.15
<i>Eragrostis eriopoda</i>	+	0.3
<i>Eragrostis laniflora</i>	1-2	0.4
<i>Eremophila platythamnos</i> subsp. <i>exotrichys</i>	+	0.5
<i>Eriachne helmsii</i>	+	0.3
<i>Gyrostemon ramulosus</i>	+	2.5
<i>Hakea lorea</i> subsp. <i>loreana</i>	1	5
<i>Hannafordia bissillii</i> subsp. <i>bissillii</i>	+	0.6
<i>Leptosema chambersii</i>	+	0.2
<i>Monachather paradoxus</i>	+	0.3
<i>Panicum decompositum</i>	+	0.4
<i>Paraneurachne muelleri</i>	+	0.3
<i>Paspalidium reflexum</i>	+	0.2
<i>Ptilotus obovatus</i>	+	0.3
<i>Salsola australis</i>	+	0.4
<i>Santalum lanceolatum</i>	3	1.5
<i>Scaevola amblyanthera</i> var. <i>centralis</i>	+	0.3
<i>Sclerolaena parviflora</i>	+	0.1
<i>Senna artemisioides</i> subsp. <i>petiolaris</i>	+	1.5
<i>Solanum centrale</i>	+	0.3
<i>Tridia basedowii</i>	20	0.8

Cassini Resources - Babel and Nebo 2018 Site WFR21A

Type Releve

Location

MGA Zone 52 383195 mE 7115880 mN 127.832200 E -26.071362 S

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ayersiana	+	2
Acacia ligulata	4	2
Aluta maisonneuvei subsp. maisonneuvei	+	0.5
Alyogyne pinoniana	+	0.5
Amphipogon caricinus var. caricinus	+	0.2
Androcalva loxophylla	+	0.3
Aristida contorta	+	0.2
Aristida holathera var. holathera	+	0.4
Bonamia erecta	+	0.3
Chrysocephalum pterochaetum	+	0.3
Cymbopogon ambiguus	+	0.4
Dicrastylis exsuccosa	+	0.5
Enchytraea tomentosa var. tomentosa	+	0.3
Eragrostis laniflora	+	0.3
Eremophila longifolia	+	1
Eremophila platythamnos subsp. exotrichys	+	0.5
Goodenia triodiophila	+	0.3
Grevillea eriostachya	+	1.5
Hakea lorea subsp. lorea	1	6
Halgania erecta	+	0.2
Hannafordia bissillii subsp. bissillii	+	0.5
Kennedia prorepens	+	0.2
Monachather paradoxus	+	0.3
Paraneurachne muelleri	+	0.3
Paspalidium reflexum	+	0.2
Ptilotus obovatus	+	0.8
Solanum centrale	+	0.2
Triodia basedowii	15	1
Triodia schinzii	20	1.2

Cassini Resources - Babel and Nebo 2018 Site SBR22A

Type Releve

Location

MGA Zone 52 371921 **mE** 7102929 **mN** 127.718230 **E** -26.187321 **S**

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
<i>Acacia ligulata</i>	2	1.2
<i>Alyogyne pinoniana</i>	+	0.7
<i>Aristida contorta</i>	+	0.1
<i>Aristida holathera</i> var. <i>holathera</i>	+	0.3
<i>Bonamia erecta</i>	+	0.1
<i>Chrysocephalum apiculatum</i> subsp. <i>glandulosum</i>	+	0.4
<i>Chrysocephalum eremaeum</i>	+	0.4
<i>Dicrastylis doranii</i>	2	0.6
<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	+	1
<i>Eragrostis laniflora</i>	+	0.4
<i>Eremophila platythamnos</i> subsp. <i>exotrichys</i>	+	0.4
<i>Eriachne aristidea</i>	+	0.4
<i>Eriachne helmsii</i>	+	0.5
<i>Goodenia mueckeana</i>	+	0.1
<i>Grevillea stenobotrya</i>	4	1
<i>Gyrostemon ramulosus</i>	3	2
<i>Newcastelia bracteosa</i>	+	0.5
<i>Ptilotus obovatus</i>	+	0.4
<i>Scaevola parvifolia</i> subsp. <i>parvifolia</i>	+	0.2
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	+	0.5
<i>Sida cardiophylla</i>	+	0.4
<i>Sida cardiophylla</i>	+	0.3
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	+	0.3
<i>Solanum centrale</i>	+	0.2
<i>Triodia basedowii</i>	+	0.5
<i>Triodia schinzii</i>	1	0.8

Cassini Resources - Babel and Nebo 2018 Site SBR23A

Type Relevé

Location

MGA Zone 50 372082 mE 7102895 mN 115.719838 E -26.187642 S

Habitat SAWS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	+	0.5
Acacia pachyacra	+	0.5
Acacia walkeri	20	1-2
Aluta maisonneuvei subsp. maisonneuvei	+	1
Alyogyne pinoniana	+	0.7
Androcalva loxophylla	+	0.4
Codonocarpus cotinifolius	+	2
Cymbopogon ambiguus	+	0.4
Dicrastylis exsuccosa	+	0.3
Eragrostis eriopoda/laniflora	+	0.2
Eremophila platythamnos subsp. exotrichys	+	0.3
Eucalyptus oxymitra	2	0.2-5
Goodenia triodiophila	+	0.1
Grevillea eriostachya	+	1.3
Hakea lorea subsp. lorea	+	2
Hibiscus solanifolius	+	0.5
Paraneurachne muelleri	+	0.3
Petalostylis cassioides	+	0.3
Ptilotus obovatus	+	0.3
Ptilotus sessilifolius	+	0.2
Sclerolaena parviflora	+	0.1
Senna pleurocarpa var. pleurocarpa	+	0.6
Triodia basedowii	5	0.5
Triodia scariosa	10	0.3

Cassini Resources - Babel and Nebo 2018 Site SBR24A

Type Releve

Location

MGA Zone 52 372463 mE 7102587 mN 127.723619 E -26.190456 S

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	1	1-1.5
Acacia pruinocarpa	+	3
Acacia walkeri	+	1-1.5
Alyogyne pinomiana	1	0.5
Aristida contorta	+	0.1
Chrysocephalum eremaeum	+	0.2
Eucalyptus oxymitra	+	2
Goodenia asteriscus	+	0.1
Goodenia triodiophila	+	0.1
Grevillea eriostachya	+	1.5
Hakea lorea subsp. lorea	+	2
Haloragis uncatipila	1	0.3
Paraneurachne muelleri	+	0.2
Paspalidium reflexum	+	0.1
Petalostylis cassioides	6	0.4
Ptilotus clementii	+	0.2
Ptilotus obovatus	+	0.3
Salsola australis	+	0.2
Scaevola amblyanthera var. centralis	+	0.1
Sclerolaena parviflora	+	0.1
Solanum lasiophyllum	+	0.1
Triodia scariosa	20	0.4

Cassini Resources - Babel and Nebo 2018 Site SBR44B

Type Relevé

Location

MGA Zone 52 355296 **mE** 7085710 **mN** 127.549963 **E** -26.341172 **S**

Habitat SAMU

SPECIES LIST:

Name	Cover	Height
Acacia aneura	5	
Acacia ayersiana	5	
Acacia ayersiana	5	
Acacia kempeana	0.1	
Acacia ligulata	1	
Acacia minyura	0.1	
Amphipogon caricinus var. caricinus	0.1	
Aristida contorta	0.1	
Eragrostis eriopoda	1	
Eremophila latrobei subsp. glabra	1	
Eremophila latrobei subsp. glabra	1	
Eucalyptus oxymitra	2	
Euphorbia tannensis subsp. eremophila	0.1	
Goodenia triodiophila	0.1	
Monachather paradoxus	0.1	
Paraneurachne muelleri	0.1	
Psydrazx suaveolens	0.1	
Triodia basedowii	30	

Cassini Resources - Babel and Nebo 2018 Site SBR45B

Type Relevé

Location

MGA Zone 52 360645 mE 7079814 mN 127.602911 E -26.394925 S

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
<i>Allocasuarina helmsii</i>	0.1	
<i>Alyogyne pinoniana</i>	0.1	
<i>Aristida contorta</i>	0.1	
<i>Chrysocephalum eremaeum</i>	0.1	
<i>Corymbia opaca</i>	0.1	
<i>Cymbopogon ambiguus</i>	0.1	
<i>Enneapogon polyphyllus</i>	0.1	
<i>Eriachne mucronata</i>	0.1	
<i>Euphorbia centralis</i>	0.1	
<i>Goodenia asteriscus</i>	0.1	
<i>Haloragis uncatipila</i>	0.1	
<i>Hibiscus solanifolius</i>	0.1	
<i>Kennedia prorepens</i>	0.1	
<i>Melaleuca eleuterostachya</i>	0.1	
<i>Melhania oblongifolia</i>	0.1	
<i>Paraneurachne muelleri</i>	0.1	
<i>Petalostylis cassioides</i>	0.1	
<i>Ptilotus obovatus</i>	0.1	
<i>Sida</i> sp. <i>Excedentifolia</i> (J.L. Egan 1925)	0.1	
<i>Swainsona flavigarinata</i>	0.1	
<i>Themeda triandra</i>	1	
<i>Triodia scariosa</i>	5	

Cassini Resources - Babel and Nebo 2018 Site SBR46B

Type Relevé

Location

MGA Zone 52 360636 mE 7079997 mN 127.602841 E -26.393272 S

Habitat CPHG

SPECIES LIST:

Name	Cover	Height
Acacia eremophila numerous-nerved variant (A.S. George 11924)	10	
Acacia ligulata	0.1	
Acacia victoriae subsp. victoriae	0.1	
Acacia walkeri	0.1	
Allocasuarina helmsii	1	
Alyogyne pinoniana	0.1	
Aristida contorta	0.1	
Corymbia opaca	0.1	
Eriachne mucronata	0.1	
Goodenia asteriscus	0.1	
Haloragis uncatipila	0.1	
Kennedia prorepens	0.1	
Melaleuca eleuterostachya	1	
Minuria leptophylla	0.1	
Paraneurachne muelleri	0.1	
Petalostylis cassioides	0.1	
Ptilotus clementii	0.1	
Ptilotus obovatus	1	
Scaevola amblyanthera var. centralis	0.1	
Sclerolaena eriacantha	0.1	
Senna pleurocarpa var. pleurocarpa	0.1	
Sida sp. Excedentifolia (J.L. Egan 1925)	0.1	
Swainsona flavigarinata	0.1	
Triodia scariosa	15	

Cassini Resources - Babel and Nebo 2018 Site SBR48B

Type Releve

Location

MGA Zone 52 356638 mE 7084524 mN 127.563275 E -26.352012 S

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	+	
Calotis sp. Carnarvon Range (D.J. Edinger & K.F. Kenneally D 2708 K	1	
Dodonaea viscosa subsp. angustissima	+	
Eriachne aristidea	1	
Eriachne helmsii	1	
Grevillea stenobotrya	+	
Paractaenum refractum	1	
Sida intricata	0.1	
Sida sp. Excedentifolia (J.L. Egan 1925)	0.1	
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	0.1	
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	0.1	

Cassini Resources - Babel and Nebo 2018 Site SBR51B**Type** Relevé**Location****MGA Zone** 52 355713 **mE** 7083193 **mN** 127.553858 **E** -26.363933 **S****Habitat** CPHG**SPECIES LIST:**

Name	Cover	Height
<i>Allocasuarina helmsii</i>	0.1	
<i>Alyogyne pinoniana</i>	0.5	
<i>Amphipogon caricinus</i> var. <i>caricinus</i>	1	
<i>Androcalva loxophylla</i>	1	
<i>Aristida holathera</i> var. <i>holathera</i>	5	
<i>Cymbopogon ambiguus</i>	0.1	
<i>Eragrostis laniflora</i>	1	
<i>Haloragis trigonocarpa</i>	0.1	
<i>Haloragis uncatipila</i>	0.5	
<i>Kennedia prorepens</i>	1	
<i>Melaleuca eleuterostachya</i>	0.1	
<i>Ptilotus obovatus</i>	0.1	
<i>Ptilotus sessilifolius</i>	0.1	
<i>Swainsona flavigarinata</i>	0.1	
<i>Triodia scariosa</i>	5	

Cassini Resources - Babel and Nebo 2018 Site SBR57B**Type** Relevé**Location****MGA Zone** 52 357364 **mE** 7085086 **mN** 127.570612 **E** -26.347012 **S****Habitat** SDAGS**SPECIES LIST:**

Name	Cover	Height
Acacia walkeri	1	
Aluta maisonneuvei subsp. maisonneuvei	10	
Aristida holathera var. holathera	5	
Brachychiton gregorii	0.5	
Dodonaea viscosa subsp. angustissima	5	
Grevillea stenobotrya	10	
Paractaenum refractum	2	
Ptilotus latifolius	0.1	
Ptilotus obovatus	5	
Sida intricata	0.1	
Sida sp. Golden calyces pubescent (G.J. Leach 1966)	0.1	

Cassini Resources - Babel and Nebo 2018 Site SBR64B

Type Relevé

Location

MGA Zone 52 359278 mE 7091398 mN 127.590477 E -26.290226 S

Habitat SDAGS

SPECIES LIST:

Name	Cover	Height
Acacia ligulata	5	-
Aluta maisonneuvei subsp. maisonneuvei	10	-
Aristida holathera var. holathera	1	-
Dicrastylis doranii	0.1	-
Dodonaea viscosa subsp. angustissima	3	-
Duboisia hopwoodii	0.1	-
Eragrostis laniflora	0.5	-
Eriachne aristidea	0.1	-
Eriachne helmsii	0.1	-
Gyrostemon ramulosus	2	-
Paractaenum refractum	0.5	-
Ptilotus obovatus	1	-
Scaevola basedowii	0.1	-
Senna artemisioides subsp. filifolia	0.5	-
Sida spodochroma	0.2	-
Swainsona sp.	0.1	-
Triodia basedowii	3	-
Triodia schinzii	2	-

Appendix 7. Systematic Species List.

Family Number	Family Name	Genus	Species	Priority Status
437	Acanthaceae	Rostellularia	adscendens var. pogonanthera	
364	Aizoaceae	Trianthema	triquetrum	
357	Amaranthaceae	Alternanthera	angustifolia	
357	Amaranthaceae	Amaranthus	centralis	P3
357	Amaranthaceae	Amaranthus	mitchellii	
357	Amaranthaceae	Ptilotus	aervoides	
357	Amaranthaceae	Ptilotus	clementii	
357	Amaranthaceae	Ptilotus	helipteroides	
357	Amaranthaceae	Ptilotus	latifolius	
357	Amaranthaceae	Ptilotus	xerophilus	
357	Amaranthaceae	Ptilotus	exaltatus	
357	Amaranthaceae	Ptilotus	obovatus	
357	Amaranthaceae	Ptilotus	polystachyus	
357	Amaranthaceae	Ptilotus	schwartzii	
357	Amaranthaceae	Ptilotus	sessilifolius	
413	Apocynaceae	Vincetoxicum	linearis	
472	Araliaceae	Trachymene	bialata	
472	Araliaceae	Trachymene	glaucifolia	
128	Asparagaceae	Thysanotus	sp. Eremaean (S. van Leeuwen 1067)	
460	Asteraceae	Angianthus	tomentosus	
460	Asteraceae	Asteraceae	sp. Indet.	
460	Asteraceae	Brachyscome	ciliaris	
460	Asteraceae	Calocephalus	platycephalus	
460	Asteraceae	Calotis	hispidula	
460	Asteraceae	Calotis	latiuscula	
460	Asteraceae	Calotis	plumulifera	
460	Asteraceae	Calotis	sp. Carnarvon Range (D.J. Edinger & K.F. Kenneally D 2708 K 12243)	
460	Asteraceae	Centipeda	pleiocephala	
460	Asteraceae	Chrysocephalum	apiculatum subsp. glandulosum	
460	Asteraceae	Chrysocephalum	apiculatum subsp. racemosum	P3
460	Asteraceae	Chrysocephalum	eremaeum	

Family Number	Family Name	Genus	Species	Priority Status
460	Asteraceae	Chrysocephalum	pterochaetum	
460	Asteraceae	Chrysocephalum	puteale	
460	Asteraceae	Ixioclamys	filicifolia	
460	Asteraceae	Lawrencella	davenportii	
460	Asteraceae	Minuria	leptophylla	
460	Asteraceae	Olearia	subspicata	
460	Asteraceae	Pluchea	dentex	
460	Asteraceae	Pluchea	dunlopiae	
460	Asteraceae	Pluchea	rubelliflora	
460	Asteraceae	Podolepis	canescens	
460	Asteraceae	Podolepis	capillaris	
460	Asteraceae	Pterocaulon	sphacelatum	
460	Asteraceae	Rhodanthe	floribunda	
460	Asteraceae	Rhodanthe	tietkensis	
460	Asteraceae	Rutidosis	helichrysoides subsp. helichrysoides	
460	Asteraceae	Senecio	gregorii	
460	Asteraceae	Streptoglossa	liatroides	
460	Asteraceae	Tietkensia	corrückiae	
460	Asteraceae	Vittadinia	eremaea	
460	Asteraceae	Xerochrysum	bracteatum	
438	Bignoniaceae	Pandorea	pandorana	
415	Boraginaceae	Halgania	cyanea var. Allambi Station (B.W.Strong 676)	
415	Boraginaceae	Halgania	erecta	
415	Boraginaceae	Heliotropium	cunninghamii	
415	Boraginaceae	Heliotropium	moorei	
415	Boraginaceae	Trichodesma	zeylanicum	
332	Brassicaceae	Brassica	tournefortii	Weed
332	Brassicaceae	Lepidium	oxytrichum	
332	Brassicaceae	Lepidium	phlebopetalum	
332	Brassicaceae	Stenopetalum	anfractum	
450	Campanulaceae	Lobelia	heterophylla subsp. centralis	
450	Campanulaceae	Wahlenbergia	tumidifructa	
217	Casuarinaceae	Allocasuarina	decaisneana	

Family Number	Family Name	Genus	Species	Priority Status
217	Casuarinaceae	Allocasuarina	helmsii	
229	Celastraceae	Stackhousia	clementii	P3
229	Celastraceae	Stackhousia	megaloptera	
229	Celastraceae	Stackhousia	muricata	
358	Chenopodiaceae	Atriplex	elachophylla	
358	Chenopodiaceae	Atriplex	vesicaria	
358	Chenopodiaceae	Chenopodium	desertorum subsp. andiophyllum	
358	Chenopodiaceae	Dissocarpus	paradoxus	
358	Chenopodiaceae	Dysphania	cristata	
358	Chenopodiaceae	Dysphania	melanocarpa forma leucocarpa	
358	Chenopodiaceae	Dysphania	rhadinostachya subsp. rhadinostachya	
358	Chenopodiaceae	Einadia	nutans subsp. eremaea	
358	Chenopodiaceae	Enchytraea	tomentosa var. tomentosa	
358	Chenopodiaceae	Eremophea	spinosa	
358	Chenopodiaceae	Maireana	aff. villosa	
358	Chenopodiaceae	Maireana	georgei	
358	Chenopodiaceae	Maireana	planifolia	
358	Chenopodiaceae	Maireana	sp. Indeterminate (dry and crispy)	
358	Chenopodiaceae	Maireana	triptera	
358	Chenopodiaceae	Maireana	villosa	
358	Chenopodiaceae	Rhagodia	eremaea	
358	Chenopodiaceae	Salsola	australis	
358	Chenopodiaceae	Sclerolaena	convexula	
358	Chenopodiaceae	Sclerolaena	cornishiana	
358	Chenopodiaceae	Sclerolaena	cuneata	
358	Chenopodiaceae	Sclerolaena	diacantha	
358	Chenopodiaceae	Sclerolaena	eriacantha	
358	Chenopodiaceae	Sclerolaena	johsonii	
358	Chenopodiaceae	Sclerolaena	obliquicuspis	
358	Chenopodiaceae	Sclerolaena	parviflora	
358	Chenopodiaceae	Sclerolaena	patentiuspis	
331	Cleomaceae	Cleome	viscosa	
109	Colchicaceae	Wurmbea	deserticola	
416	Convolvulaceae	Bonamia	erecta	

Family Number	Family Name	Genus	Species	Priority Status
416	Convolvulaceae	Convolvulus	clementii	
416	Convolvulaceae	Convolvulus	sp.indet (twiner to 0.8m)	
416	Convolvulaceae	Evolvulus	alsinoides var. villosicalyx	
224	Cucurbitaceae	Citrullus	colocynthis	Weed
224	Cucurbitaceae	Cucumis	argenteus	
156	Cyperaceae	Cyperus	centralis	
156	Cyperaceae	Fimbristylis	dichotoma	
156	Cyperaceae	Fimbristylis	sp. Indet (juvenile)	
242	Euphorbiaceae	Adriana	tomentosa var. hookeri	
242	Euphorbiaceae	Euphorbia	australis var. erythrantha	
242	Euphorbiaceae	Euphorbia	biconvexa	
242	Euphorbiaceae	Euphorbia	centralis	
242	Euphorbiaceae	Euphorbia	drummondii	
242	Euphorbiaceae	Euphorbia	tannensis subsp. eremophila	
201	Fabaceae	Acacia	abrupta	
201	Fabaceae	Acacia	acanthoclada subsp. acanthoclada	
201	Fabaceae	Acacia	aneura	
201	Fabaceae	Acacia	aneura x ayersiana	
201	Fabaceae	Acacia	aptaneura	
201	Fabaceae	Acacia	aptaneura (hybrid)	
201	Fabaceae	Acacia	ayersiana	
201	Fabaceae	Acacia	ayersiana (hybrid)	
201	Fabaceae	Acacia	ayersiana (narrow form)	
201	Fabaceae	Acacia	ayersiana (narrow phyllode variant) x aneura	
201	Fabaceae	Acacia	bivenosa	
201	Fabaceae	Acacia	brachystachya	
201	Fabaceae	Acacia	cuthbertsonii subsp. cuthbertsonii	
201	Fabaceae	Acacia	eremophila var. Numerous-nerved variant (A.S.George 11924)	P3
201	Fabaceae	Acacia	incurvaneura	
201	Fabaceae	Acacia	kempeana	
201	Fabaceae	Acacia	ligulata	
201	Fabaceae	Acacia	maitlandii	
201	Fabaceae	Acacia	maitlandii (narrow phyllode variant)	
201	Fabaceae	Acacia	melleodora	

Family Number	Family Name	Genus	Species	Priority Status
201	Fabaceae	Acacia	minyura	
201	Fabaceae	Acacia	pachyacra	
201	Fabaceae	Acacia	paraneura	
201	Fabaceae	Acacia	prainii	
201	Fabaceae	Acacia	pruinocarpa	
201	Fabaceae	Acacia	pteraneura	
201	Fabaceae	Acacia	pteraneura (hybrid)	
201	Fabaceae	Acacia	ramulosa (hybrid)	
201	Fabaceae	Acacia	ramulosa var. linophylla	
201	Fabaceae	Acacia	rhodophloia (Central Australian Desert Form)	
201	Fabaceae	Acacia	sericophylla	
201	Fabaceae	Acacia	tetragonophylla	
201	Fabaceae	Acacia	victoriae subsp. victoriae	
201	Fabaceae	Acacia	walkeri	
201	Fabaceae	Aenictophyton	anomalum	P1
201	Fabaceae	Crotalaria	cunninghamii	
201	Fabaceae	Crotalaria	eremaea subsp. strehlowii	
201	Fabaceae	Cullen	pallidum	
201	Fabaceae	Glycine	canescens	
201	Fabaceae	Indigofera	colutea	
201	Fabaceae	Indigofera	georgei	
201	Fabaceae	Indigofera	linifolia	
201	Fabaceae	Indigofera	linnaei	
201	Fabaceae	Indigofera	warburtonensis	P1
201	Fabaceae	Kennedia	prorepens	
201	Fabaceae	Leptosema	chambersii	
201	Fabaceae	Petalostylis	cassiodes	
201	Fabaceae	Rhynchosia	minima	
201	Fabaceae	Senna	artemisioides subsp. filifolia	
201	Fabaceae	Senna	artemisioides subsp. filifolia xpetiolaris	
201	Fabaceae	Senna	artemisioides subsp. helmsii	
201	Fabaceae	Senna	artemisioides subsp. oligophylla	
201	Fabaceae	Senna	artemisioides subsp. petiolaris	

Family Number	Family Name	Genus	Species	Priority Status
201	Fabaceae	Senna	artemisioides subsp. petiolaris (narrow petiole form)	
201	Fabaceae	Senna	artemisioides subsp. petiolaris X artemisioides subsp. xartemisioides	
201	Fabaceae	Senna	artemisioides subsp. xartemisioides X artemisioides subsp. filifolia	
201	Fabaceae	Senna	glaucifolia	
201	Fabaceae	Senna	pleurocarpa var. pleurocarpa	
201	Fabaceae	Senna	Senna artemisioides subsp. xartemisioides	
201	Fabaceae	Senna	sp. Billabong (J.D.Alonzo721)	
201	Fabaceae	Swainsona	flavicarinata	
201	Fabaceae	Swainsona	microphylla	
201	Fabaceae	Swainsona	phacoides	
201	Fabaceae	Swainsona	tenuis	
201	Fabaceae	Swainsona	villosa	
201	Fabaceae	Tephrosia	sp. Central (P.K. Latz 17037)	P3
201	Fabaceae	Tephrosia	sp. deserts (J.R. Maconochie 1403)	
201	Fabaceae	Tephrosia	sp. indet	
201	Fabaceae	Tephrosia	sphaerospora	
274	Geraniaceae	Erodium	aureum	Weed
274	Geraniaceae	Erodium	cygnorum	
274	Geraniaceae	Erodium	sp. Indet (insufficient material)	
458	Goodeniaceae	Brunonia	australis	
458	Goodeniaceae	Goodenia	asteriscus	P3
458	Goodeniaceae	Goodenia	cycloptera	
458	Goodeniaceae	Goodenia	glabra	
458	Goodeniaceae	Goodenia	glandulosa	
458	Goodeniaceae	Goodenia	heterochila	
458	Goodeniaceae	Goodenia	mueckeana	
458	Goodeniaceae	Goodenia	peacockiana	
458	Goodeniaceae	Goodenia	schwerinensis	
458	Goodeniaceae	Goodenia	triodiophila	
458	Goodeniaceae	Goodenia	vilmoriniae	
458	Goodeniaceae	Scaevola	amblyanthera var. centralis	
458	Goodeniaceae	Scaevola	basedowii	

Family Number	Family Name	Genus	Species	Priority Status
458	Goodeniaceae	Scaevola	parvifolia subsp. parvifolia	
458	Goodeniaceae	Scaevola	spinescens (narrow leaf non-spiny form)	
458	Goodeniaceae	Scaevola	spinescens (narrow leaf spiny form)	
328	Gyrostemonaceae	Codonocarpus	cotinifolius	
328	Gyrostemonaceae	Gyrostemon	ramulosus	
328	Gyrostemonaceae	Gyrostemon	tepperi	
196	Haloragaceae	Glischrocaryon	aureum (reticulated veination form)	
196	Haloragaceae	Haloragis	gossei var. gossei	
196	Haloragaceae	Haloragis	trigonocarpa	
196	Haloragaceae	Haloragis	uncatipila	
130	Hemerocallidaceae	Corynotheca	micranthera var. divaricata	
89	Juncaginaceae	Triglochin	nana	
432	Lamiaceae	Dicrastylis	doranii	
432	Lamiaceae	Dicrastylis	exsuccosa	
432	Lamiaceae	Microcorys	macredieana	
432	Lamiaceae	Newcastelia	bracteosa	
432	Lamiaceae	Newcastelia	cephalantha	
432	Lamiaceae	Prostanthera	wilkeana	
432	Lamiaceae	Quoya	loxocarpa	
432	Lamiaceae	Teucrium	teucriiflorum	
411	Loganiaceae	Orianthera	centralis	
339	Loranthaceae	Amyema	gibberula var. gibberula	
339	Loranthaceae	Amyema	maidenii subsp. maidenii	
339	Loranthaceae	Lysiana	murrayi	
309	Malvaceae	Abutilon	cryptopetalum	
309	Malvaceae	Abutilon	fraseri	
309	Malvaceae	Abutilon	leucopetalum	
309	Malvaceae	Abutilon	macrum	
309	Malvaceae	Abutilon	otocarpum	
309	Malvaceae	Alyogyne	pinoniana	
309	Malvaceae	Androcalva	loxophylla	
309	Malvaceae	Brachychiton	gregorii	
309	Malvaceae	Hannafordia	bissillii subsp. bissillii	
309	Malvaceae	Hibiscus	burtonii	

Family Number	Family Name	Genus	Species	Priority Status
309	Malvaceae	Hibiscus	solanifolius	
309	Malvaceae	Hibiscus	sp. Indet (WMB065)	
309	Malvaceae	Hibiscus	sp. indet. (033-04)	
309	Malvaceae	Hibiscus	sturtii var. grandiflorus	
309	Malvaceae	Malvastrum	americanum	Weed
309	Malvaceae	Melhania	oblongifolia	
309	Malvaceae	Seringia	elliptica	
			aff. cardiophylla (PERTH 03467406)	
309	Malvaceae	Sida	calyxhymenia	
309	Malvaceae	Sida	cardiophylla	
309	Malvaceae	Sida	fibulifera	
309	Malvaceae	Sida	intricata	
309	Malvaceae	Sida	platycalyx	
			sp. dark green fruits (S. van Leeuwen 2260)	
309	Malvaceae	Sida	sp. Excedentifolia (J.L.Egan 1925)	
309	Malvaceae	Sida	sp. Golden calyces pubescent (G.J. Leach 1966)	
309	Malvaceae	Sida	sp. verrucose glands (F.H. Mollemans 2423)	
309	Malvaceae	Sida	sp. verrucose glands (F.H. Mollemans 2423) (black pedicel)	
309	Malvaceae	Sida	spodochroma	
16	Marsileaceae	Marsilea	hirsuta	
368	Molluginaceae	Hypertelis	cerviana	
281	Myrtaceae	Aluta	maisonneuvei subsp. maisonneuvei	
281	Myrtaceae	Calytrix	carinata	
281	Myrtaceae	Corymbia	eremaea	
281	Myrtaceae	Corymbia	opaca	
281	Myrtaceae	Eucalyptus	concinna	
281	Myrtaceae	Eucalyptus	gamophylla	
281	Myrtaceae	Eucalyptus	gongylocarpa	
281	Myrtaceae	Eucalyptus	intertexta	
281	Myrtaceae	Eucalyptus	kingsmillii subsp. kingsmillii	
281	Myrtaceae	Eucalyptus	mannensis subsp. mannensis	

Family Number	Family Name	Genus	Species	Priority Status
281	Myrtaceae	Eucalyptus	oxymitra	
281	Myrtaceae	Eucalyptus	socialis subsp. eucentrica	
281	Myrtaceae	Eucalyptus	youngiana	
281	Myrtaceae	Melaleuca	eleuterostachya	
281	Myrtaceae	Melaleuca	glomerata	
281	Myrtaceae	Melaleuca	interioris	
281	Myrtaceae	Micromyrtus	flaviflora	
367	Nyctaginaceae	Boerhavia	repleta	
433	Phrymaceae	Peplidium	aithocheilum	
471	Pittosporaceae	Pittosporum	angustifolium	
163	Poaceae	Amphipogon	caricinus subsp. caricinus	
163	Poaceae	Amphipogon	sericeus	
163	Poaceae	Aristida	contorta	
163	Poaceae	Aristida	holathera var. holathera	
163	Poaceae	Aristida	inaequiglumis	
163	Poaceae	Aristida	jerichoensis var. subspinulifera	P3
163	Poaceae	Aristida	latifolia	
163	Poaceae	Aristida	obscura	
163	Poaceae	Astrebla	pectinata	
163	Poaceae	Austrostipa	nitida	
163	Poaceae	Cenchrus	ciliaris	Weed
163	Poaceae	Chloris	virgata	Weed
163	Poaceae	Cymbopogon	ambiguus	
163	Poaceae	Dactyloctenium	radulans	
163	Poaceae	Dichanthium	sericeum subsp. humilis	
163	Poaceae	Dichanthium	sericeum subsp. sericeum	
163	Poaceae	Digitaria	brownii	
163	Poaceae	Diplachne	fusca subsp. muelleri	
163	Poaceae	Enneapogon	avenaceus	
163	Poaceae	Enneapogon	caerulescens	
163	Poaceae	Enneapogon	cylindricus	
163	Poaceae	Enneapogon	intermedius	
163	Poaceae	Enneapogon	polyphyllus	
163	Poaceae	Enneapogon	robustissimus	
163	Poaceae	Enteropogon	ramosus	

Family Number	Family Name	Genus	Species	Priority Status
163	Poaceae	Eragrostis	deilsii	
163	Poaceae	Eragrostis	eriopoda	
163	Poaceae	Eragrostis	exigua	
163	Poaceae	Eragrostis	falcata	
163	Poaceae	Eragrostis	laniflora	
163	Poaceae	Eragrostis	leptocarpa	
163	Poaceae	Eragrostis	pergracilis	
163	Poaceae	Eragrostis	setifolia	
163	Poaceae	Eragrostis	sp. Erect spikelets (P.K. Latz 2122)	P3
163	Poaceae	Eragrostis	sp. Limestone (P.K. Latz 5921)	P3
163	Poaceae	Eragrostis	sp. Tiny annual (J. Warden, D. Brassington WB39954)	
163	Poaceae	Eragrostis	xerophila	
163	Poaceae	Eriachne	aristidea	
163	Poaceae	Eriachne	helmsii	
163	Poaceae	Eriachne	mucronata	
163	Poaceae	Eriachne	mucronata desert form	
163	Poaceae	Eriachne	pulchella subsp. dominii	
163	Poaceae	Eulalia	aurea	
163	Poaceae	Iseilema	membranaceum	
163	Poaceae	Monachather	paradoxus	
163	Poaceae	Neurachne	munroi	
163	Poaceae	Panicum	decompositum	
163	Poaceae	Paractaenum	refractum	
163	Poaceae	Paraneurachne	muelleri	
163	Poaceae	Paspalidium	basicladum	
163	Poaceae	Paspalidium	reflexum	
163	Poaceae	Poaceae	sp. indet (#119)	
163	Poaceae	Setaria	reflexa	
163	Poaceae	Themeda	triandra	
163	Poaceae	Thyridolepis	mitchelliana	
163	Poaceae	Thyridolepis	xerophila	
163	Poaceae	Tragus	australianus	
163	Poaceae	Triodia	basedowii	
163	Poaceae	Triodia	pungens	

Family Number	Family Name	Genus	Species	Priority Status
163	Poaceae	Triodia	scariosa	
163	Poaceae	Triodia	schinzii	
163	Poaceae	Tripogonella	loliiformis	
163	Poaceae	Triraphis	mollis	
163	Poaceae	Yakirra	australiensis var. australiensis	
203	Polygalaceae	Polygala	isingii	
345	Polygonaceae	Rumex	vesicarius	Weed
374	Portulacaceae	Calandrinia	balonensis	
374	Portulacaceae	Calandrinia	polyandra	
374	Portulacaceae	Calandrinia	sp. Indet 0.05cm tall	
374	Portulacaceae	Portulaca	intraterranea	
175	Proteaceae	Grevillea	eriostachya	
175	Proteaceae	Grevillea	juncifolia subsp. juncifolia	
175	Proteaceae	Grevillea	stenobotrya	
175	Proteaceae	Hakea	divaricata	
175	Proteaceae	Hakea	lorea subsp. lorea	
29	Pteridaceae	Cheilanthes	lasiophylla	
29	Pteridaceae	Cheilanthes	sieberi subsp. sieberi	
409	Rubiaceae	Pomax	sp. desert (A.S.George 11968)	
409	Rubiaceae	Psydrax	ammophila	
409	Rubiaceae	Psydrax	latifolia	
409	Rubiaceae	Psydrax	suaveolens	
338	Santalaceae	Anthobolus	leptomerioides	
338	Santalaceae	Exocarpos	sparteus	
338	Santalaceae	Santalum	acuminatum	
338	Santalaceae	Santalum	lanceolatum	
299	Sapindaceae	Dodonaea	lobulata	
299	Sapindaceae	Dodonaea	viscosa subsp. angustissima	
428	Scrophulariaceae	Eremophila	battii	
428	Scrophulariaceae	Eremophila	clarkei	
428	Scrophulariaceae	Eremophila	duttonii	
428	Scrophulariaceae	Eremophila	forrestii subsp. forrestii	
428	Scrophulariaceae	Eremophila	gilesii subsp. gilesii	
428	Scrophulariaceae	Eremophila	glabra subsp. glabra	
428	Scrophulariaceae	Eremophila	hughesii subsp. hughesii	

Family Number	Family Name	Genus	Species	Priority Status
428	Scrophulariaceae	Eremophila	latrobei subsp. glabra	
428	Scrophulariaceae	Eremophila	longifolia	
428	Scrophulariaceae	Eremophila	maculata subsp. brevifolia	
428	Scrophulariaceae	Eremophila	platythamnos subsp. exotrichys	
428	Scrophulariaceae	Eremophila	serrulata	
428	Scrophulariaceae	Eremophila	willsii subsp. integrifolia	
417	Solanaceae	Anthotroche	pannosa	
417	Solanaceae	Duboisia	hopwoodii	
417	Solanaceae	Nicotiana	occidentalis subsp. obliqua	
417	Solanaceae	Nicotiana	velutina	
417	Solanaceae	Solanum	centrale	
417	Solanaceae	Solanum	cleistogamum	
417	Solanaceae	Solanum	ferocissimum	
417	Solanaceae	Solanum	ferocissimum	
417	Solanaceae	Solanum	lasiophyllum	
417	Solanaceae	Solanum	orbiculatum subsp. orbiculatum	
417	Solanaceae	Solanum	pallidifolium	
417	Solanaceae	Solanum	sturtianum	
311	Thymelaeaceae	Pimelea	trichostachya	
199	Zygophyllaceae	Roepera	eremaea	
199	Zygophyllaceae	Roepera	iodocarpa	
199	Zygophyllaceae	Tribulus	astrocarpus	
199	Zygophyllaceae	Tribulus	macrocarpus	
199	Zygophyllaceae	Tribulus	terrestris	Weed

Appendix 8. Coordinates of Priority Flora Records.

Genus species	Priority Status	Zon e	Easting	Northing	Counts
<i>Aenictophyton anomalum</i>	P1	52J	361330	7112941	100+
<i>Aenictophyton anomalum</i>	P1	52J	369887	7123872	20+
<i>Aenictophyton anomalum</i>	P1	52J	369946	7123889	20+
<i>Aenictophyton anomalum</i>	P1	52J	369924	7123898	20+
<i>Aenictophyton anomalum</i>	P1	52J	373792	7114943	20+
<i>Aenictophyton anomalum</i>	P1	52J	359287	7091433	40+
<i>Indigofera warburtonensis</i>	P1	52J	349346	7121035	100+
<i>Indigofera warburtonensis</i>	P1	52J	363820	7111624	20+
<i>Indigofera warburtonensis</i>	P1	52J	363815	7111893	1
<i>Acacia eremophila</i> var. Numerous-nerved variant (A.S. George 11924)	P3	52J	360636	7079997	many
<i>Acacia eremophila</i> var. Numerous-nerved variant (A.S. George 11924)	P3	52J	361218	7079322	many
<i>Acacia eremophila</i> var. Numerous-nerved variant (A.S. George 11924)	P3	52J	361516	7079263	many
<i>Acacia eremophila</i> var. Numerous-nerved variant (A.S. George 11924)	P3	52J	361961	7078971	many
<i>Acacia eremophila</i> var. Numerous-nerved variant (A.S. George 11924)	P3	52J	358956	7078007	many
<i>Acacia eremophila</i> var. Numerous-nerved variant (A.S. George 11924)	P3	52J	359135	7077785	many
<i>Acacia eremophila</i> var. Numerous-nerved variant (A.S. George 11924)	P3	52J	359163	7077425	many
<i>Acacia eremophila</i> var. Numerous-nerved variant (A.S. George 11924)	P3	52J	359954	7079624	6
<i>Amaranthus centralis</i>	P3	52J	348375	7121977	1
<i>Amaranthus centralis</i>	P3	52J	369091	7112288	3
<i>Amaranthus centralis</i>	P3	52J	369101	7112044	1
<i>Amaranthus centralis</i>	P3	52J	369240	7111463	5
<i>Amaranthus centralis</i>	P3	52J	369141	7112344	4
<i>Amaranthus centralis</i>	P3	52J	369144	7112311	12
<i>Amaranthus centralis</i>	P3	52J	369136	7112271	3
<i>Amaranthus centralis</i>	P3	52J	369145	7112048	1
<i>Amaranthus centralis</i>	P3	52J	369209	7111917	4
<i>Amaranthus centralis</i>	P3	52J	369943	7111291	4
<i>Amaranthus centralis</i>	P3	52J	370602	7113112	12
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	52J	366156	7134677	
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	52J	366729	7134943	
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	52J	366112	7130111	
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	52J	366017	7138354	

Genus species	Priority Status	Zon e	Easting	Northing	Counts
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	52J	369027	7127717	
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	52J	366851	7137745	
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	52J	367087	7137784	
<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>	P3	52J	367287	7136750	
<i>Calotis latiuscula</i>	P3	52J	368943	7112514	10
<i>Calotis latiuscula</i>	P3	52J	349692	7121364	5
<i>Calotis latiuscula</i>	P3	52J	349690	7121363	3
<i>Calotis latiuscula</i>	P3	52J	349693	7121364	2
<i>Goodenia asteriscus</i>	P3	52J	389537	7113818	1
<i>Goodenia asteriscus</i>	P3	52J	370428	7109467	1
<i>Goodenia asteriscus</i>	P3	52J	356116	7080606	1
<i>Goodenia asteriscus</i>	P3	52J	360644	7079814	1
<i>Goodenia asteriscus</i>	P3	52J	360636	7079997	10
<i>Goodenia asteriscus</i>	P3	52J	372474	7102579	1
<i>Goodenia asteriscus</i>	P3	52J	372478	7102585	1
<i>Goodenia asteriscus</i>	P3	52J	376394	7098137	2
<i>Goodenia asteriscus</i>	P3	52J	375628	7110841	1
<i>Goodenia asteriscus</i>	P3	52J	375604	7110828	1
<i>Goodenia asteriscus</i>	P3	52J	375602	7110818	1
<i>Goodenia asteriscus</i>	P3	52J	354963	7082270	1
<i>Goodenia asteriscus</i>	P3	52J	355008	7082295	1
<i>Goodenia asteriscus</i>	P3	52J	355024	7082300	1
<i>Goodenia asteriscus</i>	P3	52J	355200	7082391	1
<i>Goodenia asteriscus</i>	P3	52J	355339	7082509	15
<i>Goodenia asteriscus</i>	P3	52J	355324	7082493	1
<i>Goodenia asteriscus</i>	P3	52J	355325	7082493	5
<i>Goodenia asteriscus</i>	P3	52J	355328	7082489	1
<i>Goodenia asteriscus</i>	P3	52J	355329	7082494	3
<i>Goodenia asteriscus</i>	P3	52J	355332	7082478	3
<i>Goodenia asteriscus</i>	P3	52J	355305	7082492	4
<i>Goodenia asteriscus</i>	P3	52J	355263	7082497	1
<i>Goodenia asteriscus</i>	P3	52J	355224	7082473	6
<i>Goodenia asteriscus</i>	P3	52J	355035	7082385	1
<i>Goodenia asteriscus</i>	P3	52J	354954	7082272	1
<i>Goodenia asteriscus</i>	P3	52J	359954	7079624	6
<i>Goodenia asteriscus</i>	P3	52J	355094	7082053	1
<i>Stackhousia clementii</i>	P3	52J	371795	7115985	100+

Genus species	Priority Status	Zone	Easting	Northing	Counts
Tephrosia sp. Central (P.K. Latz 17037)	P3	52J	349693	7121364	
Tephrosia sp. Central (P.K. Latz 17037)	P3	52J	349689	7121368	20+
Tephrosia sp. Central (P.K. Latz 17037)	P3	52J	349265	7121113	40+

Appendix 9. Location of Weed Species within the Survey Area.

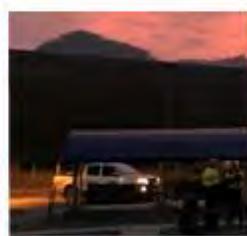
Genus species	Counts	Zone	Easting	Northing	WoNS
<i>Brassica tournefortii</i>	5 plants	52J	348375	7121977	No
<i>Cenchrus ciliaris</i>	10 plants	52J	347630	7123086	No
<i>Cenchrus ciliaris</i>	1000+ plants	52J	370224	7115423	No
<i>Cenchrus ciliaris</i>		52J	368028	7117013	No
<i>Cenchrus ciliaris</i>		52J	369093	7114070	No
<i>Cenchrus ciliaris</i>		52J	370575	7114178	No
<i>Cenchrus ciliaris</i>		52J	372199	7113514	No
<i>Cenchrus ciliaris</i>		52J	377168	7113746	No
<i>Cenchrus ciliaris</i>		52J	373135	7114640	No
<i>Cenchrus ciliaris</i>		52J	372990	7113841	No
<i>Cenchrus ciliaris</i>		52J	372498	7115187	No
<i>Cenchrus ciliaris</i>		52J	371195	7113510	No
<i>Cenchrus ciliaris</i>		52J	370622	7112407	No
<i>Cenchrus ciliaris</i>		52J	372116	7112359	No
<i>Cenchrus ciliaris</i>		52J	367909	7113505	No
<i>Cenchrus ciliaris</i>		52J	367628	7113254	No
<i>Cenchrus ciliaris</i>		52J	371989	7115387	No
<i>Cenchrus ciliaris</i>		52J	374816	7114710	No
<i>Cenchrus ciliaris</i>		52J	366332	7138430	No
<i>Cenchrus ciliaris</i>		52J	366301	7137932	No
<i>Cenchrus ciliaris</i>		52J	366278	7137869	No
<i>Cenchrus ciliaris</i>		52J	366293	7137827	No
<i>Cenchrus ciliaris</i>		52J	366551	7137624	No
<i>Cenchrus ciliaris</i>		52J	367087	7137784	No
<i>Cenchrus ciliaris</i>		52J	366541	7135287	No
<i>Cenchrus ciliaris</i>		52J	366729	7134943	No
<i>Cenchrus ciliaris</i>		52J	366726	7134869	No
<i>Cenchrus ciliaris</i>		52J	365948	7131300	No
<i>Cenchrus ciliaris</i>		52J	365948	7130683	No
<i>Cenchrus ciliaris</i>		52J	366112	7130111	No
<i>Cenchrus ciliaris</i>		52J	387460	7119786	No
<i>Chloris virgata</i>	20+ plants	52J	347487	7123208	No
<i>Citrullus colocynthis</i>	5 plants	52J	347487	7123208	No
<i>Citrullus colocynthis</i>		52J	366391	7138059	No
<i>Erodium aureum</i>		52J	368269	7112098	No
<i>Erodium aureum</i>		52J	369186	7111865	No

<i>Erodium aureum</i>		52J	369217	7112351	No
<i>Erodium aureum</i>		52J	369613	7113455	No
<i>Erodium aureum</i>		52J	368463	7112779	No
<i>Erodium aureum</i>		52J	368196	7113610	No
<i>Erodium aureum</i>		52J	368662	7111156	No
<i>Erodium aureum</i>		52J	367928	7113491	No
<i>Erodium aureum</i>		52J	373217	7112768	No
<i>Erodium aureum</i>		52J	370803	7113356	No
<i>Malvastrum americanum</i>	5 plants	52J	347942	7122328	No
<i>Malvastrum americanum</i>	5 plants	52J	348534	7122269	No
<i>Malvastrum americanum</i>	3 plants	52J	348635	7122634	No
<i>Malvastrum americanum</i>	50 plants within a 30m radius	52J	348296	7121757	No
<i>Malvastrum americanum</i>	1 plant	52J	348751	7122018	No
<i>Malvastrum americanum</i>	20 plants	52J	349212	7122023	No
<i>Malvastrum americanum</i>	100+ plants	52J	349329	7121796	No
<i>Malvastrum americanum</i>	25+ around base of Hakea loreia	52J	350407	7120541	No
<i>Rumex vesicaria</i>		52J	368463	7112779	No
<i>Rumex vesicaria</i>		52J	373501	7113530	No
<i>Rumex vesicaria</i>		52J	366301	7137932	No
<i>Tribulus terrestris</i>		52J	347630	7123086	No
<i>Tribulus terrestris</i>		52J	372173	7117283	No
<i>Tribulus terrestris</i>		52J	373329	7114511	No
<i>Tribulus terrestris</i>		52J	370895	7113748	No



West Musgrave Copper and Nickel Project
EPA Section 38 Referral Supporting Document

Appendix B2. Assessment of Potential Groundwater Dependent Ecosystems



OZ Minerals Exploration Pty Ltd

**West Musgrave Project Pre-feasibility Study –
APPENDIX A
Assessment of potential GDEs in the West Musgrave
Project area**

18 March 2020

Suite 2, Level 1B, 682 Murray Street
West Perth WA 6005
Telephone: +61 8 9486 1208

March 18, 2020

Project Number: 1000103.1000

Justin Rountree
Environmental and Approvals Lead – West Musgrave

OZ Minerals
2 Hamra Drive
Adelaide Airport SA 5950

Dear Justin

RE: West Musgrave Project pre-feasibility study – Attachment A Groundwater dependent ecosystem baseline report

CDM Smith Australia Pty Ltd is pleased to present the accompanying report outlining the results of an assessment of potential groundwater dependent ecosystems in the West Musgrave Project landscape. The report provides the following:

- Details of the physical setting where groundwater dependent ecosystems might exist, which is in addition to information and data presented in the surface water and groundwater baseline reports, including landscape and soils, and water sources
- Identification of potential GDEs and their location in the landscape based on an extensive literature review
- Conceptualisation of groundwater use by potential GDE's to provide context for their level of sensitivity to altered groundwater conditions arising from mine water affecting activities (which is assessed in the Groundwater effects assessment report, OZL ref. WM-5100-ENV-REP-0007)

We trust the report meets your expectations. If you have any questions, please do not hesitate to call.

Sincerely,



Amy Aird
Project Hydrogeologist

p. +61 433 308 327
e. airda@cdmsmith.com



Paul Howe
Principal Hydrogeologist

p. +61 407 740 559
e. howepj@cdmsmith.com

cc:

Table of Contents

Section 1 Introduction.....	64
Section 2 Physical setting	65
2.1 Overview	65
2.2 Climate	65
2.3 Geology, landforms and soils	65
2.4 Vegetation associations	69
2.5 Water-related habitats.....	69
2.5.1 Aquatic.....	69
2.5.2 Subterranean.....	71
2.5.3 Terrestrial	71
Section 3 Groundwater Dependent Ecosystems	74
3.1 Overview	74
3.2 Assessment approach	75
3.2.1 Available data sources.....	75
3.2.2 Approach	75
3.3 Stage 1: Preliminary identification of potential GDEs	77
3.3.1 GDE Atlas review	77
3.3.2 Local scale field surveys.....	77
3.4 Stage 2: Conceptualisation of groundwater use	83
3.4.1 Literature review	83
3.4.2 Conceptualisations of groundwater use	83
3.5 Stage 3: Qualification of potential GDEs	90
3.5.1 Type 1 GDEs (stygofauna ecosystems)	90
3.5.2 Type 3 GDEs (terrestrial ecosystems)	93
Section 4 Conclusions.....	100
4.1.1 Overview.....	100
4.1.2 Stage 1 assessment.....	100
4.1.3 Stage 2 assessment.....	100
4.1.4 Stage 3 assessment.....	101
Section 5 References	102
Attachment A Literature review	
Attachment B Supporting analysis for the identification of Type 3 GDEs.....	
Flowpath water quality trends	111
Analysis of VegMachine green fractional cover	113

Figures

Figure 1	WMP locality plan (Source: OZL)	64
Figure 2	Average monthly evaporation versus rainfall.....	66
Figure 3	Annual rainfall and CDFM at West Musgrave.....	66
Figure 4	Project physical setting.....	67
Figure 5	Landform systems	68
Figure 6	Surveyed vegetation communities (Western Botanical, 2020)	70
Figure 7	Modelled depth to groundwater.....	73
Figure 8	Assessment approach for identifying potential Type 2 and Type 3 GDEs	76
Figure 9	Assessment approach for identifying potential Type 1 GDEs	76
Figure 10	Potential GDEs in the Project area identified in the GDE Atlas	78
Figure 11	Identified stygofauna locations from sampled bores	79
Figure 12	Identified potential GDEs: field survey vs literature review	82
Figure 13	Preliminary identified potential terrestrial GDEs within the Project development envelope over landform systems	87
Figure 14	Conceptualisation of stygofauna occurrence	88
Figure 15	Conceptualisation of rockholes	89
Figure 16	Preliminary identified potential terrestrial GDEs within the Project development envelope and modelled depth to groundwater.....	91
Figure 17	Maximum height of dominant species in each mapped vegetation association within the Project development envelope.....	92
Figure 18	Matrix for qualitative determination of vegetation groundwater use	93
Figure 19	Conceptualisation of potential groundwater use by terrestrial vegetation	94
Figure 20	Qualification of terrestrial vegetation groundwater dependence based on distribution across landscape	99

Tables

Table 1	Priority vegetation species list (Western Botanical, 2020).....	69
Table 2	Key observational data for rockholes in the Project area.....	80
Table 3	Surveyed vegetation and inferred potential for groundwater use from literature review ^{[1],[2]}	84
Table 4	Qualitative classification of identified vegetation association potential for groundwater use	95
Table 5	Qualitative classification of identified vegetation associations degree of dependence.....	97
Table 6	Potential terrestrial GDEs	98

Glossary of terms and abbreviations

Terms

Aquifer	A saturated or partially saturated hydrostratigraphic unit that is sufficiently permeable to transmit useful quantities of water
Aquifer (confined)	A fully saturated aquifer that is overlain by a confining (low permeability) hydrostratigraphic unit, and where the groundwater pressure is higher than the base of the confining unit
Aquifer (unconfined)	An aquifer whose upper water surface (water table) is at atmospheric pressure, sometimes referred to as a water table aquifer
Aquitard	A layer in the geological profile that separates two aquifers and restricts the flow between them, in unconsolidated (regolith) aquifers it is generally clay
Baseflow	The portion of stream flow derived from groundwater discharge
Basement	Lowest or basal rock unit occurring within a region, comprising rock
Capillary fringe	The zone immediately above the water table, where water is drawn upward by capillary action
Capillary rise	The ability of a liquid to flow in narrow spaces without the assistance of, or even in opposition to, external forces like gravity
Claypan	A dense, compact, slowly permeable layer in the subsoil having a much higher clay content than the overlying material, from which it is separated by a sharply defined boundary
Colluvial slopes	Accumulation of colluvium (loose unconsolidated sediments) as gently sloping aprons or fans, either at the base of or within gullies and hollows within hillslopes
Discharge	The volume of water that passes a given location within a given period of time, can be expressed as cubic metres per second, cubic metres per day or megalitres per day
Drained upper limit (field capacity)	The amount of water a soil can hold against gravity
Drawdown	The distance between the static water level and the surface of the water table in response to the taking of groundwater, e.g. via pumping
Ecological function	Any process or set of processes that can change (over time) an ecological system
Ecological services	The services and benefits that humans derive from ecological systems, including oxygen production, carbon stores and water purification
Ecosystem	Term used to describe species in an environment and their relationship with one another and the non-living (abiotic) community
Ecosystem composition	The variety of living things found within an ecosystem
Ecosystem (health) condition	The state of ecological systems, which includes their physical, chemical, and biological characteristics and the processes and interactions that connect them
Ecosystem resilience	Resilience relates to the capacity of an ecosystem that is adversely affected by a disturbance to recover to its prior condition (e.g. for leaves to recommence normal rates of photosynthesis)
Ecosystem resistance	Resistance relates to the capacity of an ecosystem to resist/adapt to change (e.g. by eco-physiological means such as increasing leaf water potentials to overcome the effect of water table drawdown, or reducing canopy area to minimise transpiration rates)

Glossary of terms and abbreviations

Ecosystem services	Fundamental characteristic of ecosystems related to conditions and processes necessary for maintaining ecosystem integrity, which implies intact abiotic components (e.g. soils and water), biodiversity and resilience to natural successional cycles (e.g. fire, flooding, predation). Ecosystem function will include such processes as decomposition, nutrient cycling and production. It is generally considered that maintenance of biodiversity is integral to ecosystem function. The term is sometimes used interchangeably with <i>ecosystem condition</i>
Environmental value	Values or uses of the environment that are important for a healthy ecosystem or for public benefit, welfare, safety or health
Environmental water requirement	Water regime needed to maintain a particular composition, structure and level of ecological function and ecosystem service provision
Ephemeral	Lasting only a short time; short lived; transitory
Evapotranspiration	The process by which water is transferred from the land to the atmosphere by evaporation from the soil and other surfaces and by transpiration from plants
Facultative groundwater dependent ecosystem	Facultative GDEs require access to groundwater in some landscapes, but in other landscapes can utilise alternate sources of water to maintain ecosystem function, i.e. access to groundwater is not critical in determining ecosystem occurrence in the landscape (compare with obligate GDE)
Flowpath	Any route for groundwater movement, extending from a recharge (intake) zone to a discharge (output) zone such as a shallow stream
Groundwater	The water contained in interconnected pores, gaps or fractures located below the water table in an unconfined aquifer or located in a confined aquifer.
Groundwater dependant ecosystem	Natural ecosystems that require access to groundwater to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services
Groundwater discharge	The movement of groundwater from the subsurface to the surface
Hydraulic gradient	The rate of change in total head per unit distance in a given direction. The direction of gradient is that yielding the maximum rate of decrease in head
Indicator species	An organism or a plant that serves as a measure of the environmental conditions that exist in a given locale
Obligate groundwater dependent ecosystem	Obligate GDEs are ecosystems that rely on groundwater for maintenance of some part or all of their ecosystem function. This reliance can be continual, seasonal or episodic (compare with Facultative GDE), and access to groundwater is crucial in determining ecosystem occurrence in the landscape
Outcrop hills	Visible exposure of bedrock or ancient superficial deposits on the surface of the Earth
Outwash plains	A broad, sloping landform built of coalesced deposits of outwash
Palaeochannel	A landform occurring within an inactive river or stream system that has been inset into a palaeovalley and infilled by younger sediments, the deepest part of which may be infilled with relatively coarse clastic materials, depending on the depositional environment (see thalweg and palaeovalley)
Palaeoriver	An inactive, ancient river or stream system, an infilled and buried palaeoriver is referred to as a palaeochannel
Palaeovalley	An ancient valley that may have hosted one or more palaeoriver systems, now partially or completely buried by fine to coarse sediments, e.g. the Kadgo Palaeovalley

Glossary of terms and abbreviations

Phreatophytes	Plant that draws water from the capillary fringe and saturated zone (i.e. below water table) to maintain vigour and function
Permanent wilting point	The minimal amount of water in the soil that the plant requires not to wilt
Plant Available Water Capacity	The soil water content between an upper limit, termed field capacity (FC), and a lower limit or the permanent wilting point (PWP)
Plant uptake	The amount of nutrients taken into a plant by root and foliar uptake
Priority Flora	The system by which Western Australia's conservation flora are given a priority
Riparian vegetation	Vegetation found in the riparian zone, considered to be distinct from <i>terrestrial vegetation</i>
Riparian zone	Riparian zones border creeks, rivers, lakes, wetlands or other bodies of water, often, there is close interaction of surface water and groundwater within riparian zones.
Rockhole	Weathered depression in basement outcrop that may or may not hold water arising from rainfall runoff
Riparian vegetation	Vegetation found in the riparian zone
Riparian zone	Riparian zones are narrow strips of land that border creeks, rivers, lakes, wetlands or other bodies of water. Often, there is close interaction of surface water and groundwater within riparian zones
River baseflow system	Streams that are fed by groundwater baseflow
Rockhole	Surface water feature formed in rocky outcrop
Rooting depth	The soil depth from which a fully grown plant can easily extract most of the water needed for transpiration
Runoff	The part of the water cycle that flows over land as surface water instead of being absorbed into groundwater or evaporating
Saturated zone	The zone in which the voids in the rock or soil are filled with water. Sometimes referred to as the 'phreatic' zone
Seep	A source of water at the ground surface supplied by groundwater discharge
Sheet flow	Relatively high-frequency, low-magnitude overland flow occurring in a continuous sheet and is restricted to laminar flow conditions
Soil moisture	Water occurring in the pore spaces between the soil particles in the unsaturated zone from which water is discharged by the transpiration of plants or by evaporation from the soil
Soil water	Any water held in the soil as a vapour, liquid or solid
Soil water reservoir/storage	The total amount of water that is stored in the soil above the water table and capillary fringe, can change with time depending on evapotranspiration and frequency of precipitation events
Spring	A source of water at the ground surface supplied by groundwater discharge
Stable isotope	An isotope that does not undergo radioactive decay
Stable water isotope ratio	The ratio of the concentrations of the comparatively rare, stable ^{18}O isotope and the comparatively abundant, stable ^{16}O isotope in water molecules in a given body of water
Stomatal control	A physiological mechanism of plants for the reduction of water loss
Stratum	A distinct height class of plants in a vegetation association

Glossary of terms and abbreviations

Stygofauna	Any fauna that live in groundwater systems or aquifers, such as pore spaces, caves, fissures and vughs
Subterranean ecosystem	An ecosystem dependent on water held in aquifers (e.g. stygofauna) or inundated caves, also referred to as ‘aquifer and cave ecosystems’
Surface expression of groundwater	Groundwater that has been discharged to the surface, such as baseflow or spring flow
Swale	A low or hollow place, especially a marshy depression between ridges
Terrestrial vegetation	Vegetation that grows on, in or from land, considered different to <i>riparian vegetation</i>
Thalweg	A line connecting the deepest sections of a palaeochannel, not usually discernible from the surface
Threatened Flora	Flora which are vulnerable to endangerment in the near future
Transpiration	The process by which water absorbed by plants, usually through the roots, is evaporated into the atmosphere from the plant surface, principally from the leaves
Troglifauna	Terrestrial animals living in caves and other air-filled subterranean spaces
Unconfined aquifer	A water table aquifer
Unsaturated zone	The zone between land surface and the water table within which the moisture content is less than saturation (except in the capillary fringe) and pressure is less than atmospheric. Sometimes referred to as the vadose zone
Vadose zone	Unsaturated zone
Vadophytic	Reliant on soil water reservoir for maintenance of ecosystem function
Vadophyte	A plant which is vadophytic
Vegetation associations	A grouping of plant species, or a plant community, that recurs across the landscape; Structural form and dominant species
Vegetation complex	Structural and floristic description linked to geomorphology
Water affecting activity	A development activity that has the potential to alter the water environment from the baseline and may therefore have an effect on dependent EVs
Water holding properties	Properties that control a medium's ability to retain water, such as texture, composition and organic matter content
Water regime	The prevailing pattern of water flow over a given time of a freshwater ecosystem. More specifically, it refers to the duration and timing of flooding resulting from surface water (overland flow), precipitation, and ground water inflow
Water table	The surface between the unsaturated and saturated zones of the subsurface at which the hydrostatic pressure is equal to that of the atmosphere
Wetland	A distinct ecosystem that is inundated by water, either permanently or seasonally, where oxygen-free processes prevail

Abbreviations

AHD	Australian Height Datum
bgl	Below ground level
DEM	Digital elevation model
DTW	Depth to (ground)water

EWR	Environmental Water Requirement
GDE	Groundwater dependent ecosystem
JAXA	Japan Aerospace Exploration Agency
PAWC	Plant available water capacity
SILO	Scientific Information for Land Owners
WAA	Water affecting activity
WMP	West Musgrave Project

Units of measure

mAHD	Metres Australian Height Datum
mbgl	metres below ground level

Document history & status

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
0	22 Feb 2019	P. Howe	A. Hoare	21 Feb 2019	Draft for client comment
1	8 May 2019	J Fawcett	R. Cranswick	27 May 2019	2 nd Draft
2	2 Oct 2019	P. Howe	P. Howe	2 Oct 2019	3 rd Draft
3	31 Jan 2020	P. Howe	A. Aird	31 Jan 2020	Final draft
4	18 Mar 2020	R. Cranswick	P. Howe	18 Mar 2020	2 nd Final draft

Distribution of copies

Version	Date issued	Quantity	Electronic	Issued to
0	22 Feb 2019	1	PDF	J. Rowntree (OZL)
1	27 May 2019	1	PDF	J. Rowntree (OZL)
2	2 Oct 2019	1	PDF	J. Rowntree (OZL)
3	31 Jan 2020	1	Word	A.Wright (OZL)
4	18 Mar 2020	1	PDF and Word	A.Wright (OZL)

Printed:	18 March 2020
Last Saved:	18 March 2020
File Name:	WM-5100-ENV-REP-0003-AppA-4
Author:	A. Aird, J. Fawcett, D. Currie, R. Cranswick
Project Manager:	A. Aird
Client:	OZ Minerals Exploration Pty Ltd
Document Title:	West Musgrave Project Pre-feasibility Study –APPENDIX A Assessment of potential GDEs in the West Musgrave Project area
Document Version:	4
Project Number:	1000103.1000

Section 1 Introduction

OZ Minerals Exploration Pty Ltd (OZL) has entered into a Joint Venture (JV) with Cassini Resources Limited (CZI) to develop the West Musgrave Project (WMP or 'the Project'), which is located in the remote east of Western Australia (around 1,300 km northeast of Perth), near the South Australian and Northern Territory borders (Figure 1). The Project will involve the mining and processing of the Nebo-Babel Ni-Cu-PGE sulfide deposits (Figure 1).

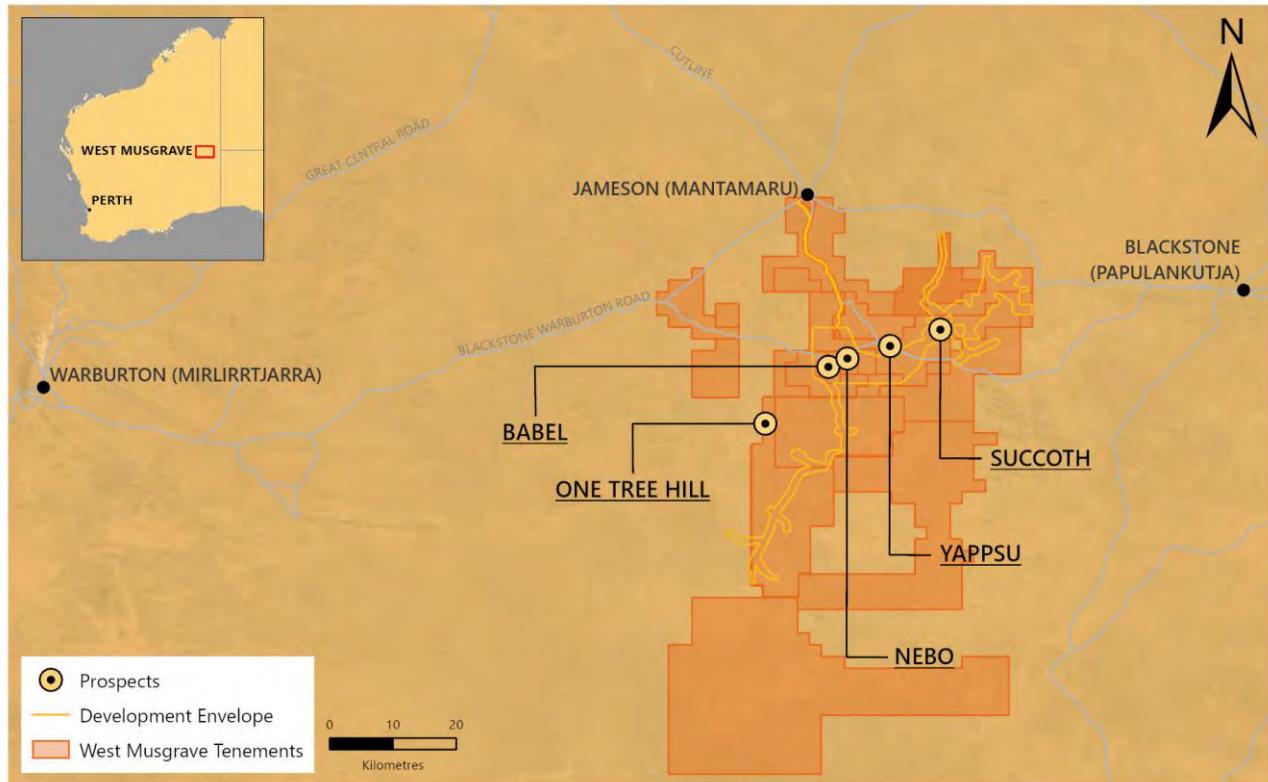


Figure 1 WMP locality plan (Source: OZL)

This report presents a desktop assessment of the potential for groundwater dependent ecosystems (GDEs) to occur within the Project area, and provides the basis from which to assess the potential effects to GDEs arising from changes in groundwater conditions due to the proposed development activities (OZL ref. WM-5100-ENV-REP-0007).

Section 2 Physical setting

2.1 Overview

A detailed description of climate and topography of the broader Project area is presented in the surface water baseline report (WM-5100-ENV-REP-0002). A detailed description of the geological and hydrogeological setting of the Project area is presented in the groundwater baseline report (WM-5100-ENV-REP-0003).

The discussion presented below provides specific context around the sources of water available to sustain ecosystems in the Project area.

2.2 Climate

Mean rainfall for the Project area is likely to range between 100 and 200 mm/y (BoM, 2010), with most rainfall likely to occur during the summer and autumn months (averaging around 100 mm and more than 50 mm, respectively) in association with cyclonic depressions moving across the continent from the northwest. Rainfall during winter and spring months can be expected to range between 25 and 50 mm, respectively, on average.

Figure 2 shows long-term average monthly rainfall and evaporation data for the Project area from SILO (Ref. WM-5100-ENV-REP-0002). Figure 3 shows estimated annual rainfall for the period 1889 through to 2014 and cumulative deviation from mean (CDFM) rainfall for the same period. The figure shows rainfall can be regarded as low (average of 181 mm, consistent with BoM's estimate of between 100 to 200 mm/y), and extremely variable. Importantly, there appears to be multi-decadal rainfall variability within the Project area, with the period from 1974 to the present likely being significantly wetter than earlier years (Figure 3).

The mean annual pan evaporation rate for the Project area ranges between 3,200 and 3,600 mm/y (BoM, 2006) averaging around 14 mm/d during warmer months and around 5 mm/d during cooler periods of the typical year. Figure 2 shows that average monthly evaporation rates greatly exceed average rainfall rates across all months of the year. This is an important factor, as it drives a considerably large annual soil water deficit, which might impact on plant available water.

2.3 Geology, landforms and soils

The geology of the Project area comprises Quaternary sandplains and dunefields (Tile, 2006), over Tertiary and Neoproterozoic sediments of the Officer Basin and Proterozoic rocks of the Musgrave Province, which have been incised by palaeochannels hosted within the Kadgo Palaeovalley .

The landscape is characterised by sand dunes, particularly in the northeast, small scale calcrete ridges to the south, and low relief rocky outcrop hills and associated outwash plains to the east, west and north of the Project area (Figure 5).

The landscape is covered by varying thicknesses of red siliceous sand, becoming silty or clayey in low-lying areas (Western Botanical, 2020), where internally draining claypans are common (Figure 4). Micro-relief calcareous soils overlying calcrete deposits are also common while colluvial slopes and outwashes occur adjacent to elevated areas, where they occur.

Given the arid environment, the water holding capacity of soils (which is controlled by texture, bulk density and organic matter content) will be an important consideration for plant water use patterns. Typically, it would be expected sandplains and dunefields will have a relatively lower water holding capacity than the clayey and silty soils that might be associated with claypans. In the Project area, the source of water held within the vadose (unsaturated) zone will be a combination of rainfall that infiltrates to replenish the soil water reservoir and water rising up from the water table in response to water potential gradients established between the soil water reservoir (due to plant uptake) and the capillary fringe.

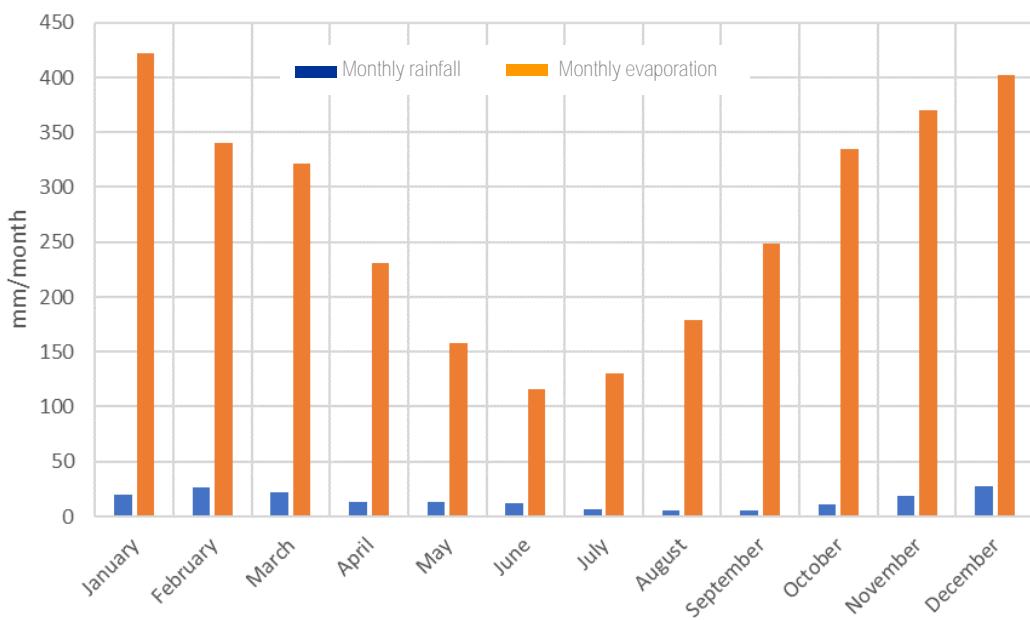


Figure 2 Average monthly evaporation versus rainfall

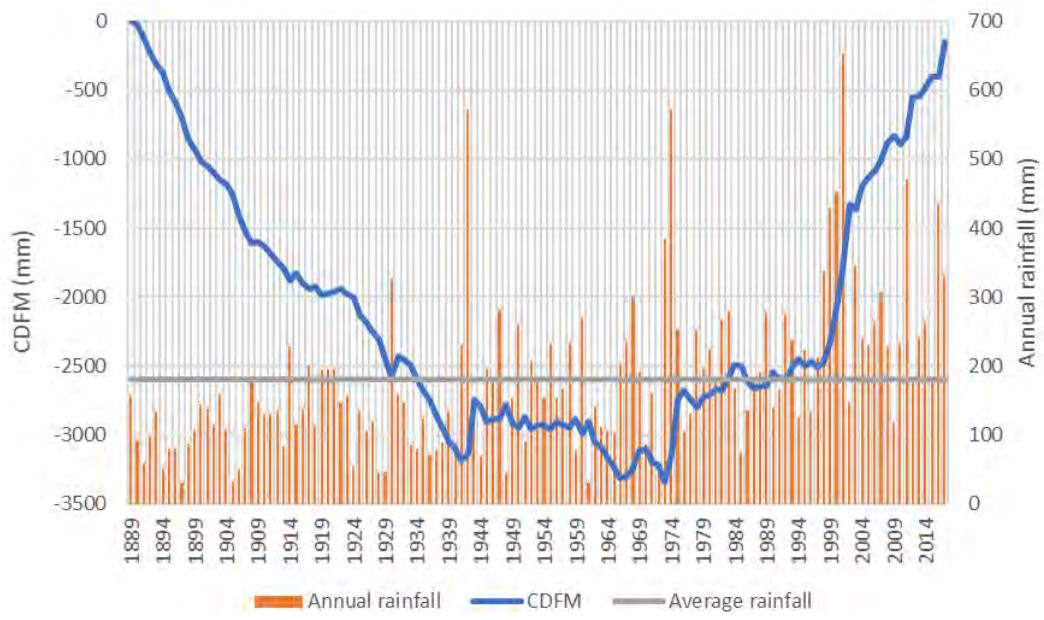


Figure 3 Annual rainfall and CDFM at West Musgrave

Figure 4

Project physical setting

- Road
- Proposed mine pit
- Development envelope
- AEM Palaeovalley extent (20m depth)
- Clay pan
- Minor drainage

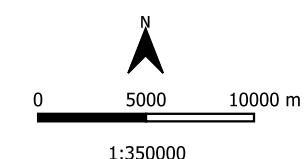
Topography (mAHD)

<= 400
400 - 425
425 - 450
450 - 475
475 - 500
500 - 525
525 - 550
550 - 575
575 - 600
600 - 625
625 - 650
650 - 675
675 - 700
700 - 750
750 - 800
800 - 1200

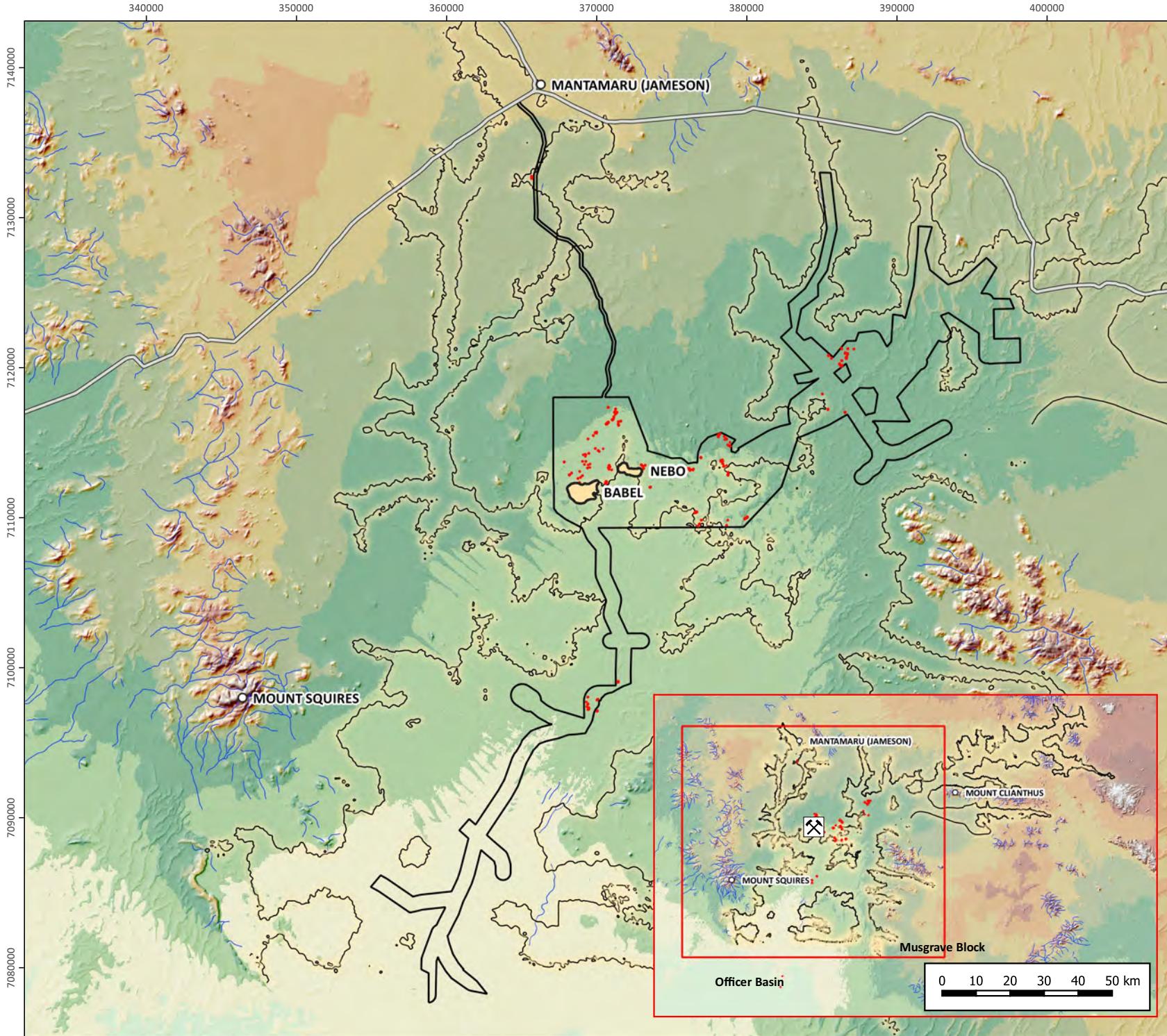
DATA SOURCES
Cassini Resources, 2018
OZ Minerals, 2019

DISCLAIMER
CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

Date Published: 29 Jan 2020
Project Number: 1000103
Client: OZ Minerals/Cassini Resources
Drawn: ETEROVICZ
Map Projection: GDA2020 / MGA Zone 52



**CDM
Smith**



340000

350000

360000

370000

380000

390000

400000

7140000

7130000

7120000

7110000

7100000

7090000

7080000

MANTAMARU (JAMESON)

MOUNT SQUIRES

Figure 5**Landform systems**

- Proposed mine pit
- Development envelope

Landscape

- Extensive plains with numerous dunes which are often short and of irregular shape and orientation
- Outwash plains and dissected fan and terrace formations flanking ranges of sedimentary and some metamorphic, volcanic, and granitic rocks
- Outwash plains subjacent to ranges of basic igneous rocks; some low hills of basic rocks occur in the unit; occasional dunes
- Plains with occasional short dunes, and hilly areas with rock outcrops
- Ranges and hills mainly on granitic rocks; rock outcrop is extensive
- Steep hills and ranges on basic rocks; rock outcrop common; some gorges; small pediments and plains
- Steep hills and ranges on sedimentary and some metamorphic, volcanic, and granitic rocks; bare rock outcrop is common; some gorges
- Very gently undulating plain traversed by longitudinal dunes
- Clay pan

DATA SOURCES

DMIRS, 2018
OZ Minerals, 2019

Inset map: Western Botanical, 2020

DISCLAIMER

CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

Date Published: 31 Jan 2020

Project Number: 1000103

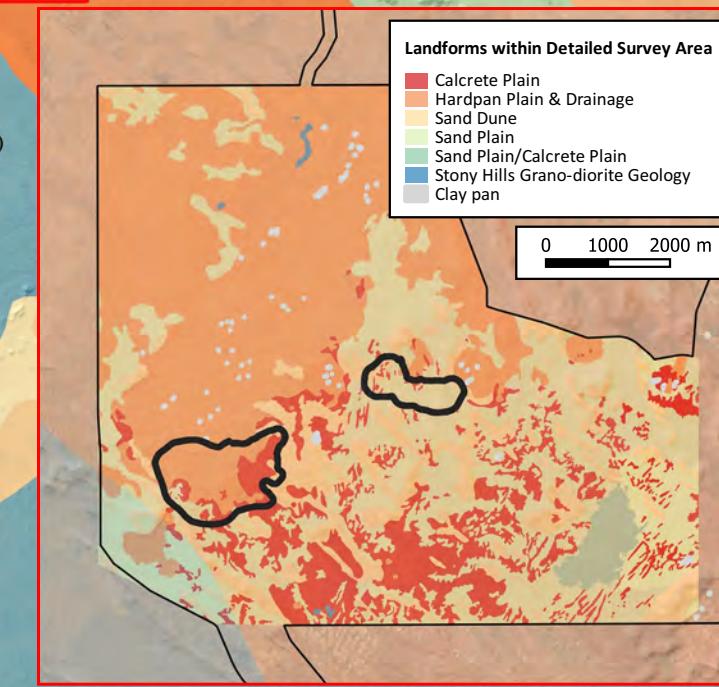
Client: OZ Minerals/Cassini Resources

Drawn: ETEROVICZ

Map Projection: GDA2020 / MGA Zone 52



1:350000

**CDM
Smith**


2.4 Vegetation associations

Three phases of field vegetation and flora surveys have been undertaken (2014/2015, 2018 and 2019; Western Botanical, 2020) over the development envelope, and these have identified 38 different vegetation associations in total (extending from Jameson in the north to the Officer Basin in the south), 29 of which occur within the development envelope (Figure 1) and 33 of which occur with the numerical model domain that is described in the Project groundwater modelling report (OZL ref. WM-5100-WTR-REP-0034). The distribution of these associations is presented in Figure 6, showing there is reasonable affinity to landform systems (Figure 5), i.e.:

- Calcrete Plains landforms host a number of grassland associations and *Corymbia opaca* woodlands
- Hardpan Plain and Drainage landforms host a number of woodland, shrubland and grassland associations
- Clay Pan Playa host annual grasses and herbs
- Sand Dune landforms host shrubland associations
- Sand Plains landforms host a number of woodland, shrubland and (Spinifex) grassland associations
- Stoney Hill landforms host a number of shrubland associations

No Threatened Flora that are listed under the Western Australian Biodiversity Conservation Act (2016) or the Commonwealth EPBC Act have been observed in the Project area, although a number of Priority Flora species have been identified (Western Botanical, 2020), which are listed in Table 1.

Table 1 Priority vegetation species list (Western Botanical, 2020)

Priority 1	Priority 3
<i>Aenictophyton anomalum</i>	<i>Acacia eremophila</i>
<i>Indigofera warburtonensis</i>	<i>Amaranthus centralis</i>
	<i>Aristida jerichoensis</i> var. <i>subspinulifera</i>
	<i>Chrysocephalum apiculatum</i> subsp. <i>ramosum</i>
	<i>Eragrostis</i> spp.
	<i>Goodenia asteriscus</i>
	<i>Stackhousia clementii</i>
	<i>Tephrosia</i> sp.

2.5 Water-related habitats

2.5.1 Aquatic

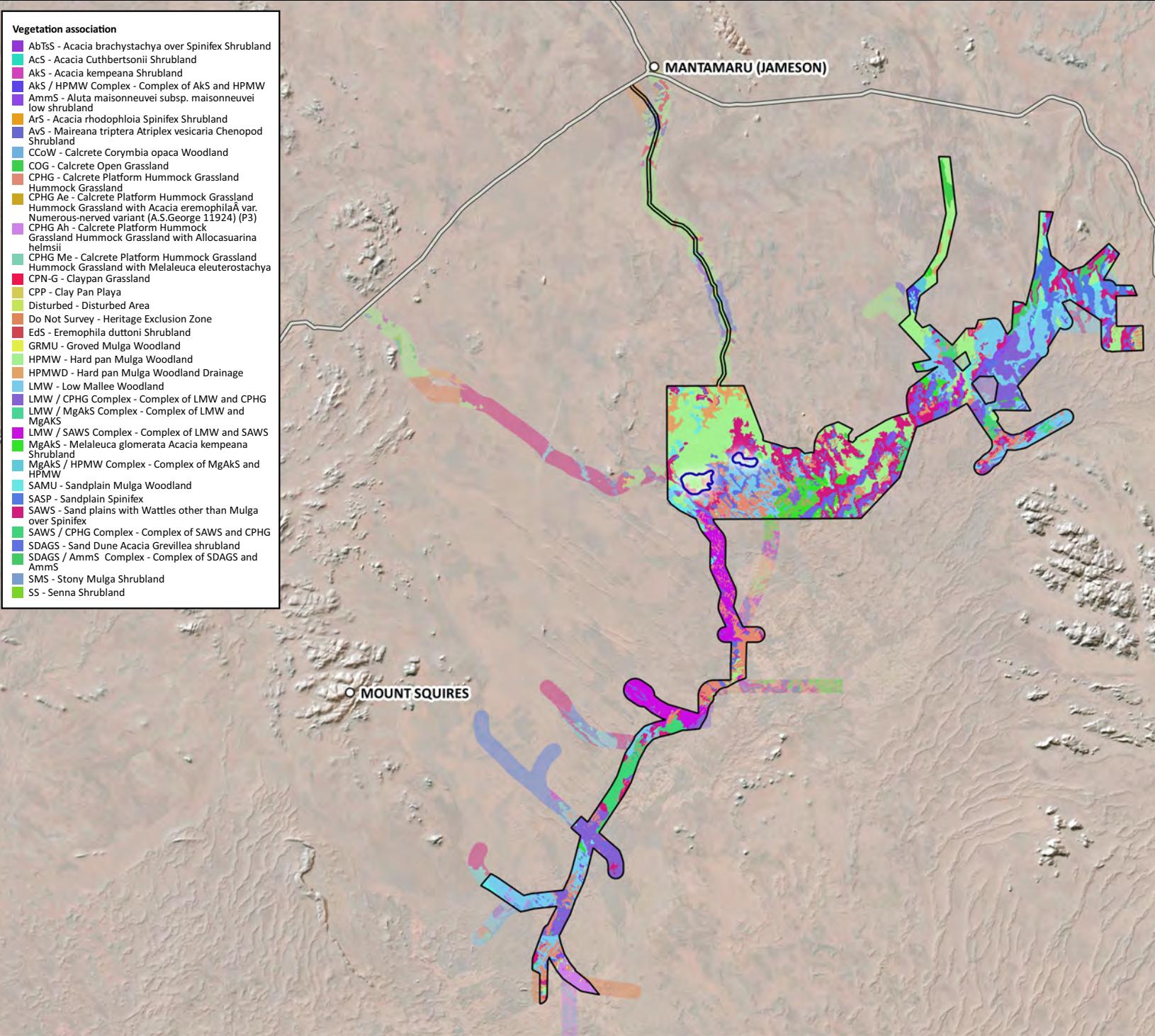
The Project area is characterised by poorly defined surface water catchments and disconnected ephemeral drainage lines (Figure 4). There are no permanent or semi-permanent water courses present in the landscape. The ‘normal’ condition of the Project area catchments is dry. Runoff and ponding of rainfall is not often seen observed in the Project area following a rainfall event. This suggests one of three effects:

- Rainfall runoff is limited due to high evaporation rates, or
- Rainfall runoff is limited due to rapid infiltration (consistent with the presence of micro-relief calcareous soils), or
- Rainfall runoff is limited due to a combination of high evaporation rates and rapid infiltration

Figure 6

**Surveyed vegetation communities
(Western Botanical, 2020)**

- Road
- Proposed mine pit
- Development envelope



**CDM
Smith**

However, when sufficient rainfall occurs to generate runoff, sheet flow is the dominant form of runoff observed. There are some areas where rainfall-runoff will collect and flow after intense rainfall events, particularly where there are successions of interconnected low-lying terrains that often terminate in clay pans. Groundwater baseflow to streams is not a feature of the landscape.

Rainfall samples report very low salinity (around 30 µS/cm) and groundwater is typically fresh to slightly brackish (generally ranging from 750 to 3,000 µS/cm). Groundwater from all aquifers across the Project area report elevated levels of nitrate.

The presence of aquatic habitats that have some reliance on groundwater requires surface water interaction with groundwater, which means:

- The water table surface has to cut (window at) the land surface or intersect water courses above the bed level, and this is not observed in the Project area or more broadly
- Aquifers have artesian pressures resulting in groundwater discharge to the surface via diffuse upward leakage or fractures / fissures, and again this is not observed in the Project area or more broadly

2.5.2 Subterranean

Aquifers provide a habitat for stygofauna, and troglofauna are present above the water table. These fauna are adapted to conditions of stable temperature and limited sunlight, oxygen and nutrients.

Stygofauna are commonly found in aquifers having relatively large (mm or greater) pore spaces, e.g. within alluvial, karst and some fractured rock systems. They are typically most abundant in fresh to brackish shallow aquifers where nutrients and oxygen are more readily available, and their presence generally decreases with depth and distance along groundwater flow paths (Hose et al, 2015).

Troglofauna likely have limited sensitivity (if any) to changes in groundwater levels, other than where this might impact on subsurface humidity levels. However, rainfall infiltration is likely important for these types of ecosystems to meet environmental water requirements (EWRs), which makes them more reliant on maintaining surface water regimes as close as possible to the baseline rather than groundwater regimes.

2.5.3 Terrestrial

Where the water table is shallow enough to be accessed by plant roots or allow capillary rise to near the surface, groundwater discharge will occur through evapotranspiration processes.

It is anticipated that, due to the lack of any evidence of wetlands connected to the groundwater, the presence of any above ground surface GDEs will be dominated by terrestrial vegetation that have access to groundwater via root development, and it follows that tall tree species with larger canopy areas are more likely to have deeper, more extensive rooting systems than smaller tree species.

An important component of mapping potential terrestrial GDEs is plant available water capacity (PAWC), i.e. the total amount of water in the vadose zone (also termed the soil water reservoir) that can be stored and released to plants. PAWC is controlled by the water holding properties of the soil, including the thickness of the vadose zone. For an individual plant, PAWC is the amount of water held between the drained upper limit (field capacity) of the soil and the permanent wilting point (which varies between plant species based on their ability to extract tightly held soil moisture in dry soils), summed over the rooting depth. Rooting depths depend on many factors including soil structure, antecedent conditions over the life of the plant and the quality of available soil moisture over time. These typically vary between species but can show significant variation between different species populations, depending on location and climate.

Infiltrating rainwater will likely be the dominant source of soil water, and it follows that this will vary seasonally depending on rainfall conditions (timing, amount and intensity). Rooting depth is an important factor in controlling PAWC, it will vary between plant species and may be limited by physical (e.g. hardpans) and chemical (e.g. high/low

Section 2 Physical setting

pH, salinity and elevated boron) constraints in the subsoil, all of which can prevent root access to deeper soil water reserves.

The depth of the vadose zone (i.e. depth to the water table and capillary fringe) generally ranges between 3 and 8 m below ground level in the Project area (m bgl; OZL ref. WM-5100-ENV-REP-0003). Figure 7 presents a plan showing the modelled steady-state depth to water table (OZL ref. WM-5100-WTR-REP-0034) across the Project area. In areas where the water table is shallow (i.e. the soil water reservoir is restricted by depth), there may be times when larger, perennial vegetation species require access to groundwater, e.g. during extended periods of drought.

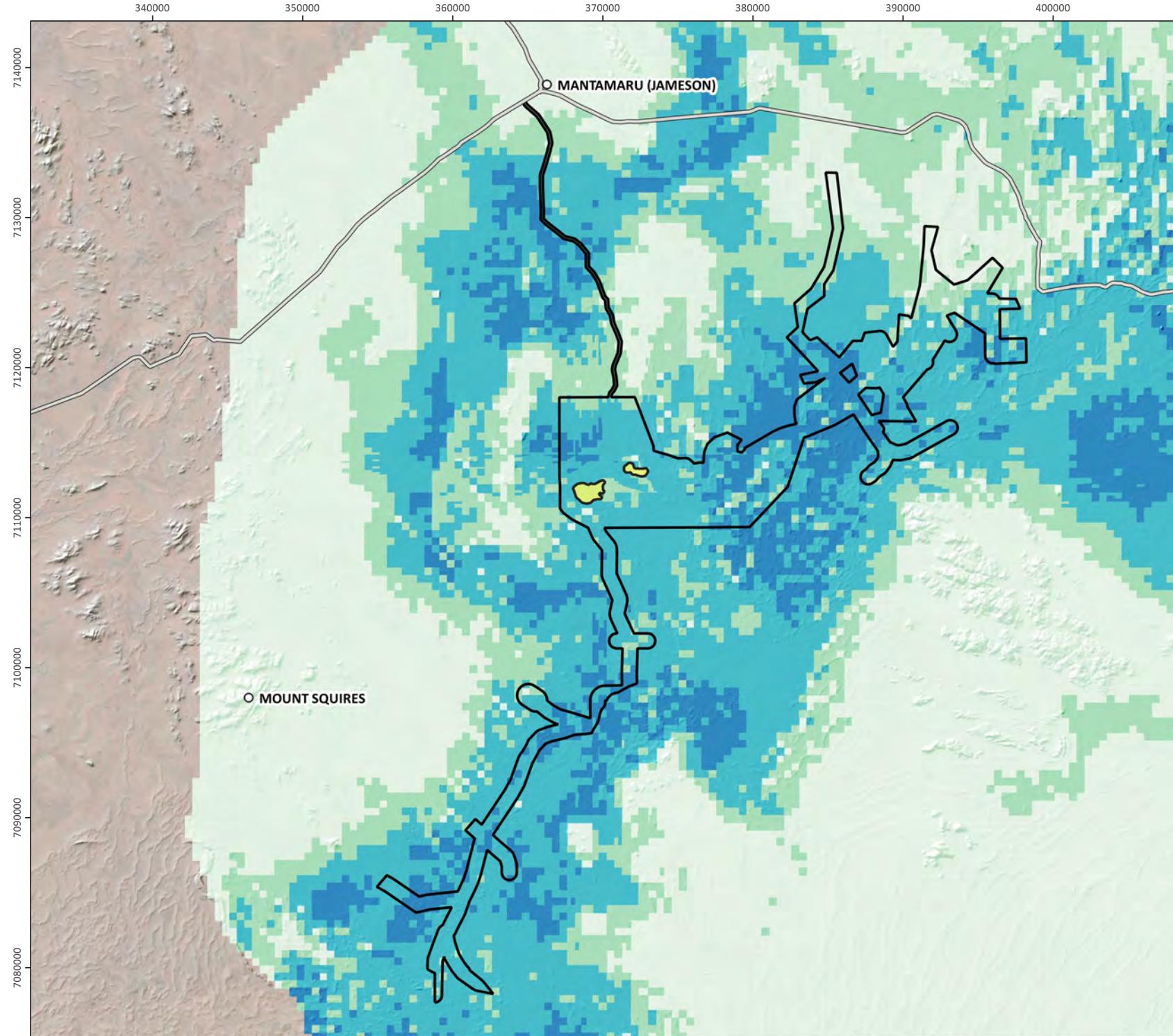


Figure 7

Modelled depth to groundwater

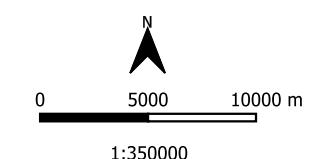
- Road
- Proposed mine pit
- Development envelope

Modelled depth to groundwater (mbgl)	
< 2	
2 - 5	
5 - 10	
10 - 15	
< 15	

DATA SOURCES
Cassini Resources, 2018
OZ Minerals, 2019

DISCLAIMER
CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

Date Published: 12 Mar 2020
Project Number: 1000103
Client: OZ Minerals/Cassini Resources
Drawn: ETEROVICZ
Map Projection: GDA2020 / MGA Zone 52



**CDM
Smith**

Section 3 Groundwater Dependent Ecosystems

3.1 Overview

All ecosystems rely on a water regime that is sufficient to maintain a particular composition, structure and level of ecological function and ecosystem service provision. This water regime is known as the EWR. Groundwater dependent ecosystems (GDEs) depend on groundwater (i.e. water occurring below the water table including the capillary fringe) to at least some extent consistently or on occasion to meet their EWRs. The EWR can be related to surface water flow, depth to water table and/or water quality, and can vary spatially and temporally (Richardson et al., 2011a).

Groundwater often forms an important component of EWRs for ecosystems in arid environments where extended dry periods are experienced, and when surface water and soil water is scarce (Eamus et al., 2006). GDEs may be dependent on groundwater to meet their EWR at all times (e.g. stygofauna) or only part of the time, for example a few months every year during the dry season when the soil water reservoir is depleted. The dependence becomes apparent when the supply of groundwater is removed for a sufficient length of time that might give rise to changes in plant function, ecosystem condition, composition and distribution (Eamus, 2009). These changes will be constrained to some degree by ecosystem resilience (capacity to recover once the water regime returns to ‘normal’) and resistance (capacity to adapt to change).

Obligate GDEs are those GDEs where component species require access to groundwater at some stage in their lifecycle to maintain ecological function and ecosystem services, i.e. access to groundwater (as well as other factors) defines the ecosystems presence in the landscape. Facultative GDEs are those GDEs where access to groundwater does not necessarily define their presence in a landscape, i.e. depending on location, component species may use no groundwater to meet all of their EWRs. Not all component species (flora or fauna) within an ecosystem need to be groundwater users in order for an ecosystem to be classified as a GDE. However, if the species that requires access to groundwater (i.e. the ‘indicator species’) are removed or impacted (e.g. due to long-term drought, anthropogenic effects, pests, weeds or fire) other component non-GDE species may be impacted such that ecosystem function breaks down.

The Australian GDE toolbox (Richardson et al., 2011) provides a framework to assist with the identification of GDEs and the management of their EWRs. The toolbox adopts the approach of Eamus et al. (2006) by classifying GDEs based on the role groundwater plays in maintaining biodiversity and ecological function. Three types of GDEs are defined by the GDE toolbox:

- Type 1 - Subterranean ecosystems, also referred to as ‘aquifer and cave ecosystems’
Dependent on water held in aquifers (e.g. stygofauna) or inundated caves, these ecosystems are typically common within karst aquifer systems, sedimentary aquifers and fractured rock groundwater environments
- Type 2 - Ecosystems dependent on the surface expression of groundwater, also referred to as ‘aquatic ecosystems’
Surface expression of groundwater provides water that can support aquatic biodiversity through access to habitat (especially when surface run-off is low or non-existent), as well as regulation of water quality and temperature, include wetlands, lakes, seeps, springs, and river baseflow systems
- Type 3 - Ecosystems dependent on subsurface presence of groundwater, also referred to as terrestrial ecosystems
Dependent on groundwater either seasonally, episodically or permanently to prevent water stress and avoid adverse threat to their condition, these ecosystems can exist wherever the water table and capillary fringe (semi-saturated zone of soil above the water table) are within the root zone of the plants, either permanently or episodically, includes terrestrial and riparian vegetation

3.2 Assessment approach

3.2.1 Available data sources

The Project area is located within an arid and remote region of Australia that remains relatively undeveloped and under studied compared to other relatively remote environments, e.g. Ti-Tree Basin (NT), Pilbara (WA) and the Goldfields (WA). This has resulted in a paucity of observational data and information from which to make a quantitative assessment of the presence and distribution of GDEs. The following data sources have been used to inform the assessment presented in this report:

- The National Atlas of GDEs (GDE Atlas; BoM, 2017)
 - Provides a national dataset pertaining to the presence of GDEs, and presents the current knowledge of ecosystems that may have some degree of reliance on groundwater across Australia
- A desktop survey and multiple phases of detailed flora and vegetation field surveys of the Project area from 2014 to 2020 (summarised in Western Botanical, 2020)
 - Provides a preliminary identification of a small number of plant species that may be dependent on groundwater
- Field surveys of the Project area, including communication with Traditional Owners (TOs)
- State and national surface water feature mapping (EPP wetlands, Ramsar wetlands, or Directory of Important Wetlands)
- State geological and landscape mapping
- Project baseline hydrologic and hydrogeologic data and conceptualisation, as described above in Section 2 and other Project references listed in Section 5
- Expert knowledge and experience of the extended GDE study team
- Publicly available literature, including VegMachine (<https://vegmachine.net/>), which is a web-based tool that summarises the long-term spatial and temporal changes in land cover using satellite imagery
- Published literature re: GDE research and studies completed for plant species identified in the Project area, including Project references listed in Section 5

3.2.2 Approach

The approach used to identify potential GDEs in the Project area is summarised in Figure 8 and more specifically for Type 1 GDEs in Figure 9. The following describes the steps undertaken:

- Stage 1 – Preliminary identification of potential GDEs
 - GDE Atlas
 - Given the scarcity of site-specific data and broad resolution of available national scale data, the usefulness of GDE Atlas data products are considered preliminary / indicative for the Project area
 - Local scale field surveys
 - First pass knowledge gleaned from the GDE Atlas and other broad scale datasets is refined based on more detailed/local scale desktop and field assessments, including baseline hydrological and hydrogeological data collection, and surface water, vegetation and flora surveys
 - Sampling of groundwater from dedicated bores for the presence of stygofauna (results are reported in Bennelongia, 2020)

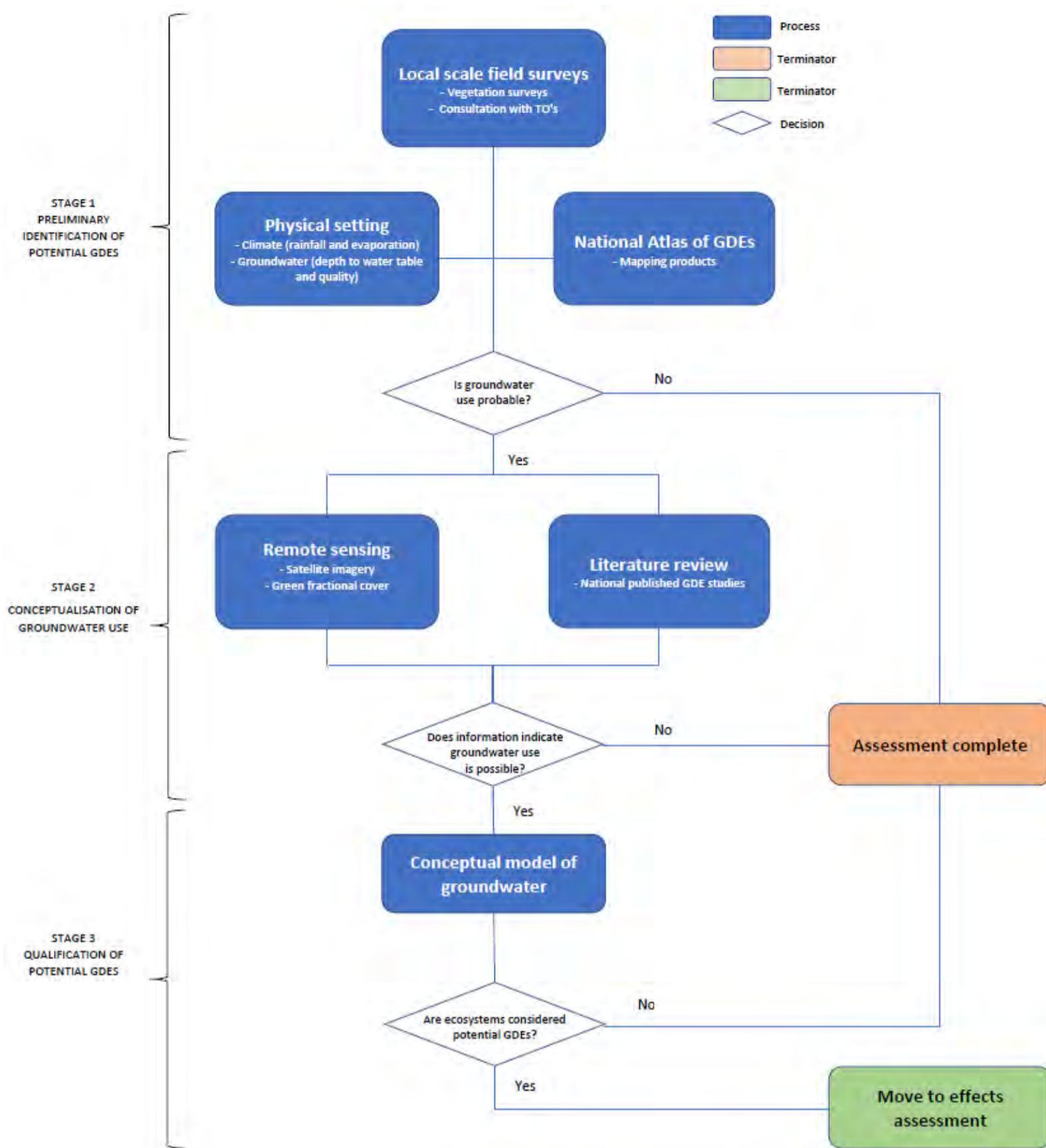


Figure 8 Assessment approach for identifying potential Type 2 and Type 3 GDEs

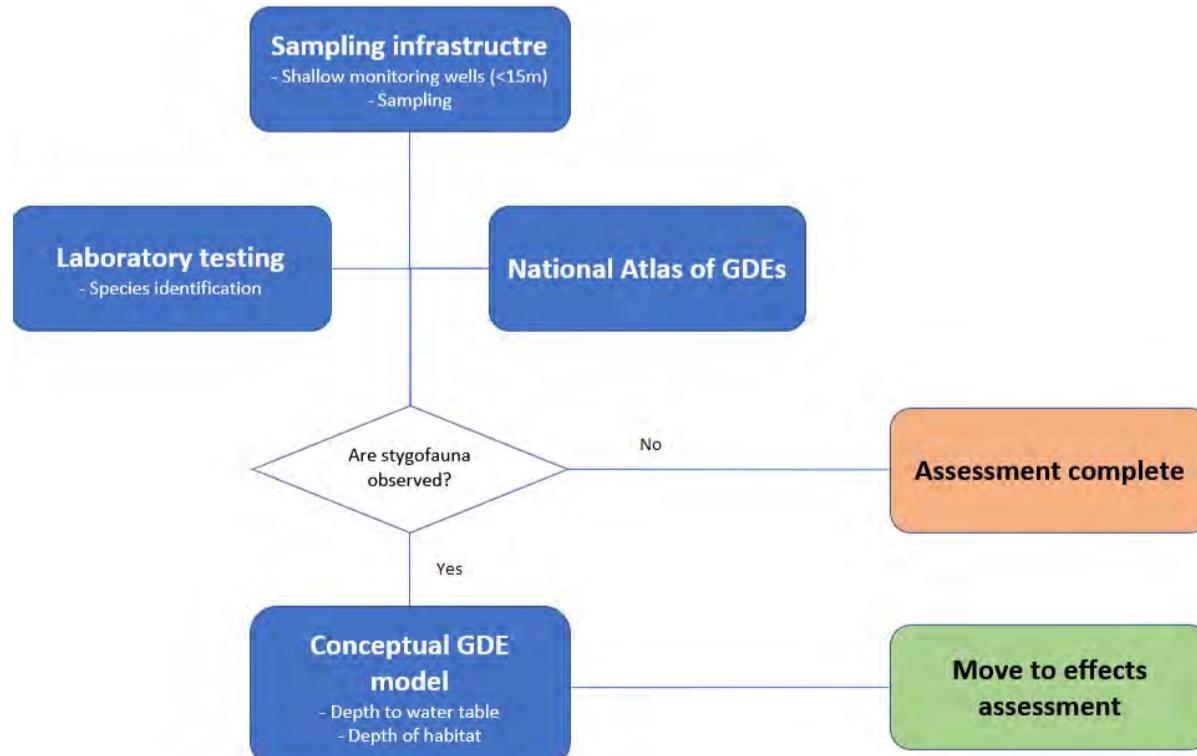


Figure 9 Assessment approach for identifying potential Type 1 GDEs

Section 3 Groundwater Dependent Ecosystems

- Stage 2 – Conceptualisation of groundwater use
 - Literature review of relevant publicly available GDE research and studies has been completed (see Attachment A), including consultation with persons considered to have expert knowledge of the Project area and/or other similar regions (e.g. Angus Duguid, NT Department of Environment and Natural Resources), which is considered an important data source in data-limited regions (Richardson et al., 2011a)
 - Development of a conceptualisation of the interactions between potential GDEs (Types 1, 2 and 3) and groundwater, including interpretation of remote sensing data and hydrogeological trends analysis
- Stage 3 – Qualification of potential GDEs
 - Qualification of potential GDEs and their capacity to resist altered groundwater condition whilst maintaining their EWRs, based on their presence in the landscape
 - Mapping the spatial distribution of potential GDEs that forms the basis for undertaking an assessment of possible effects that might arise in response to the proposed development (OZL ref. WM-5100-ENV-REP-0007)

3.3 Stage 1: Preliminary identification of potential GDEs

3.3.1 GDE Atlas review

Interrogation of the GDE Atlas indicates:

- No information exists re: stygofauna ecosystems (Type 1 GDEs) in the Project area
- No aquatic ecosystems (Type 2 GDEs) likely to occur within the Project area
- Terrestrial ecosystems (Type 3 GDEs) likely exist in the Project area (Figure 10) but the potential for their presence is mostly identified as low, with moderate potential for GDEs to occur more than 20 km to the west and northwest (near Jameson), no high potential terrestrial GDEs have been mapped by the GDE Atlas

3.3.2 Local scale field surveys

Stygofauna survey (Type 1 GDEs)

As at January 2020, a total of 202 samples have been collected from 100 dedicated bores for analysis of the presence of stygofauna (Figure 11, see OZL Ref. WM-5100-WTR-REP-0014 for completion details). These bores are located across the Project area (Babel pit, Nebo pit, Northern Borefield investigation area and Southern Borefield investigation area; Bennelongia, 2020). Stygofauna specimens have been collected, where present, via net hauls during field surveys. 30 different species of stygofauna have been identified in the laboratory from 63 of 100 sampled bores. Major groups recorded include annelid worms, amphipods, a protojanirid isopod, syncarids, cyclopoid copepods, harpacticoid copepods, ostracods and nematodes. Species have been identified in the following locations

- In and around the proposed Babel pit (basement habitat)
- In and around the Nebo pit (palaeovalley sediment and calcrete habitat)
- In The Northern and Southern Borefield investigation areas (palaeovalley sediment and calcrete habitat)

In a broader context of stygal communities documented in the Yilgarn, the community observed across the Project area is not notably rich. However, only a small number of species have been recorded in more than one of the sampled areas, no single species has been recorded in all four sampled areas and none of the species have been identified outside the area covered by the survey. Figure 11 presents a locality plan showing sample locations and locations where stygofauna have been recorded.

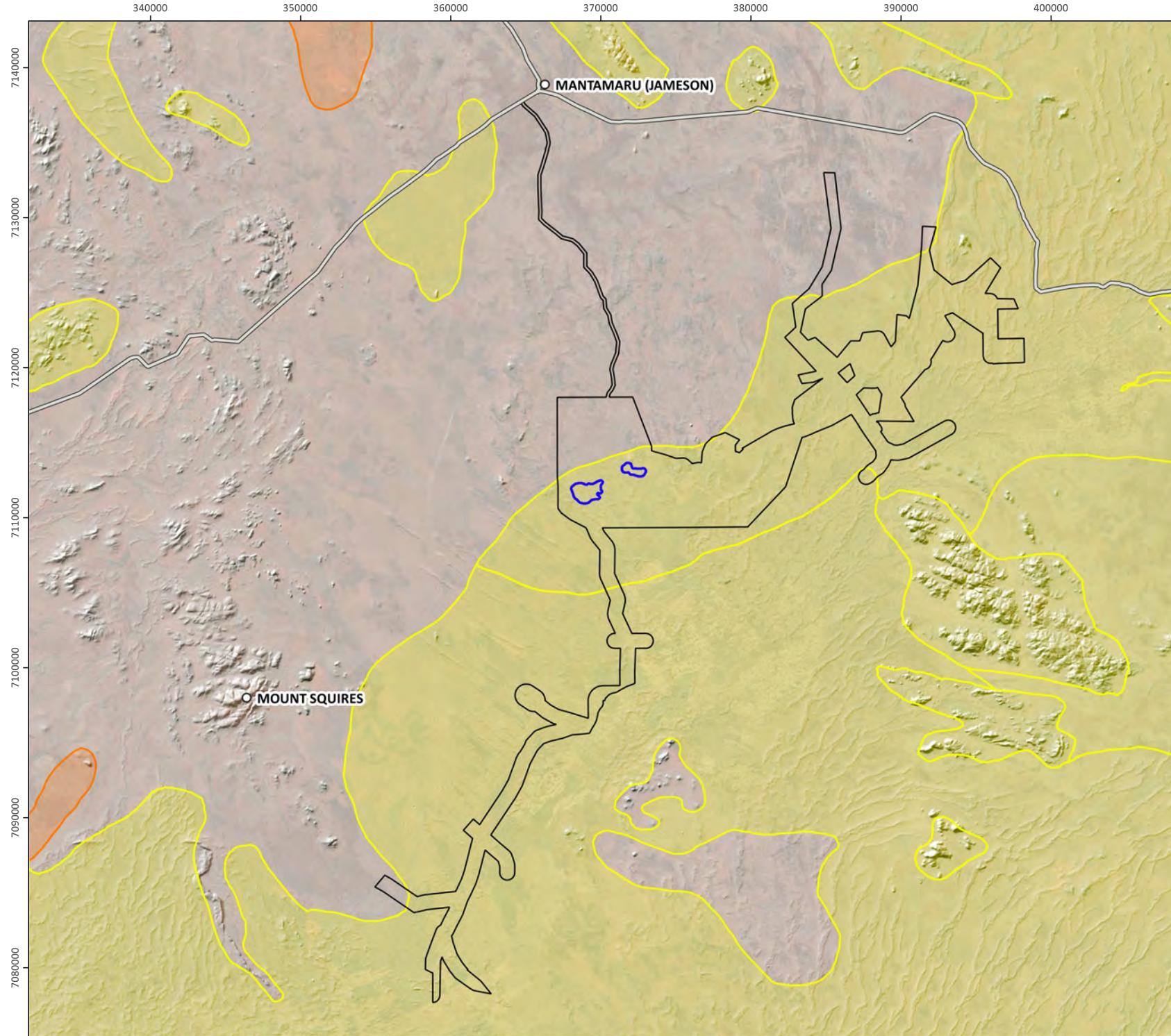


Figure 10

Potential GDEs in the Project area identified in the GDE atlas

- Road
- Proposed mine pit
- Development envelope

- Potential GDE - Identified via GDE Atlas**
- Moderate potential Type 3 GDE
 - Low potential Type 3 GDE

**CDM
Smith**

340000

350000

360000

370000

380000

390000

400000

7140000

7130000

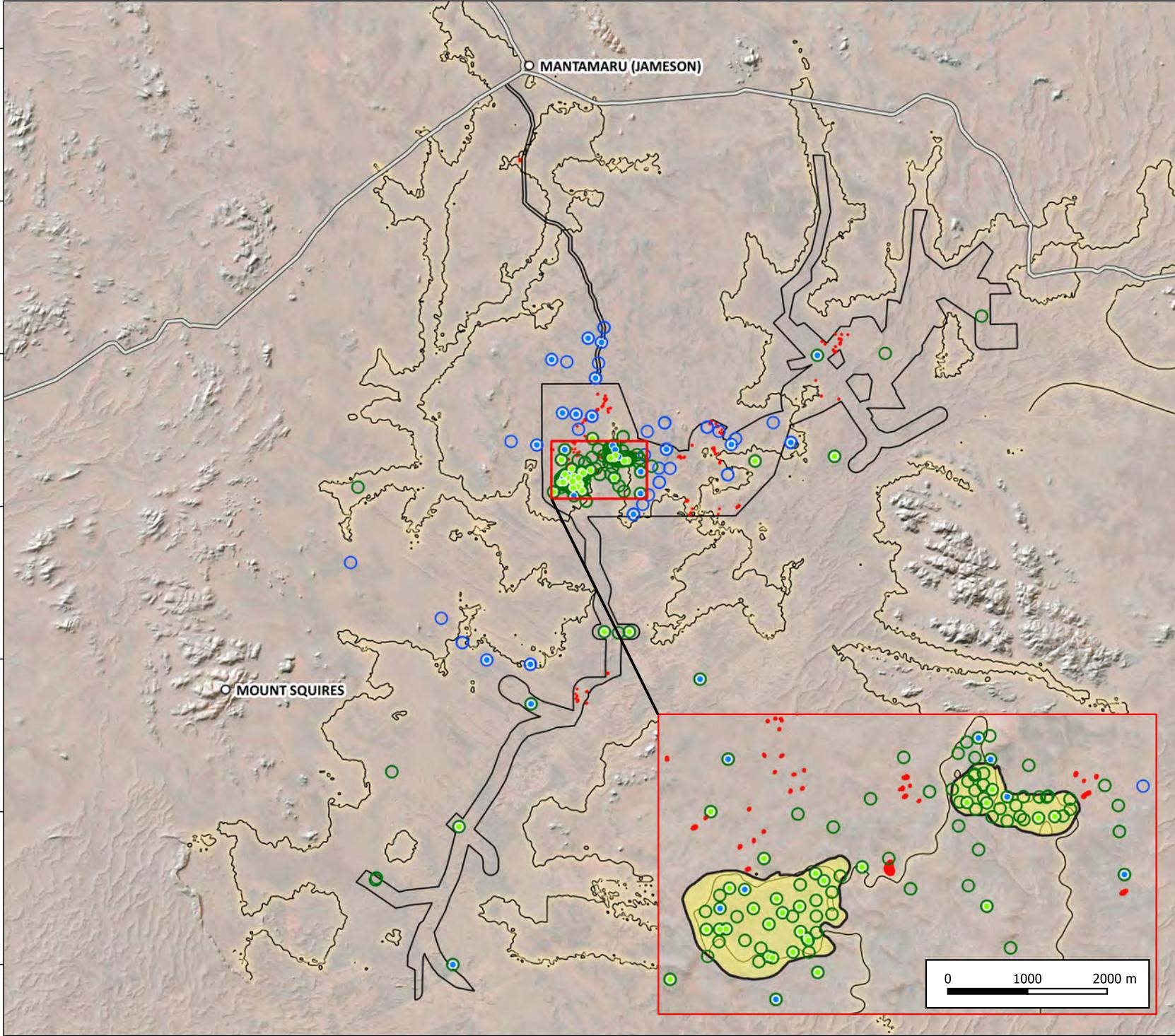
7120000

7110000

7100000

7090000

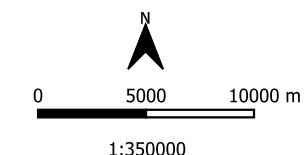
7080000

**Figure 11****Identified stygofauna locations from sampled bores**

DATA SOURCES
 Cassini Resources, 2018
 OZ Minerals, 2019
 Bennelongia, 2020

DISCLAIMER
 CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

Date Published: 16 Mar 2020
 Project Number: 1000103
 Client: OZ Minerals/Cassini Resources
 Drawn: ETEROVICZ
 Map Projection: GDA2020 / MGA Zone 52



**CDM
Smith**

Section 3 Groundwater Dependent Ecosystems

Based on initial findings and the potential for Project mine water affecting activities (WAAs) to impact on stygofauna habitat, the stygofauna survey area has been expanded to encompass more of the proposed mine development envelope to assist in developing a more detailed understanding of species distribution and physical constraints on distribution.

Wetlands and springs (potential Type 2 GDEs)

OZL has consulted with Traditional Owners (TOs) to understand whether there are springs located within the Project area or the broader landscape. The TOs have not identified any springs, but have indicated there are a number of rockholes in the region that are associated with basement outcrops. Two of these occur within the proposed mine development envelope and one occurs within 25 km of the proposed mine. Table 2 presents key observational data for the rockholes and Plate 1 shows the position of 'Rockhole 2' in the landscape. The rockholes have cultural significance and, for this reason, their locations are unable to be presented in this report.

Table 2 Key observational data for rockholes in the Project area

Rockhole ^[1]	Ground elev. ^[2]	Water table elev. ^[3]	Comment
1	483.3	472.3	<ul style="list-style-type: none">• Occurs within proposed mine development envelope• Approx. 11 m above water table• Dry 'basin' with desiccated grasses
2	480.4	474.9	<ul style="list-style-type: none">• Occurs within proposed mine development envelope• Approx. 5.5 m above water table• Dry 'basin'
3	516.5	492.2	<ul style="list-style-type: none">• Occurs within 25 km of proposed mine• Approx. 24.3 m above water table• Dry cleft

Notes: 1. Name and co-ordinates of rockholes cannot be provided for cultural reasons
2. Sourced from JAXA DEM (mAHD)
3. Predicted by calibrated groundwater model (mAHD)



Plate 1 Rockhole 2 occurring on weathered granitic outcrop

Section 3 Groundwater Dependent Ecosystems

The evidence shows it is very unlikely the rockholes interact with groundwater, i.e. they:

- Appear to be ephemeral (i.e. all inspected rockholes were dry at the time they were observed by OZL personnel)
- Occur on weathered basement outcrops that are typically slightly more elevated than the surrounding landscape and some metres above the water table, as inferred from the model predicted water table surface (see OZL ref. WM-5100-WTR-REP-0034) and Japan Aerospace Exploration Agency (JAXA) AW3D30 digital elevation model (DEM; OZL ref. WM-5100-ENV-REP-0002)
- Are all located such that weathered outcrop surfaces form small surface water catchments that drain to the rockholes following rainfall events

There is no evidence of permanent or semi-permanent wetlands in the Project area that might be reliant on groundwater to maintain EWRs, i.e. where the water table might intersect the land surface or artesian pressures might result in discharge to the land surface via fissures or faults (OZL ref. WM-5100-ENV-REP-0002 and WM-5100-ENV-REP-0003).

Flora and vegetation survey (potential Type 3 GDEs)

Consistent with the lack of surface water features in the Project area (Section 2.5.1; also see OZL ref. WM-5100-ENV-REP-0002), no riparian ecosystems have been identified. However, the Western Botanical (2020) survey, described in Section 2.4 with results presented in Figure 6, has identified three vegetation associations as potential GDEs based on their position in the landscape and knowledge of indicator species that are known to be phreatophytes (groundwater users) as opposed to species that are known to typically be shallow rooted and vadophytic (soil water users).

The Type 3 assessment presented here is based primarily on the following key assumptions - (i) vegetation associations represent identifiable ecosystems, and (ii) if dominant plant species within any vegetation association are known, or considered, to be phreatophytic then the vegetation association is identified as a potential GDE.

The three potential GDEs identified by Western Botanical are:

- Calcrete *Corymbia opaca* Open Woodlands (CCoW)
This association covers around 1% of the greater survey area, and comprises open Woodland with an upper stratum of scattered *C. opaca* trees with a height of 8 to 12 m, which form dense vegetation stands in places that are represented by two or three trees within an area of around 50 m², and *Eucalyptus intertexta* (6 to 7 m high), over *Acacia ligulata* (2 m high), *A. kempeana* (3 m high), *M. glomerata* (3 m high), *Hakea lorea* subsp. *lorea* (5 m high) and a ground stratum of hummock grassland
- *Melaleuca glomerata* and *A. kempeana* Shrubland (MgAkS)
This association covers around 3% of the greater survey area, and comprises very open woodland with occasional *E. intertexta* and *C. opaca* (4 to 8 m high), a Shrubland mid stratum dominated by *M. glomerata* (4 m high), *A. kempeana* (2 to 3 m high), *H. lorea* subsp. *lorea* (3 to 4 m high), *A. ligulata* (2 to 3 m high) and *Eremophila longifolia* (2 m high), and a ground stratum of open hummock grassland
- Low Mallee Woodlands (LMW)
This association covers around 12% of the greater survey area, and comprises open Mallee woodland to Mallee woodland dominated by *E. oxymitra* (2 to 5 m high) and *E. gamphylla* (2 to 8 m high) and a sparse Shrubland mid stratum dominated by *A. ligulata* (2 to 5 m high), *A. melleodora* (2 to 3 m high), *Grevillea eriostachya* (3 m high) and *Hannafordia bissillii* subsp. *bissillii* (1 m high), and a ground stratum of hummock grassland

These vegetation associations have been observed across dune swales between calcrete platforms, often as a complex with Calcrete Platform Hummock Grassland Complex (CPHG). Figure 12 shows their spatial distribution.

350000

360000

370000

380000

390000

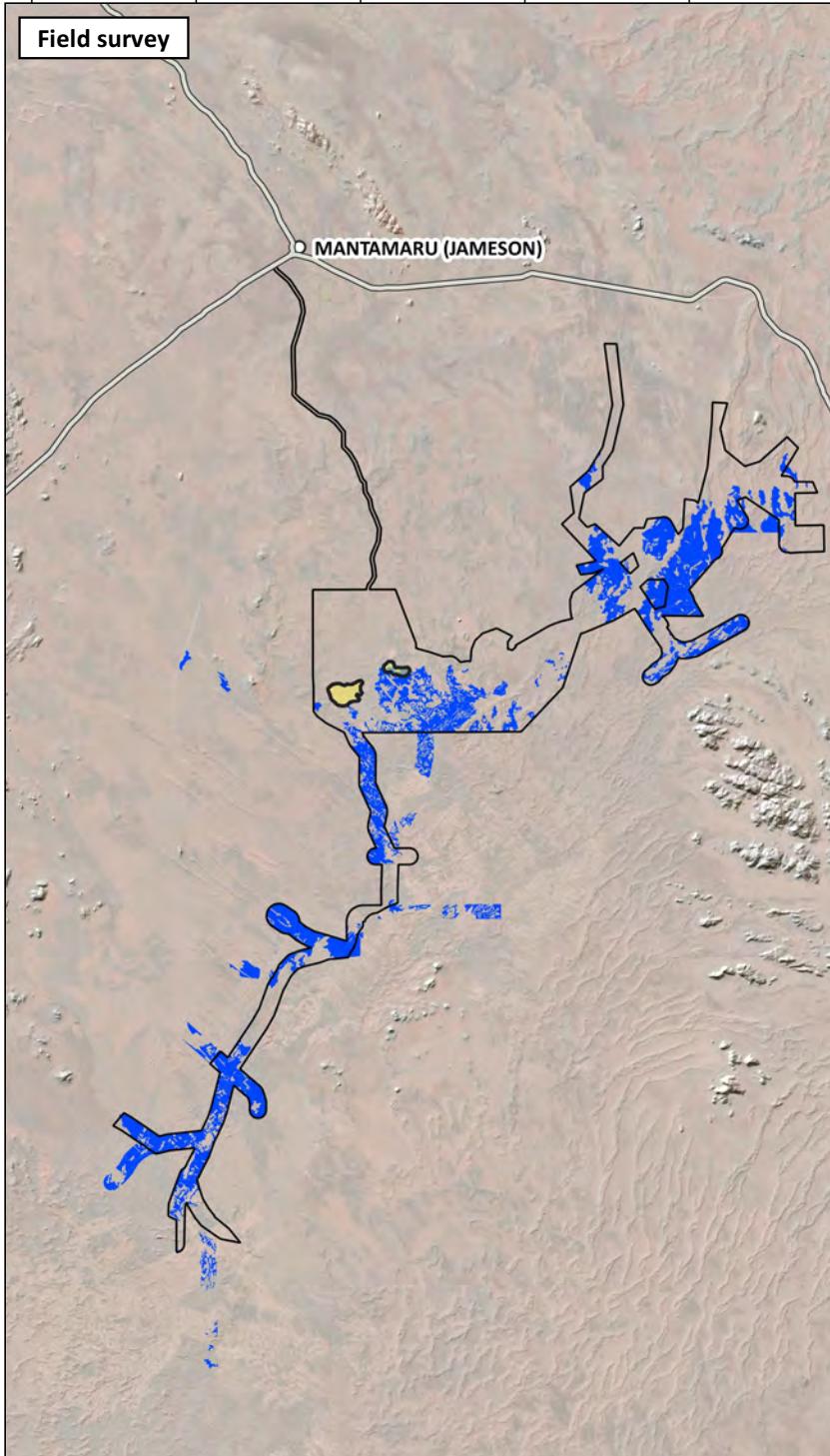
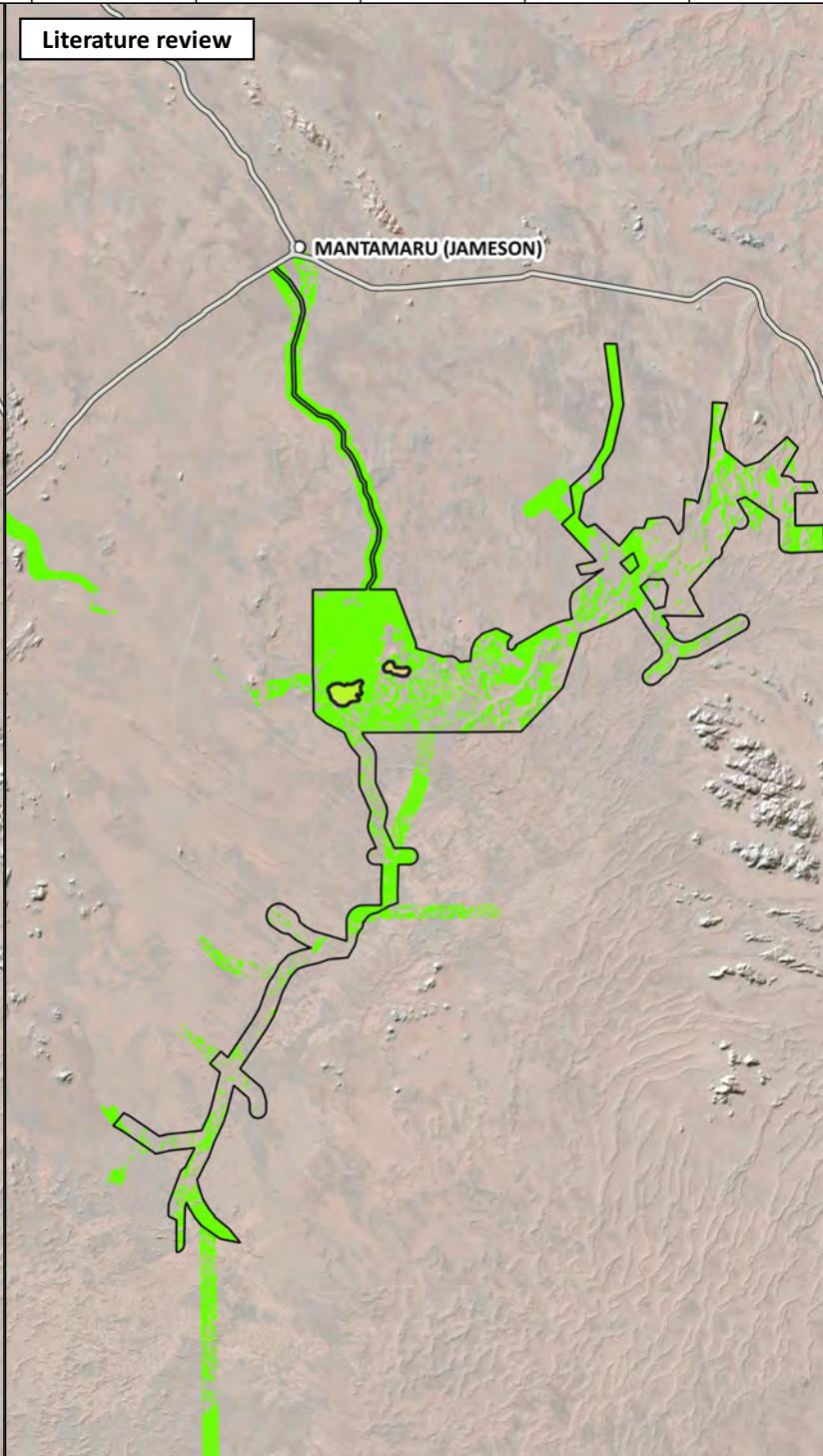
350000

360000

370000

380000

390000

Field survey**Literature review****Figure 12**

Identified potential GDEs: field survey and literature review

- Road
- Proposed mine pit
- Development envelope
- Potential GDE - identified via field survey
(Western Botanical, 2020)
- Potential GDE - Identified via literature review

DATA SOURCES
Cassini Resources, 2018
OZ Minerals, 2019
Western Botanical, 2020

DISCLAIMER
CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

Date Published: 13 Mar 2020
Project Number: 1000103
Client: OZ Minerals/Cassini Resources
Drawn: ETEROVICZ
Map Projection: GDA2020 / MGA Zone 52



1:460000

**CDM
Smith**

3.4 Stage 2: Conceptualisation of groundwater use

3.4.1 Literature review

A literature review has been undertaken to confirm Western Botanical's findings and to identify potential groundwater dependent vegetation from the list of 'dominant' vegetation species observed in each of the vegetation associations identified within the mine development area (as outlined in Western Botanical, 2020). Only dominant species with a typical observed height of greater than 1m have been included in the literature review, as trees above this height are more likely to have a rooting system that can extend to more than a few metres and access the water table (Zolghager, 2013 and Zolghager *et al.*, 2017). Attachment A provides the literature review results, and the following presents a summary:

- Studies in the Ti Tree Basin, located near Alice Springs in the Northern Territory (i.e. an arid area within a similar geographical and climatic setting) indicate plant abundance (density) and growth form is linked to groundwater depth, with larger plants occurring in areas where a shallow groundwater exists and shrubs generally occurring in areas where groundwater is deeper (Cook and Eamus, 2018)
- Studies in the Ti Tree Basin demonstrate groundwater use in *C. opaca* where the water table is between 8 and 15 m bgl and in some cases up to 20 m bgl (Cook and Eamus, 2018)
- Studies in arid and semi-arid Australia indicate a typical groundwater use threshold of around 10 m bgl for overstory trees (Rumman *et al.*, 2017 and Zolghager, 2013) and note significant differences in woodland ecosystem structure and function where the water table is in excess of 10 m bgl compared to areas with shallower water tables (Cook and Eamus, 2018)
- Western Botanical's identification of potential GDEs is supported, but several other potential groundwater indicator species are present in the Project area as shown in Table 3, and in Figure 12 and Figure 13
- In regard to identified Priority Flora species listed in Section 2.4, the literature review has not identified any Priority Flora species as being potentially groundwater dependent

3.4.2 Conceptualisations of groundwater use

Overview

The following conceptualisations of GDEs within the Project area relies on the available information and results of field studies described in Section 3.3, as well as information sourced from the literature and study team experience.

Type 1 GDEs – Stygofauna ecosystems

There are two key habitats for stygofauna in the Project area – (i) saturated Kadgo palaeovalley sediments and calcretes, and (ii) saturated fractured rock (gabronorite and gneiss). Figure 14 presents a conceptualisation of stygofauna occurrence. Stygofauna habitat comprises saturated pore space or open fractures, which will be vertically constrained by:

- Clayey sequences (in sedimentary environments) and depth of weathering (in hardrock environments)
- Bioavailability of nutrients, carbon and oxygen, which typically results in decreasing abundance and diversity with depth below the water table (Hose *et al.*, 2015)

Type 2 GDEs- Aquatic ecosystems

Figure 15 presents a conceptualisation of rockholes in the Project Area, based on observations presented in Section 3.3.2. The conceptualisation shows the rockholes are not reliant on groundwater.

Section 3 Groundwater Dependent Ecosystems

Table 3 Surveyed vegetation and inferred potential for groundwater use from literature review^{[1],[2]}

Landform system	Sub-unit description	Vegetation associations	Vegetation association code	Dominant species ^[3]
Calcrete Plain	Calcrete Plain: Level to undulating plains of paleo-groundwater Calcrete overlain by varying depths of Aeolian sand	Calcrete <i>Corymbia opaca</i> Woodland	CCoW	<i>Corymbia opaca</i> <i>Eucalyptus intertexta</i> <i>Acacia ligulata</i> <i>Acacia kempeana</i> <i>Hakea lorea subsp. Lorea</i> <i>Melaleuca glomerata</i>
		Calcrete Open Grassland		<i>Acacia kempeana</i> <i>Acacia tetragonophylla</i> <i>Acacia victoriae subsp. victoriae</i>
		Calcrete Platform Hummock Grassland	CPHG	<i>Hakea lorea subsp. lorea</i> <i>Acacia tetragonophylla</i> <i>Acacia ligulata</i>
		Calcrete Platform Hummock Grassland with <i>Acacia eremophila</i> var. Numerous-nerved variant (A.S. George 11924)		<i>Hakea lorea subsp. lorea</i> <i>Acacia eremophila</i> var. <i>Acacia prainii</i>
		Calcrete Platform Hummock Grassland with <i>Allocasuarina helmsii</i>	CPHG Ah	<i>Hakea lorea subsp. lorea</i> <i>Eucalyptus oxymitra</i> <i>Acacia ligulata</i> <i>Allocasuarina helmsii</i>
		Calcrete Platform Hummock Grassland with <i>Melaleuca eleuterostachya</i>		<i>Hakea lorea subsp. lorea</i> <i>Acacia ligulata</i> <i>Melaleuca eleuterostachya</i>
		CPHG / LMW COMPLEX	LMW / CPHG Complex	See LMW and CPHG
		CPHG / SAWS COMPLEX		See SAWS and CPHG
Hardpan Plain & Drainage	Plains: red clayey sand hardpan plains, subject to sheet flow	Hardpan Mulga Woodland	HPMW	<i>Acacia ayersiana</i> (narrow phyllode variant) <i>Acacia aneura</i> <i>Acacia aptaneura</i> <i>Hakea lorea subsp. Lorea</i> <i>Senna artemisioides</i> subsp. <i>Artemisioides</i>
		Hardpan Mulga Woodland Drainage		<i>Acacia aptaneura</i> <i>Acacia ayersiana</i> (narrow phyllode variant) <i>Acacia aneura</i> <i>Eremophila latrobei</i> subsp. <i>Glabra</i> <i>Teucrium teucriiflorum</i> <i>Acacia tetragonophylla</i>
		Mulga Grove	GRMU	<i>Acacia aptaneura</i> <i>Hakea lorea subsp. lorea</i>
		<i>Eremophila duttonii</i> Shrubland		<i>Eremophila duttonii</i> <i>Rhagodia drummondii</i>
		Hardpan Chenopod Shrubland	Avs	no upper story (all less than 0.5m)
	Clay Pans: (a) Small ephemerally inundated clay pans with hard setting clay soils supporting annual grasses and herbaceous vegetation; or (b) Extensive clay pans with medium to heavy clay soils supporting perennial grasses	Claypan Playa	CPP	<i>Acacia tetragonophylla</i> <i>Acacia pteraneura</i> <i>Eremophila longifolia</i> <i>Acacia victoriae</i> subsp. <i>victoriae</i>
		Claypan Grassland		<i>Aristida latifolia</i>

Table 4 Surveyed vegetation and inferred potential for groundwater use^{[1],[2]} (cont.)

Landform system	Sub-unit description	Vegetation associations	Vegetation association code	Dominant species ^[3]
Sand Dune	Sand dunes with fine red Aeolian sand, 2 to 20m relief	<i>Aluta maisonneuvei</i> subsp. <i>maisonneuvei</i> low shrubland	AmmS	<i>Aluta maisonneuvei</i> subsp. <i>maisonneuvei</i>
		Sand Dune Acacia - <i>Grevillea</i> shrubland	SDAGS	<i>Acacia ligulata</i> <i>Acacia maitlandii</i> <i>Grevillea stenobotrya</i> <i>Grevillea juncifolia</i> subsp. <i>juncifolia</i> <i>Dodonaea viscosa</i> subsp. <i>angustissimus</i> <i>Acacia melleodora</i> <i>Aluta maisonneuvei</i> subsp. <i>maisonneuvei</i>
		SDAGS/AmmS COMPLEX		See SDAGS and AmmS
Sand Plain	Aeolian medium red silty sand plains, often with hardpan or underlying calcrete	Sandplains with Wattles other than Mulga	SAWS	<i>Acacia ligulata</i> <i>Acacia walkeri</i> <i>Acacia abrupta</i> <i>Acacia pachyacra</i> <i>Acacia melleodora</i> <i>Acacia pruinocarpa</i> <i>Acacia sericophylla</i> <i>Grevillea eriostachya</i> <i>Eremophila forrestii</i>
		Sandplain Spinifex		<i>Triodia schinzii</i>
		Sandplain Mulga		<i>Acacia aneura</i> <i>Acacia ayersiana</i> <i>Hakea lorea</i> subsp. <i>lorea</i> <i>Eremophila longifolia</i> <i>Acacia ligulata</i>
		Low Mallee Woodland	LMW	<i>Eucalyptus oxymitra</i> <i>Eucalyptus gamophylla</i> <i>Acacia ligulata</i> <i>Acacia melleodora</i> <i>Grevillea eriostachya</i> <i>Hannafordia bissillii</i> subsp. <i>bissillii</i>
		LMW/SAWS COMPLEX		See LMW and SAWS
		LMW/MgAkS COMPLEX		See LMW and MgAkS
		Melaleuca <i>glomerata</i> Shrubland with <i>Acacia kempeana</i>	MgAkS	<i>Eucalyptus intertexta</i> <i>Corymbia Opaca</i> <i>Acacia kempeana</i> <i>Melaleuca glomerata</i> <i>Hakea lorea</i> subsp. <i>lorea</i> <i>Acacia ligulata</i> <i>Eremophila longifolia</i>
		MgAkS/HPMW Complex		See MgAkS and HPMW
		Acacia <i>brachystachya</i> over Spinifex Shrubland	AbTsS	<i>Acacia brachystachya</i> <i>Eremophila longifolia</i> <i>Acacia pachyacra</i> <i>Triodia schinzii</i>

Table 4 Surveyed vegetation and inferred potential for groundwater use^{[1],[2]} (cont.)

Landform system	Sub-unit description	Vegetation associations	Vegetation association code	Dominant species ^[3]
Sand Plain (cont.)	Aeolian medium red silty sand plains, often with hardpan or underlying calcrete (cont.)	<i>Acacia rhodophloia</i> over Spinifex Shrubland	ArS	<i>Acacia rhodophloia</i> <i>Acacia ligulata</i> <i>Grevillea eriostachya</i> <i>Aluta maisonneuvei</i> subsp. <i>maisonneuvei</i>
Stony Hills Granodiorite Geology: Foot slopes and outwash plains at the base of small to medium sized outcrops of grano-diorite		Stony Mulga Shrubland	SMS	<i>Acacia ayersiana</i> (narrow phyllode variant) <i>Acacia aptaneura</i> <i>Eremophila latrobei</i> subsp. <i>glabra</i> <i>Senna artemisioides</i> subsp. <i>artemisioides</i> <i>Eremophila hughesii</i> subsp. <i>hughesii</i>
		Senna Shrubland	SS	<i>Hakea lorea</i> subsp. <i>lorea</i> <i>Acacia pruinocarpa</i> <i>Acacia ayersiana</i> (narrow phyllode variant) <i>Senna artemisioides</i> subsp. <i>helmsii</i> <i>Senna</i> sp. <i>Billabong</i>
		<i>Acacia kempeana</i> Shrubland	AkS	<i>Acacia kempeana</i> <i>Acacia tetragonophylla</i> <i>Senna artemisioides</i> subsp. <i>artemisioides</i> <i>Rhagodia eremaea</i> <i>Eremophila serrulata</i> <i>Eremophila longifolia</i>
		AkS/HPMW Complex	AkS/HPMW Complex	See AkS and HPMW
		<i>Acacia cuthbertsonii</i> Shrubland	AcS	<i>Acacia cuthbertsonii</i> <i>Acacia ayersiana</i> (narrow phyllode variant) <i>Eremophila latrobei</i> subsp. <i>glabra</i> <i>Senna artemisioides</i> subsp. <i>helmsii</i> <i>Eremophila latrobei</i> subsp. <i>glabra</i>

- Notes:
1. From Western Botanical, 2020
 2. Does not include associations/complexes that occur outside model domain (and, hence, outside the possible area of Project impact)
 3. Dominant species considered to be those >1m in upper and mid stratum, as per Western Botanical, 2020

Key:

Vegetation association – Identified potential GDE	Dominant species – Identified potential groundwater user
Identified by field survey	Unlikely
Identified by literature review	Possible
	No information identified

340000

350000

360000

370000

380000

390000

400000

7140000

7130000

7120000

7110000

7100000

7090000

7080000

DATA SOURCES
DMIRS, 2018
OZ Minerals, 2019
Western Botanical, 2020

MANTAMARU (JAMESON)

MOUNT SQUIRES

400000

Figure 13

Preliminary identified potential terrestrial GDEs within the Project development over landform systems

- Road
- Proposed mine pit
- Development envelope
- Identified potential GDEs

Landscape

- Extensive plains with numerous dunes which are often short and of irregular shape and orientation
- Outwash plains and dissected fan and terrace formations flanking ranges of sedimentary and some metamorphic, volcanic, and granitic rocks
- Outwash plains subjacent to ranges of basic igneous rocks; some low hills of basic rocks occur in the unit; occasional dunes
- Plains with occasional short dunes, and hilly areas with rock outcrops
- Ranges and hills mainly on granitic rocks; rock outcrop is extensive
- Steep hills and ranges on basic rocks; rock outcrop common; some gorges; small pediments and plains
- Steep hills and ranges on sedimentary and some metamorphic, volcanic, and granitic rocks; bare rock outcrop is common; some gorges
- Very gently undulating plain traversed by longitudinal dunes

DISCLAIMER

CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

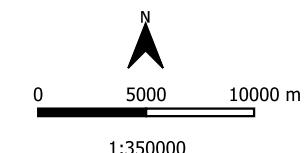
Date Published: 12 Mar 2020

Project Number: 1000103

Client: OZ Minerals/Cassini Resources

Drawn: ETEROVICZ

Map Projection: GDA2020 / MGA Zone 52



1:350000

**CDM
Smith**

Section 3 Groundwater Dependent Ecosystems

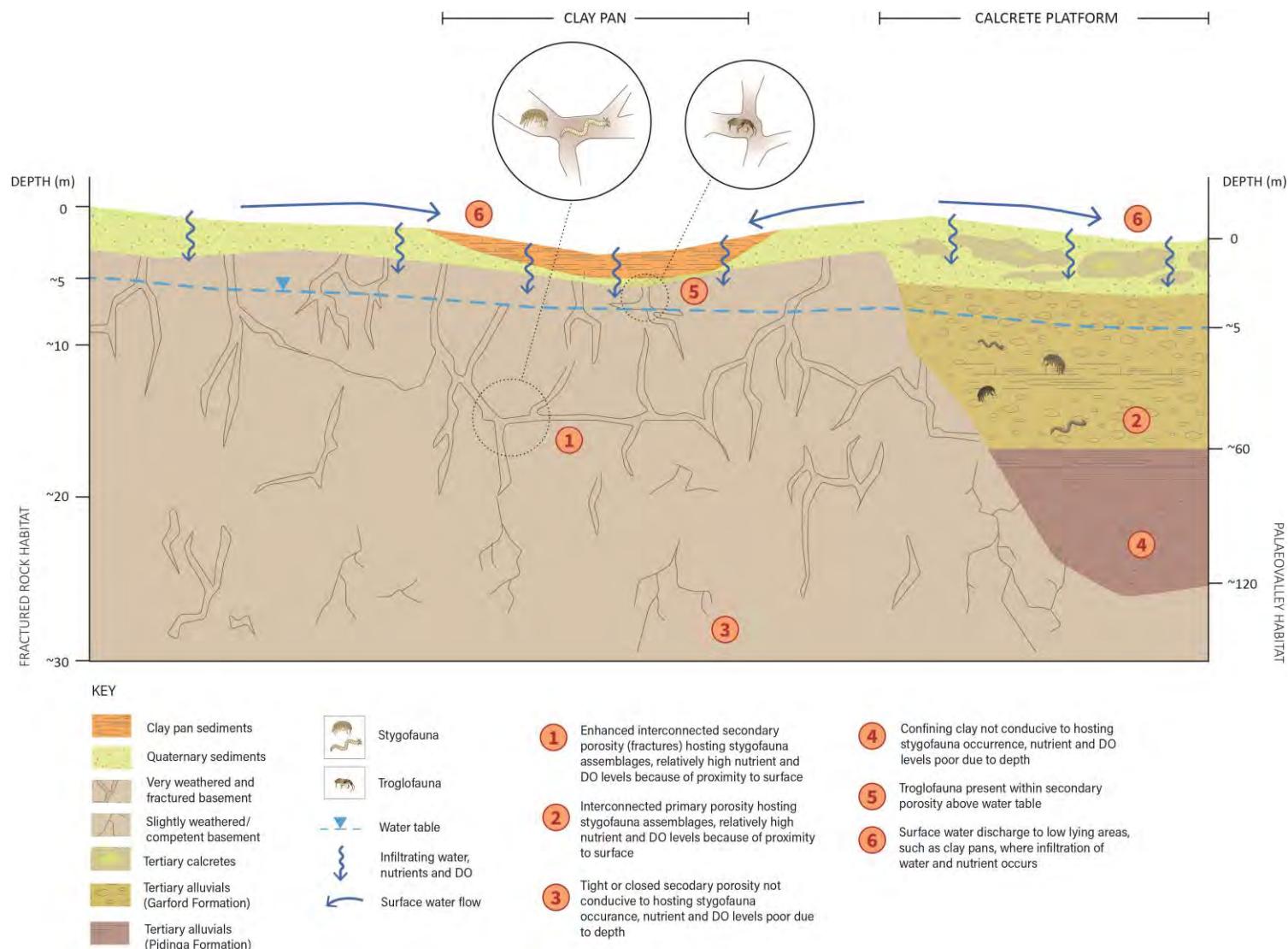
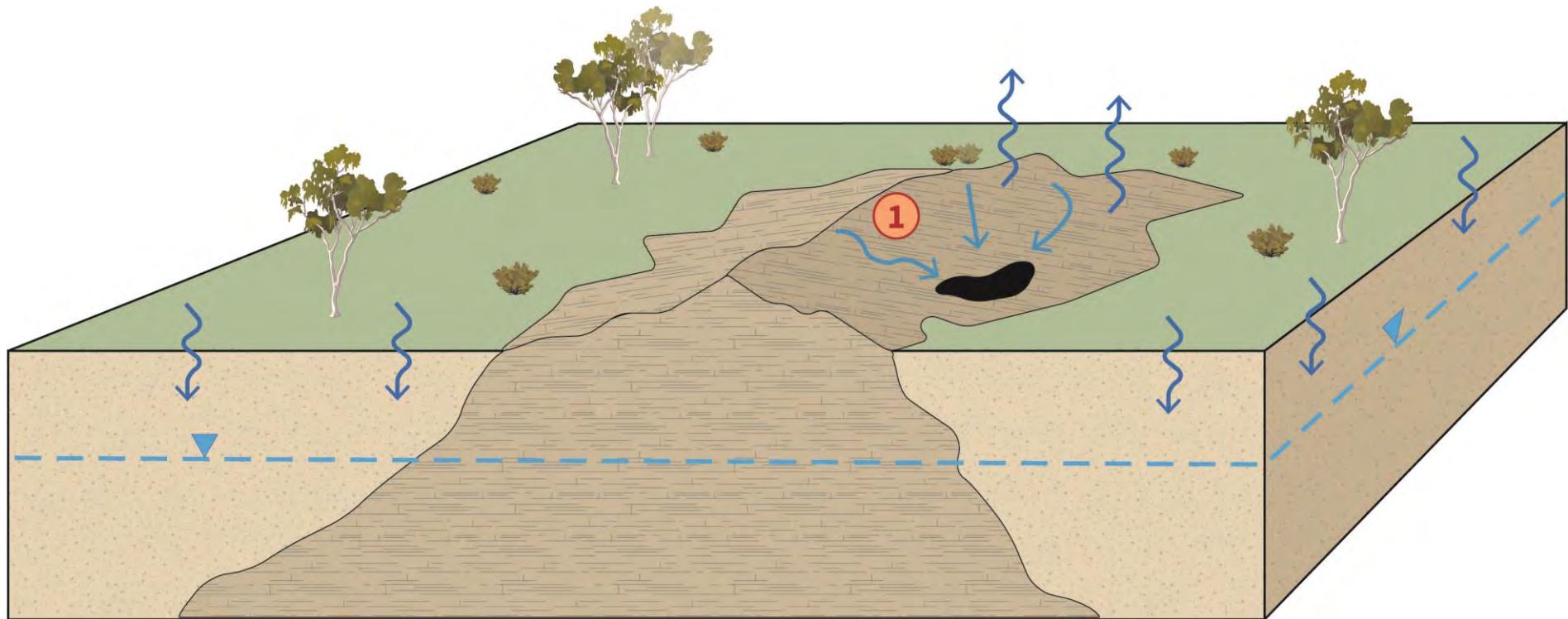


Figure 14 Conceptualisation of stygofauna occurrence



KEY

	Palaeovalley Sediments		Water table		Rainfall runoff collects within rockhole
	Basement		Evaporation		
	Rock Hole		Rainfall Infiltration		
			Surface water flow		

Figure 15 Conceptualisation of rockholes

Section 3 Groundwater Dependent Ecosystems

Type 3 GDEs- Terrestrial ecosystems

Vegetation associations present in the Project area that are not identified as potential GDEs (as described in Stage 1 of the assessment, refer Section 3.3) can generally be described as:

- Annual (ephemeral) and perennial grasses, shrubs and small trees associated with clay pans and hardpans that likely have their EWRs met via inundation following rainfall events that are of sufficient intensity or duration to generate runoff and recharge of the soil water reservoir
- Shrublands on sandplains and stony hills, including species of Acacia, Grevillea and hummock grasses, that typically demonstrate (resistance) attributes allowing them to cope with low soil moisture levels (e.g. stomatal control and the ability to generate very negative plant water potentials)

Figure 13 presents vegetation associations present in the Project area that have been identified as potential GDEs (as described in Stage 1 of the assessment, refer Section 3.3) over landform systems, whilst Figure 16 presents identified potential GDEs over model predicted depth to groundwater (see OZL ref. WM-5100-WTR-REP-0034) and Figure 17 shows the spatial distribution of the maximum height of dominant species within the different vegetation associations (as a proxy for estimating the rooting depth of these species, which may be a conservative assumption based on a study conducted by Jochen Shenk and Jackson, 2002).

Identified potential terrestrial GDEs can generally be described as associations comprising vegetation that:

- Have rooting systems capable of penetrating shallow calcrete profiles present in many locations
- Are located within dune systems, in deep sandy swales between outcropping calcrites
- Are located where the water table is accessible, e.g. within 10 to 15 m bgl, depending on the depth to which root systems can extend

The identification of potential groundwater dependent terrestrial vegetation is supported by the following trends (as described in Attachment B), noting the temporal nature of possible groundwater reliance is not well understood given the lack of timeseries groundwater head data for the Project area:

- An increasing salinity trend along the regional flowpath, which suggests either evaporation from a shallow water table or evapotranspiration (i.e. plant transpiration and shallow groundwater evaporation) is occurring, assuming water-rock interactions do not account for the observed salinity increase and recharge conditions are relatively uniform across the Project area
- Although, there appears to be responsiveness of vegetation to rainfall across the Project area, there is also an apparent consistent base level green fractional cover that persists over a drying sequence of below-average rainfall years, suggesting sustained access to water (possibly from a sizable soil water reservoir or groundwater, or both)

3.5 Stage 3: Qualification of potential GDEs

3.5.1 Type 1 GDEs (stygofauna ecosystems)

Stygofauna are accepted as having obligate groundwater dependence but have the capacity to move vertically within an aquifer in response to changes in water table elevation. This capacity will be limited by a number of factors such as the vertical and lateral extent of interconnected (primary or secondary) porosity, the size of pore spaces to accommodate individual animals, and the depth to which sufficient nutrients, carbon and oxygen are available.

340000

350000

360000

370000

380000

390000

400000

7140000

7130000

7120000

7110000

7100000

7090000

7080000

O MANTAMARU (JAMESON)

O MOUNT SQUIRES

Figure 16

Preliminary identified potential terrestrial GDEs within the Project development envelope and modelled depth to groundwater

- Road
- Proposed mine pit
- Development envelope
- Identified potential GDE

Modelled depth to groundwater (mbgl)
< 2
2 - 5
5 - 10
10 - 15
< 15

DATA SOURCES

Cassini Resources, 2018

OZ Minerals, 2019

Western Botanical, 2020

DISCLAIMER

CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

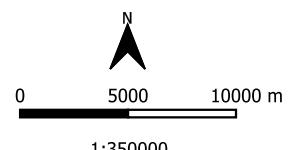
Date Published: 12 Mar 2020

Project Number: 1000103

Client: OZ Minerals/Cassini Resources

Drawn: ETEROVICZ

Map Projection: GDA2020 / MGA Zone 52



**CDM
Smith**

340000

350000

360000

370000

380000

390000

400000

7140000

7130000

7120000

7110000

7100000

7090000

7080000

MANTAMARU (JAMESON)

MOUNT SQUIRES

Figure 17

Maximum height of tallest dominant species in each mapped vegetation association within the Project development envelope

- Road
- Proposed mine pit
- Development envelope

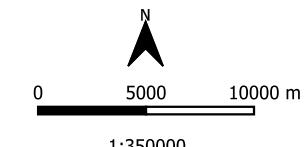
Max height (m)

- < 2.0
- 2.0 - 5.0
- 5.0 - 10.0
- > 10

DATA SOURCES
 Cassini Resources, 2018
 OZ Minerals, 2019
 Western Botanical, 2020

DISCLAIMER
 CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

Date Published: 13 Mar 2020
 Project Number: 1000103
 Client: OZ Minerals/Cassini Resources
 Drawn: ETEROVICZ
 Map Projection: GDA2020 / MGA Zone 52



**CDM
Smith**

Section 3 Groundwater Dependent Ecosystems

3.5.2 Type 3 GDEs (terrestrial ecosystems)

Classification of groundwater use

Based on the conceptualisation presented in Section 3.4.2, a qualitative assessment of the likelihood of groundwater use by terrestrial vegetation has been undertaken, with the following, sometimes conservative, assumptions:

- Vegetation species identified as ‘dominant’ within a vegetation association (according to Western Botanical 2020) are critically important components of the ecosystems active within the association, i.e. if this species were to be adversely impacted by reduced water access, ecosystem function would also be adversely impacted
- A relatively shallow vadose zone and an arid climate suggests the soil reservoir in some locations might be insufficient to meet EWRs, especially of larger perennial plant species (trees and shrubs; see Jochen Shenk and Jackson, 2002)
- Dominant plant species height and rooting depth are co-related, i.e. the taller a tree is the deeper its root system can extend (Jochen Shenk and Jackson, 2002)
- Water table drawdown in response to climate variability and anthropogenic activity (such as mine dewatering) is likely to have some impact on the capacity of groundwater dependent vegetation to meet EWRs
- Based on climate and hydrological setting, vegetation species in the Project area will demonstrate a degree of resistance (ability to control water loss) and / or resilience (the ability to recover ecosystem function) to cope with variable water access

The assessment considers groundwater use according to the matrix provided in Figure 18. The matrix classifies the likelihood or potential for groundwater to meet all or some of the EWRs of terrestrial vegetation associations (ecosystems) based on two variables – (i) vegetation height of dominant species in each vegetation association (identified through field surveys, as a proxy for potential rooting depth), and (ii) depth to groundwater (predicted by a numerical groundwater model, calibrated to field measurements; refer OZL ref. WM-5100-WTR-REP-0034 and Figure 19). Depending on an association’s distribution across the landscape, it may be classified into more than one category of potential for groundwater use. The qualitative assessment considers the following:

- ‘Low’ likelihood of groundwater use occurs where the depth to groundwater is probably below the dominant plant species potential rooting depth, as indicated by the dominant species tree height
- ‘Moderate’ likelihood of groundwater use occurs where the depth to groundwater is *possibly within* the dominant plant species potential rooting depth, as indicated by the dominant species tree height
- ‘High’ likelihood of groundwater use occurs where the depth to groundwater is *probably within* the dominant plant species potential rooting depth, as indicated by the dominant species tree height

Depth to groundwater (mbgl)	Dominant vegetation height (m)				Likelihood of groundwater use
	<2	2 to 5	5 to 10	>10	
<2	High				
2 to 5	Moderate	High			
5 to 10	Low	Moderate	High		
10 to 15	Low	Low	Moderate		
>15	Low	Low	Low	Moderate	

Figure 18 Matrix for qualitative determination of vegetation groundwater use

Section 3 Groundwater Dependent Ecosystems

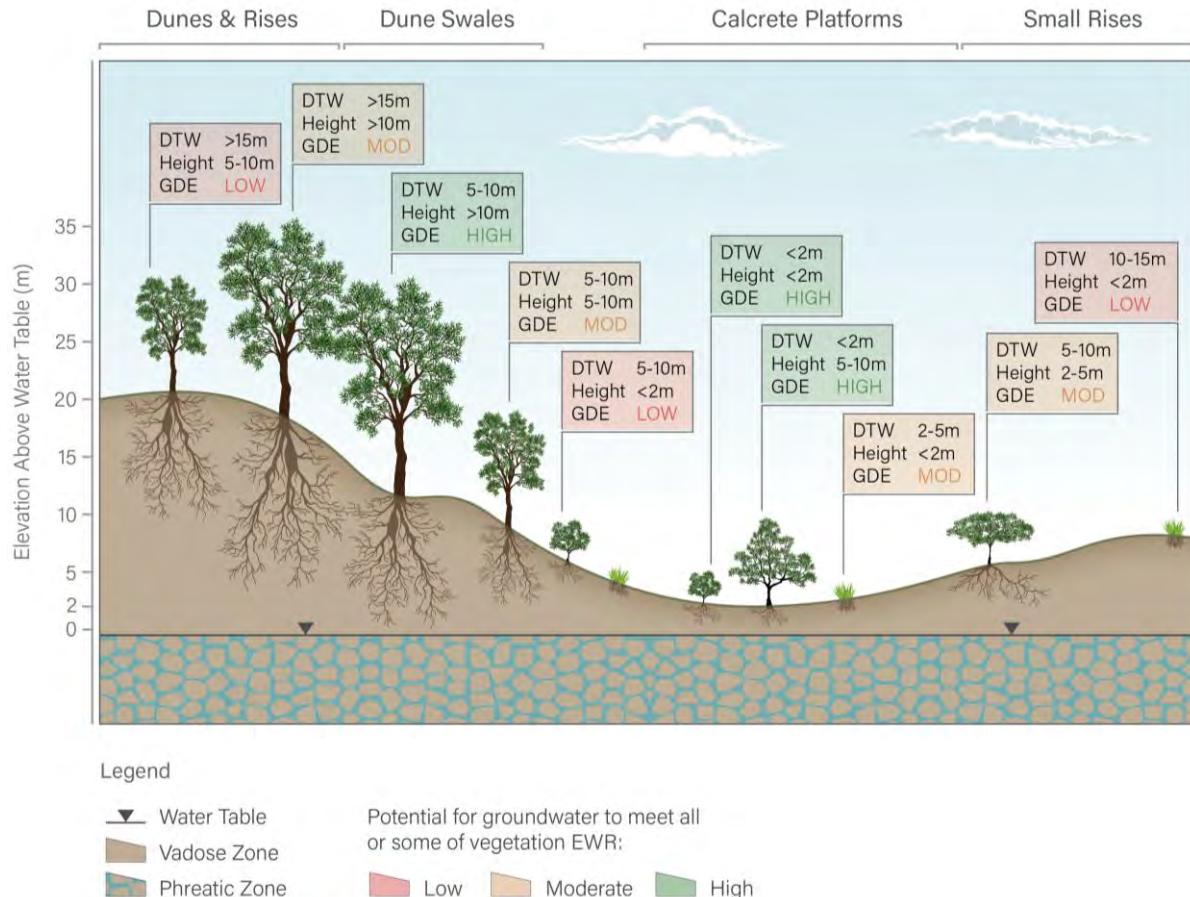


Figure 19 Conceptualisation of potential groundwater use by terrestrial vegetation

Table 4 lists each of the 38 identified vegetation associations that have been mapped within the entire surveyed area. Only 33 of the associations occur within the Project groundwater model domain (OZL ref. WM-5100-WTR-REP-0034), and these have been assessed on their likelihood of groundwater use based on the above approach:

- Four are mapped as low likelihood only (AcS, AvS, CPN-G, SS)
- Five are mapped as low-moderate likelihood (AmmS, ArS, SASP, SDAS/AmmS, SMS)
- 16 associations are mapped as low-moderate-high likelihood (AbTsS, AkS, COG, CPHG, CPHG Ah, CPP, GRMU, HPMW, HMPWD, LMW, LMW/CPHG, LMW/SAWS, MgAkS, SAMU, SAWS, SAWS/CPHG)
- Two are mapped as moderate likelihood only (CPHG Ae, MgAkS/HPMW)
- Five are mapped as moderate-high likelihood (i.e. Complex of Aks and HPMW, CCoW, CPHG Me, Complex of LMW and MgAkS, Complex of SAWS and CPHG)
- One is mapped as high likelihood (i.e. *E. duttonii* shrubland; EdS)

Section 3 Groundwater Dependent Ecosystems

Table 4 Qualitative classification of identified vegetation association potential for groundwater use

Vegetation association	Likelihood of groundwater use based on depth to groundwater and dominant species height			Potential for groundwater use of dominant species based on literature review ^{1,2}
	High	Mod	Low	
<i>Acacia brachystachya</i> over Spinifex Shrubland (AbTsS)	✓	✓	✓	Unlikely/unknown
<i>A. cuthbertsonii</i> Shrubland (AcS)	✗	✗	✓	Unlikely/unknown
<i>A. kempeana</i> Shrubland (AkS)	✓	✓	✓	Possible
Complex of AkS and HPMW	✓	✓	✗	Possible
Complex of AkS and SAMU	Occurs outside model domain			
<i>A. maisonneuvei</i> subsp. <i>maisonneuvei</i> low shrubland (Amms)	✗	✓	✓	Unknown
<i>A. rhodophloia</i> over Spinifex Shrubland (ArS)	✗	✓	✓	Unlikely/unknown
Hardpan Chenopod Shrubland (AvS)	✗	✗	✓	Unknown
<i>Calcrete C. opaca</i> Open Woodlands (CCoW)	✓	✓	✗	Possible
Calcrete Open Grassland (COG)	✓	✓	✓	Possible
Calcrete Platform Hummock Grassland (CPHG)	✓	✓	✓	Possible
Complex of CPHG and SaS	Occurs outside model domain			
CPHG Hummock Grassland with <i>A. eremophila</i> var. numerous-nerved variant (CPHG Ae)	✗	✓	✗	Possible
CPHG with <i>A. helmsii</i> (CPHG Ah)	✓	✓	✓	Possible
CPHG with <i>M. eleuterostachya</i> (CPHG Me)	✓	✓	✗	Possible
Claypan Grassland (CPN-G)	✗	✗	✓	Unknown
Claypan Playa (CPP)	✓	✓	✓	Possible
<i>E. duttonii</i> Shrubland (EdS)	✓	✗	✗	Unknown
Mulga Grove (GRMU)	✓	✓	✓	Possible
Hardpan Mulga Woodland (HPMW)	✓	✓	✓	Possible
Hardpan Mulga Woodland Drainage (HPMWD)	✓	✓	✓	Possible
Low Mallee Woodland (LMW)	✓	✓	✓	Possible
Complex of LMW and CPHG	✓	✓	✓	Possible
Complex of LMW and MgAkS	✓	✓	✗	Possible
Complex of LMW and SAWS	✓	✓	✓	Possible
<i>M. glomerata</i> Shrubland with <i>A. kempeana</i> (MgAkS)	✓	✓	✓	Possible
Complex of MgAkS and HPMW	✗	✓	✗	Possible
Sandplain <i>A. Dodonea</i> Shrubland (SADS)	Occurs outside model domain			
Sandplain Mulga Woodland (SAMU)	✓	✓	✓	Possible
<i>Senna artemisioides</i> subsp. <i>xartemisioides</i> Shrubland (SaS)	Occurs outside model domain			
Complex of SaS and SAWS	Occurs outside model domain			
Sandplain Spinifex (SASP)	✗	✓	✓	Unknown
Sandplains with Wattles other than Mulga over Spinifex (SAWS)	✓	✓	✓	Unlikely/unknown
Complex of SAWS and CPHG	✓	✓	✗	Possible
Sand Dune <i>A. Grevillea</i> shrubland (SDAGS)	✓	✓	✓	Possible
Complex of SDAGS and Amms	✗	✓	✓	Unknown
Stony Mulga Shrubland (SMS)	✗	✓	✓	Possible
Senna Shrubland (SS)	✗	✗	✓	Possible
Total	22	28	25	-

Notes: 1. Refer to Table 3

2. Bold text indicates a vegetation association that has been identified through the literature review to have possible dependence on groundwater however the qualitative assessment indicates it is likely to have some resistance as it is present in areas classified as having "Low" likelihood for groundwater use based on depth to groundwater and the dominant species tree height.

Section 3 Groundwater Dependent Ecosystems

Degree of ecosystem groundwater dependence

Any vegetation association that includes a dominant plant species that is considered to have some likelihood of using groundwater, even if only episodically or to meet a portion of its EWRs, is considered a potential GDE, and their reliance on groundwater can be either facultative (essentially opportunistic) or obligate (essentially absolute). A GDE's degree of dependence, or more importantly, resistance to altered groundwater condition (either quantity or quality), can be qualified based on its occurrence in the landscape (see Table 5):

- Where an association / ecosystem occurs *only* in areas where the soil water reservoir is not sufficient to support the EWRs of some or all component plant species at some stage in their lifecycle and groundwater access is required to meet EWRs (i.e. 'high' likelihood for groundwater use), it is classified as an obligate GDE, meaning
 - Access to groundwater is one of the factors that likely define the ecosystem's presence in the landscape
 - Plant resistance to altered groundwater availability is possibly diminished by relatively consistent access to water for meeting EWRs
 - An ecosystems ability to recover following re-established groundwater availability (resilience) is diminished by an extended period of not having consistent access to water for meeting EWRs
- Where an association / ecosystem occurs in areas with varying depths to the water table¹, ranging from less than a few metres (likely within plant root zones, i.e. 'moderate' to 'high' likelihood for groundwater use) to where the water table is beyond plant root zones (i.e. 'low' likelihood for groundwater use), it is classified as a facultative GDE, meaning
 - Access to groundwater does not necessarily define the ecosystem's presence in the landscape
 - There is a likelihood the soil water reservoir is sufficient to meet plant EWRs in some areas where they occur
 - Plant resistance to altered soil water availability mitigates the need to access groundwater to meet EWRs until the soil water potentials cannot be overcome, at which point plants will switch to using groundwater
- Where an association is present in areas where the water table is deeper than 10 m and likely outside the plant root zone, (i.e. 'low' likelihood for groundwater use), even if also present in areas more conducive to groundwater use, it may be considered vadophytic meaning
 - Access to groundwater is unlikely to define an ecosystem's presence in the landscape
 - There is a likelihood the soil water reservoir is always sufficient to meet plant EWRs
 - Plant resistance to altered soil water availability is sufficient to meet plant EWRs as the soil water reservoir becomes depleted
 - Ecosystem ability to recover following re-established groundwater availability is likely because of reliance on soil water and seasonality of water availability

¹ Including the capillary fringe

Section 3 Groundwater Dependent Ecosystems

Table 5 Qualitative classification of identified vegetation associations degree of dependence

Vegetation association	Type of dependence		
	Obligate	Facultative	Vadophytic
<i>Acacia brachystachya</i> over Spinifex Shrubland (AbTsS)			✓
<i>A. cuthbertsonii</i> Shrubland (AcS)			✓
<i>A. kempeana</i> Shrubland (AkS)			✓
Complex of AkS and HPMW		✓	
<i>A. maisonneuvei</i> subsp. <i>maisonneuvei</i> low shrubland (Amms)			✓
<i>A. rhodophloia</i> over Spinifex Shrubland (ArS)			✓
Hardpan Chenopod Shrubland (AvS)			✓
Calcrete <i>C. opaca</i> Open Woodlands (CCoW)		✓	
Calcrete Open Grassland (COG)			✓
Calcrete Platform Hummock Grassland (CPHG)			✓
CPHG Hummock Grassland with <i>A. eremophila</i> var. Numerous-nerved variant (CPHG Ae)		✓	
CPHG with <i>A. helmsii</i> (CPHG Ah)			✓
CPHG with <i>M. eleuterostachya</i> (CPHG Me)		✓	✗
Claypan Grassland (CPN-G)			✓
Claypan Playa (CPP)			✓
<i>E. duttonii</i> Shrubland (EdS)	✓		
Mulga Grove (GRMU)			✓
Hardpan Mulga Woodland (HPMW)			✓
Hardpan Mulga Woodland Drainage (HPMWD)			✓
Low Mallee Woodland (LMW)			✓
Complex of LMW and CPHG			✓
Complex of LMW and MgAkS		✓	
Complex of LMW and SAWS			✓
<i>M. glomerata</i> Shrubland with <i>A. kempeana</i> (MgAkS)			✓
Complex of MgAkS and HPMW		✓	
Sandplain Mulga Woodland (SAMU)			✓
Sandplain Spinifex (SASP)			✓
Sandplains with Wattles other than Mulga over Spinifex (SAWS)			✓
Complex of SAWS and CPHG		✓	
Sand Dune A. <i>Grevillea</i> shrubland (SDAGS)			✓
Complex of SDAGS and AmmS			✓
Stony Mulga Shrubland (SMS)			✓
Senna Shrubland (SS)			✓
Total (33 in total)	1	7	25

Notes: Associations that occur only outside the numerical model domain are omitted from this table

Section 3 Groundwater Dependent Ecosystems

Table 6 presents the potential GDEs within the Project area that have the potential to be affected by WAAs (development activities) and whether Priority listed plant species might occur within the ecosystems, noting the following:

- For the vegetation associations demonstrating potential facultative groundwater dependence
 - All have been identified from the literature as possible groundwater users (see Section 3.4.1)
 -
 - The dominant vegetation species occurring within these associations likely achieve their EWRs by primarily accessing the soil water reservoir, or by accessing both the soil water reservoir and the water table where it is accessible
- For the single vegetation association (*Eremophila duttonii* Shrubland) that demonstrates potential obligate groundwater dependence
 - Reference to *E. duttonii* in the available literature is absent (see Section 3.4.1)
 - No priority listed plant species identified within this vegetation association
 - The dominant vegetation species occurring within this association likely achieve their EWRs by accessing both soil water and the groundwater (at least seasonally)

Table 6 Potential terrestrial GDEs

Vegetation association	Likely form of dependence
<i>Eremophila duttonii</i> Shrubland (Eds)	Obligate
Complex of <i>A. kempeana</i> Shrubland (AkS) and Hardpan Mulga Woodland (HPMW)	
Calcrete <i>C. opaca</i> Woodland (CCoW)	
Calcrete Platform Hummock Grassland with <i>A. eremophila</i> (CPHG Ae)	
Calcrete Platform Hummock Grassland with <i>M. eleuterostachya</i> (CPHG Me)	
Complex of Low Mallee Woodland (LMW) and <i>M. glomerata</i> Shrubland with <i>A. kempeana</i> (MgAkS)	Facultative
Complex of <i>M. glomerata</i> Shrubland with <i>A. kempeana</i> (MgAkS) and Hardpan Mulga Woodland (HPMW)	
Complex of Sandplains with Wattles other than Mulga over Spinifex (SAWS) and Calcrete Platform Hummock Grassland (CPHG)	

Notes: 1. Refer to Western Botanical (2020), Table 14

2. Priority 3 only, where identified

Priority species absent

One or more priority species present

25 of the 33 surveyed vegetation associations (i.e. within the groundwater model domain) are classified as probably vadophytic, predominantly achieving their EWRs by accessing the soil water reservoir. However, use of groundwater in areas where it is very shallow cannot be completely discounted.

Figure 20 presents the spatial distribution of the type of terrestrial vegetation groundwater dependence based on the qualitative analysis presented in Table 4 and in the above discussion. The figure shows the development envelope (and by association the broader Project area landscape) is dominated by vadophytic vegetation associations (i.e. ecosystems that will be relatively insensitive to altered groundwater condition), whereas vegetation associations having either a facultative or obligate dependence on groundwater cover a small portion of the development envelope.

340000

350000

360000

370000

380000

390000

400000

7140000

7130000

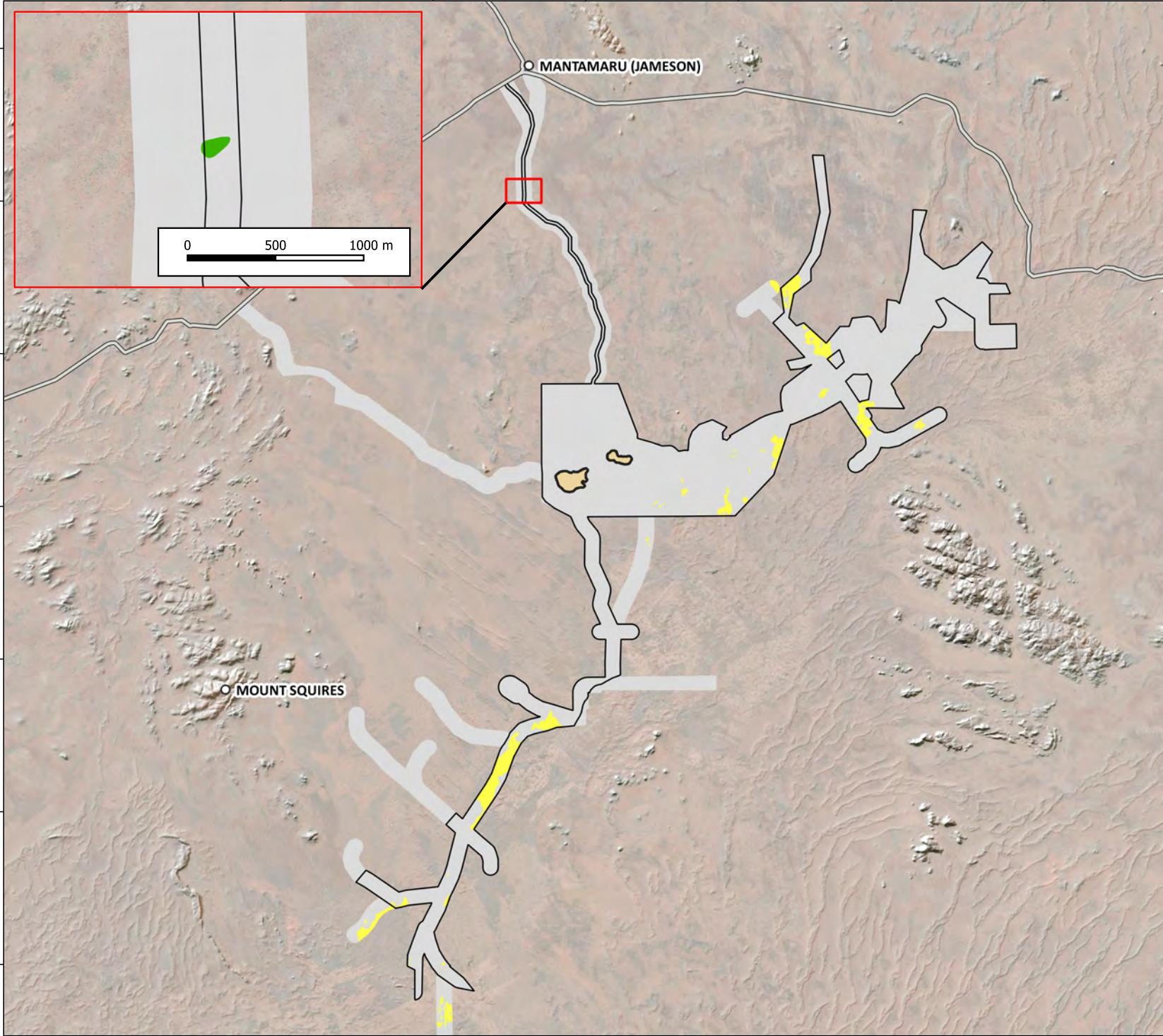
7120000

7110000

7100000

7090000

7080000

**Figure 20**

Qualification of terrestrial vegetation groundwater dependence based on distribution across landscape

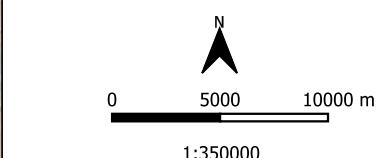
- Road
- Proposed mine pit
- Development envelope

- Vegetation association groundwater dependence**
- Obligate GDE
 - Facultative GDE
 - Vadophytic GDE

DATA SOURCES
Cassini Resources, 2018
OZ Minerals, 2019
Western Botanical, 2020

DISCLAIMER
CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

Date Published: 16 Mar 2020
Project Number: 1000103
Client: OZ Minerals/Cassini Resources
Drawn: ETEROVICZ
Map Projection: GDA2020 / MGA Zone 52



**CDM
Smith**

Section 4 Conclusions

4.1.1 Overview

The following observations support the preliminary identification of potential GDEs in the Project area:

- The Project area occurs within an arid climate zone where evaporation rates greatly exceed rainfall rates in every month of the average year
- Depths to water table are relatively shallow over much of the Project area (typically between 3 and 8 m bgl), meaning the PAWC for supporting larger vegetation species may be limited and sometimes insufficient to meet EWRs during prolonged drought periods, for example
- Rockholes that occur within the Project area appear to be formed above the water table, meaning there is little to no potential for interaction with groundwater or for Type 2 GDEs to occur in the landscape

A staged approach has been used to identify the presence of potential GDEs within and surrounding the Project area that may be affected by mining related activities.

4.1.2 Stage 1 assessment

Stage 1 of the assessment involved preliminary identification of potential GDEs via interrogation of the national scale GDE Atlas as well as local scale field surveys and indicated:

- Type 1 GDEs – Stygofauna ecosystems are present, with more apparent diversity in the area of the proposed mine pits compared to the borefield investigation areas
- Type 2 GDEs – Aquatic ecosystems (springs and wetlands) are not present in the landscape including rockholes, which, whilst occurring within the development envelope, are not reliant on groundwater
- Type 3 GDEs
 - Terrestrial ecosystems (vegetation) may be widely occurring in the Project area but, as noted in Section 2.4, none of the plant species that might be reliant on groundwater are Threatened Flora
 - Riparian ecosystems (vegetation) are not present in the Project area

4.1.3 Stage 2 assessment

Stage 2 of the assessment involved analysis and interpretation of available data to develop conceptualisations of the interactions between potential GDEs and groundwater. Key outcomes of the Stage 2 of the assessment are as follows:

- Type 1 GDEs – Stygofauna ecosystems
 - 30 species of stygofauna identified from 63 locations across the Project area
 - The presence of stygofauna inherently indicates groundwater use
 - Stygofauna habitat comprises saturated palaeovalley sediments and fractured basement
- Type 3 GDEs- Terrestrial ecosystems
 - Groundwater use by vegetation is potentially widespread across the Project area

4.1.4 Stage 3 assessment

Stage 3 of the assessment involved qualification of the capacity of potential GDEs identified in Stage 2 to resist altered groundwater condition whilst maintaining their EWRs, based on their presence in the landscape. Key outcomes of the qualification undertaken in Stage 3 of the assessment are as follows:

- Type 1 GDEs – Stygofauna ecosystems
 - Groundwater dependence is obligate, however stygofauna ecosystems have some tolerance or resistance to change in groundwater conditions owing to their capacity to move within an aquifer
 - Maintenance of a portion of habitat will be important in providing the ecosystem the opportunity to resist a change in groundwater condition and recover once mine WAA cease
- Type 3 GDEs- Terrestrial ecosystems
 - The spatial extent of vegetation associations that are considered likely to have some form of groundwater dependence is much less than those vegetation associations considered to be vadophytic (eight compared to 25 of the 33 associations occurring within the groundwater model domain)
 - One vegetation association (*E. duttoni* Shrubland), which is located at the northern end of the Jameson-WMP access road, is classified as probably being an obligate GDE, i.e. access to groundwater defines the ecosystem's presence in the landscape
 - Seven vegetation associations are classified as probably being facultative GDEs, i.e. access to groundwater does not necessarily define their presence in the landscape (Calcrete *C. opaca* Woodland, Calcrete Platform Hummock Grassland *A. eremophila* variant, Calcrete Platform Hummock Grassland *M. eleuterostachya* variant, Complex of Low Mallee Woodland and *M. glomerata* *A. kempeana* Shrubland, Complex of *M. glomerata* *A. kempeana* Shrubland and Hard pan Mulga Woodland, Complex of Sand plains with Wattles other than Mulga over Spinifex and Calcrete Platform Hummock Grassland, Complex of *A. kempeana* Shrubland and Hard pan Mulga Woodland)

Section 5 References

- Bennelongia. 2020. West Musgrave Copper and Nickel Project: Interim Summary of Subterranean Fauna Results. Prepared for OZ Minerals by Bennelongia Environmental Consultants. August 2019.
- BHP Billiton Iron Ore. 2015. Orebody 31: Flora and vegetation Environmental Impact Assessment. Prepared for BHP Billiton by Onshore Environmental.
- BoM. 2017. National Groundwater Dependent Ecosystem Atlas. Bureau of Meteorology.
<http://www.bom.gov.au/water/groundwater/gde/>
- CDM Smith. 2020. West Musgrave Project Pre-feasibility Study –Surface water baseline report, WM-5100-ENV-REP-0002. Prepared for OZ Minerals by CDM Smith.
- CDM Smith. 2020. West Musgrave Project Pre-feasibility Study –Groundwater baseline assessment report, WM-5100-ENV-REP-0003. Prepared for OZ Minerals by CDM Smith.
- CDM Smith. 2020. West Musgrave Project (10 Mtpa) Pre-feasibility Study –Groundwater flow modelling, WM-5100-WTR-REP-0034. Prepared for OZ Minerals by CDM Smith.
- CDM Smith. 2020. West Musgrave Project Pre-feasibility Study –Groundwater effects assessment, WM-5100-ENV-REP-0007. Prepared for OZ Minerals by CDM Smith.
- CDM Smith. 2020. West Musgrave Project pre-feasibility study – Environmental and pilot water supply drilling, construction and testing completion report, WM-5100-WTR-REP-0014. Prepared for OZ Minerals by CDM Smith.
- Cook, P.G. and Eamus, D. 2018. The potential for Groundwater use by vegetation in the Australian arid zone.
- Doody, T.M., Hancock, P.J. and Pritchard, J.L. 2018. Assessing Groundwater-Dependent Ecosystems: IESC Information Guidelines Explanatory Note. A report prepared for the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development through the Department of the Environment and Energy.
- DEWNR. 2015. Hydrogeology of water-dependent ecosystems of the western rivers region, Lake Eyre Basin. Vol. 40: Technical Report. South Australian Dept. Environment, Water and Natural Resources.
- DEWNR. 2017. An examination of ecosystems dependence on shallow groundwater systems in the western rivers region, Lake Eyre Basin, South Australia. Vol. 2: Supplementary Report. South Australian Dept. Environment, Water and Natural Resources.
- Eamus D, Froend R, Loomes R, Hose G, Murray B. 2006. A functional methodology for determining the groundwater regime needed to maintain the health of groundwater dependent vegetation. Australian Journal of Botany, 54, 97-114.
- Eamus D. 2009. Identifying groundwater dependent ecosystems. Land & Water Australia.
- GHD. 2017. Arafura Resources Limited. Risk assessment: potential impacts of groundwater changes to Groundwater Dependent Ecosystems (GDEs).
- Gold Road Resources Limited. 2016. Gruyere Gold Project: Assessment on Proponent Information. Prepared by MBS Environmental.
- Hose G.C., J Sreekanth, Barron O, Pollino C. 2015. Stygofauna in Australian Groundwater Systems: Extent of knowledge. CSIRO, Australia.
- Jochen Schenk H. and Jackson R.B. 2002. Rooting depths, lateral root spreads and below-ground / above-ground allometries of plants in water-limited systems. Journal of Ecology. Vol. 90, pp480-494. British Ecological Society.

Section 5 References

- Page, G.F.M. 2013. Morphological and Ecophysiological Diversity of Mulga (*Acacia aneura* Complex) in the Hamersley Ranges (*Doctoral dissertation, University of Western Australia*).
- Richardson S, Irvine E, Froend R, Boon P, Barber S, Bonneville B. 2011a. Australian groundwater-dependent ecosystems toolbox. Part 1: assessment framework. National Water Commission, Canberra.
- Richardson S, Irvine E, Froend R, Boon P, Barber S, Bonneville B. 2011b. Australian groundwater-dependent ecosystems toolbox. Part 2: assessment tools. National Water Commission, Canberra.
- RPS. 2015. Ecohydrogeological conceptualisation of the Central Pilbara Region. Prepared for BHP Billiton Iron Ore.
- Rumman R, Cleverly J, Nolan RH, Tarin T, Eamus D. 2017. Speculations on the application of foliar ^{13}C discrimination to reveal groundwater dependency of vegetation, provide estimates of root depth and rates of groundwater use. *Hydrol. Earth Syst. Sci. Discuss.*, <https://doi.org/10.5194/hess-2017-540>.
- Western Australian Herbarium. 1998–. FloraBase—the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/>.
- Western Botanical. 2020. Detailed Flora and Vegetation Survey, West Musgravites Project. Report Ref WB897. Prepared for OZ Minerals Limited.
- Zolfaghar, S., 2013. Comparative ecophysiology of Eucalyptus woodlands along a depth-to-groundwater gradient (Doctoral dissertation).
- Zolfaghar S, Villalobos-Vega R, Zeppel M, Cleverly J, Rumman R, Hingee M, Boulain N, Li Z, Eamus D. 2017. Transpiration of Eucalyptus woodlands across a natural gradient of depth-to-groundwater. *Tree Physiology*, 37, 961-975.

Attachment A Literature review

Summary of literature review: groundwater use by dominant species identified within the survey area

Species	Possible groundwater use yes/no	Summary of literature review	References
<i>Acacia abrupta</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia aneura</i>	unlikely	Mulga have shallow root system and routinely measure water potentials <-10MPa in arid areas, indicating severe water deficit and therefore little or no access to groundwater (Slatyer 1965, Pressland 1975). Can extract water from very dry soils and is able to maintain very low rates of water use during extended drought to survive (Page & Grierson, 2010, as cited by RPS, 2015). Typically known to be shallow rooted rainfall harvesters (Western Botanical, 2020).	Page, 2013 (Thesis) RPS, 2015 Western Botanical (2020)
<i>Acacia aptaneura</i> ¹	possible	Identified as part of a potential GDE and is located where the water table generally <10 m bgl, but no evidence is provided to justify why it is considered a GDE. Soil and leaf water potential data indicates water extraction to 8m depth (Cook and Eamus, 2018) indicating this species opportunistically uses groundwater where the water table is at or shallower than this depth, although it is typically reliant on soil moisture. Typically known to be shallow rooted rainfall harvesters (Western Botanical, 2020).	Gold Road Resources Limited, 2016 Cook and Eamus, 2018 Western Botanical (2020)
<i>Acacia ayersiana</i>	unlikely	Unlikely to be a groundwater user. Typically known to be shallow rooted rainfall harvesters (Western Botanical, 2020).	Pers comms, A. Duguid, Jan 2019 Western Botanical (2020)
<i>Acacia ayersiana (narrow phyllode variant)</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia brachystachya</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia cuthbertsonii</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia eremophila</i> var.	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia kempeana</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia ligulata</i>	unknown	Typically a riparian/floodplain species that 'responds to wet conditions'. Prefer lake edges, sandy soils.	DEWNR, 2015
<i>Acacia maitlandii</i>	yes	Soil and leaf water potential data indicates water extraction to at least 6.5m.	Cook and Eamus, 2018
<i>Acacia melleodora</i>	yes	Soil and leaf water potential data indicates water extraction to 12m depth .	Cook and Eamus, 2018
<i>Acacia pachyacra</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia prainii</i>	unknown		
<i>Acacia pruinocarpa</i>	possible	Possible facultative (opportunistic) groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia pteraneura</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia rhodophloia</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2020
<i>Acacia sericophylla</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia tetragonophylla</i>	possible	Conflicting information: Identified as part of a potential GDE and is located where the water table generally <10 m bgl, but no evidence is provided to justify why it is considered a GDE. Unlikely to use groundwater (DEWNR, 2017)	Gold Road Resources Limited, 2016 DEWNR, 2017

Species	Possible groundwater use yes/no	Summary of literature review	References
<i>Acacia victoriae</i> subsp. <i>victoriae</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Acacia walkeri</i>	unlikely	Unlikely to be a groundwater user.	Pers comms, A. Duguid, Jan 2019
<i>Allocasuarina helmsii</i>	unknown		
<i>Aluta maisonneuvei</i> subsp. <i>maisonneuvei</i>	unknown	Typical habitat- sand dunes, sandplains, high rocky sites	Western Australian Herbarium (1998–)
<i>Aristida latifolia</i>	unknown		
<i>Corymbia opaca</i>	yes	Can access groundwater where water table depths are 8-12m and up to 20m in some cases. Listed as a species that have been shown to access groundwater (Doody et al, 2018).	Cook and Eamus, 2018, GHD, 2017 (for Arafura Resources Limited) Doody et al, 2018
<i>Dodonaea viscosa</i> subsp. <i>angustissimus</i>	unknown		
<i>Eremophila duttonii</i>	unknown		
<i>Eremophila forrestii</i>	unknown		
<i>Eremophila hughesii</i> subsp. <i>hughesii</i>	unknown		
<i>Eremophila latrobei</i> subsp. <i>Glabra</i>	unknown		
<i>Eremophila longifolia</i>	unknown		
<i>Eremophila serrulata</i>	unknown	Typical habitat- red sand, sandy clay loam, gravelly soils; along creek lines, granite outcrops, hardpan flats.	Western Australian Herbarium (1998–)
<i>Eucalyptus gamophylla</i>	possible	Conflicting information: Listed as a xerophytic species, representing no groundwater reliance (BHP, 2015). Known to access deep groundwater (Western Botanical, 2020).	BHP, 2015 Western Botanical, 2020
<i>Eucalyptus intertexta</i>	yes	Listed as a species that have been shown to access groundwater (Doody et al., 2018) Known to access deep groundwater (Western Botanical, 2020)	Doody et al, 2018 Western Botanical, 2020
<i>Eucalyptus oxymitra</i>	yes	Known to access deep groundwater (Western Botanical, 2020)	Western Botanical, 2020
<i>Grevillea eriostachya</i>	unknown	Typical habitat- yellow or red sand, occasionally white or grey sand; sandhills, red sand dunes, sandplains.	Western Australian Herbarium (1998–)
<i>Grevillea juncifolia</i> subsp. <i>juncifolia</i>	unknown	Typical habitat- red or yellow sand, sandhills, flats.	Western Australian Herbarium (1998–)
<i>Grevillea stenobotrya</i>	unknown	Typical habitat- red sand; sand dunes	Western Australian Herbarium (1998–)
<i>Hakea lorea</i> subsp. <i>Lorea</i>	yes	Soil and leaf water potential data indicates water extraction to 5m.	Cook and Eamus, 2018

Species	Possible groundwater use yes/no	Summary of literature review	References
<i>Hannafordia bissillii</i> subsp. <i>bissillii</i>	unknown	Typical habitat- red sand	Western Australian Herbarium (1998–)
<i>Melaleuca eleuterostachya</i>	unknown	Typical habitat- sandy or clayey soils, often over limestone; plains, low hills, moist depressions.	Western Australian Herbarium (1998–)
<i>Melaleuca glomerata</i>	yes	Opportunistic groundwater user. Listed as a species that have been shown to access groundwater (Doody et al, 2018). Typical habitat- red sand, clay, sandy loam; rocky river beds, shallow depressions, sandy flats. Known to access deep water (Western Botanical, 2020)	Pers comms, A. Duguid, Jan 2019 Doody et al, 2018 Western Australian Herbarium (1998–) Western Botanical, 2020
<i>Rhagodia eremaea</i>	unknown	Typical habitat- sand, clayey or sandy loam, often stony soils, rocky hillsides, coastal areas over limestone, along rivers & creeks.	Western Australian Herbarium (1998–)
<i>Rhagodia drummondii</i>	unknown		
<i>Senna artemisioides</i> subsp. <i>Artemisioides</i>	unknown	Variety of habitats.	Western Australian Herbarium (1998–)
<i>Senna artemisioides</i> subsp. <i>helmsii</i>	unknown	Variety of habitats.	Western Australian Herbarium (1998–)
<i>Teucrium teucriiflorum</i>	unknown		
<i>Triodia schinzii</i>	unknown	Typical habitat- red sandy soils, sandplains, red sand dunes.	Western Australian Herbarium (1998–)

Notes:

1. *Acacia aptaneura* previously called *Acacia aneura*

**Attachment B Supporting analysis for the identification of
Type 3 GDEs**

Attachment B: Supporting analysis for the identification of Type 3 GDEs

Flowpath water quality trends

If groundwater is being widely used by vegetation across the Project area, it would be expected that the salinity of the groundwater along a regional flowpath would increase (i.e. reducing the volume of water but leaving the majority of salts has a concentration effect on the groundwater salinity). Groundwater generally flows in a south to southwestward direction (Figure B1) and so the northing of each groundwater salinity sample can be used to approximate the distance along a flowpath. Figure B2 shows that Flowpath A has an increasing salinity towards the south at a rate of approximately 50 µS/cm/km (i.e. approximately 2500 µS/cm over 50 km). A similar increasing trend is found using Chloride with a trend of approximately 30 mg/L/km along Flowpath A. This increase along the groundwater flowpath suggests that either evaporation or evapotranspiration is occurring (assuming water-rock interaction does not account for this much salinity increase and recharge conditions are relatively uniform across the Project area).

This relatively simple analysis could be strengthened using stable water isotope ratios of groundwater along the flowpath to support more definitive conclusions. If the increasing salinity and Chloride is caused partially or primarily from groundwater use by vegetation (i.e. GDEs), it would be expected that the water isotope ratios would remain relatively constant along the flowpath, while Chloride and/or salinity increases. This data is not available for the Project area.

Attachment B: Supporting analysis for the identification of Type 3 GDEs

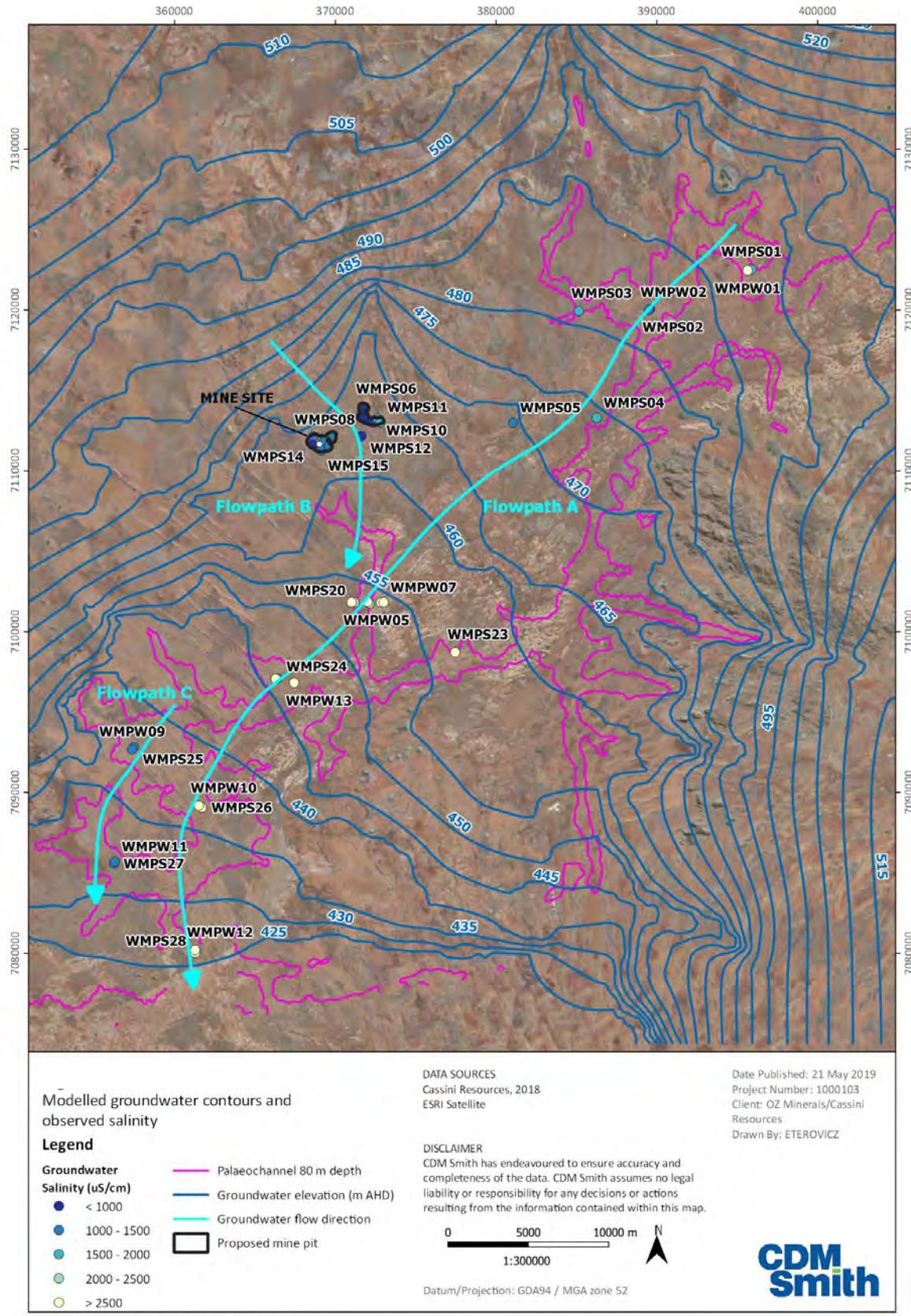


Figure B1 Distribution of groundwater salinity and modelled groundwater contours

Attachment B: Supporting analysis for the identification of Type 3 GDEs

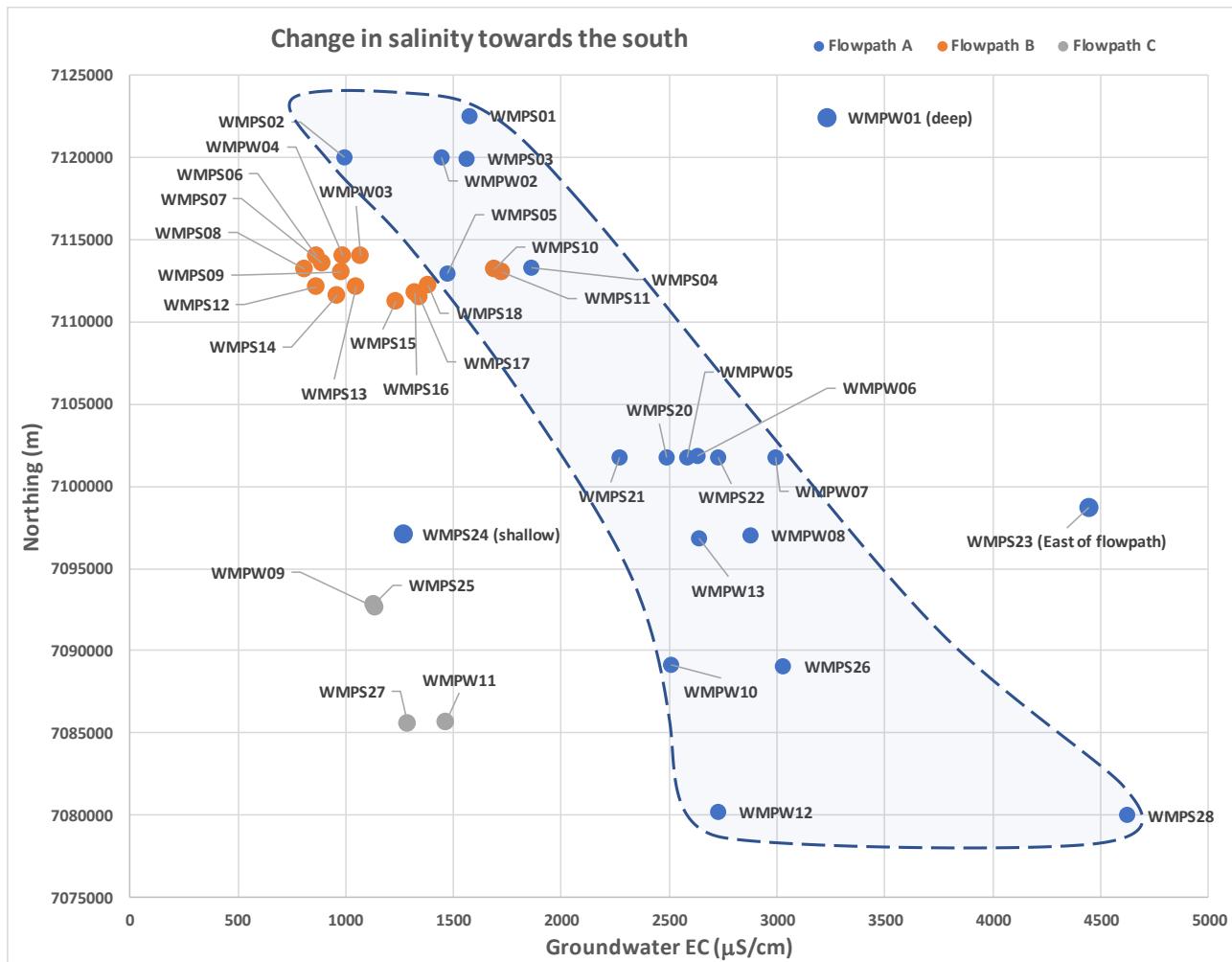


Figure B2 Change in groundwater salinity towards the south

Analysis of VegMachine green fractional cover

The temporal nature of likely groundwater reliance by potential Type 3 GDEs is not well understood given the lack of timeseries groundwater head data associated with the Project.

VegMachine, a web-based tool that summarises the long-term spatial and temporal changes in land cover using satellite imagery, has been used to assist in identifying plant water use and the temporal nature of use. The data is sourced from Landsat image archive, which has been processed from 1988 – 2018 by the Queensland Department of Science, Information Technology and Innovation. A range of processed datasets are available, including fractional cover that is broken into three categories; green, non-green and bare. The green fractional cover represents greenness due to vegetation and can be used to infer actively transpiring vegetation and potentially groundwater use in some cases. For example, if a landscape is consistently green during extended periods of low rainfall where soil moisture is assumed to be insufficient for plant water demand. This would be observed over time as an elevated minimum green fractional that is consistently higher than other parts of the landscape.

Fourteen polygons of approximately 100x100 m area (1 Ha) were created using VegMachine covering a representative selection of the vegetation communities found in the Project area. Where possible these were linked with known depth to water and additional areas were also selected for relative comparisons where minimal or no vegetation was observed in satellite imagery (see Figure B3 for locations). The fractional cover data was extracted and processed in MS Excel. The timeseries green fractional cover is shown in Figure B4 and details of each polygon are summarised in Table B1. This table also shows a median green fractional cover ranking for three periods selected to align with the data sources from different satellites and/or the entire processed data record (i.e. LANDSAT-7 from April 1999

Attachment B: Supporting analysis for the identification of Type 3 GDEs

onwards and replaced by LANDSAT-8 in February 2013). It is assumed that the pixel configuration is constant over time and so results would be most consistent inclusive of these periods.

As expected, the vegetation communities within each of the polygons show a responsiveness in green fractional cover to rainfall with the newly available soil moisture. This responsiveness is likely due to the emergence of short-lived grasses in combination with enhanced growth periods of larger shrub and tree species. The increasing magnitude of monthly rainfall is correlated with an increased green fractional cover and there appears to be a threshold value between 30 and 50 mm/month (Figure B5) prior to considerable increases in green fractional cover for each vegetation community. A responsiveness to rainfall is also evident for the calcrete and outcrop areas, reflecting the ability of the vegetation types present in these locations to opportunistically utilise rainfall even in the apparent poor – absent soils.

Box and whisker plots for selected time periods show the variability of green fractional cover for each representative polygon (Figure B6, B7 and B8 for 2013–2018, 2000–2012 and 1988–2018 time periods respectively) as a measure of variability in green fractional cover. These figures show the median as the middle line of each green box, which has upper and lower bounds of the 75th and 25th percentiles with the maximum and minimum values shown as the upper and lower error bars respectively. The vegetation communities are ordered based on their median value from left to right. The 2013–2018 period for example, shows the largest median green fractional cover is generally found in low Mallee woodland and Melaleuca shrubland polygons with the lowest median green fractional cover found in the calcrete hummock grasslands and outcrop polygons. The differences between the polygons with lower and higher green fractional cover can be accounted for by the vegetation community present that presumably has greater access to water (assuming this is the primary limiting factor in most cases – there may be others such as soil properties or limiting nutrients).

The persistence of green fractional cover from a relatively wet period through to a relatively dry period can give an indication of whether or not rainfall and shallow soil moisture is a limiting factor to greenness. Theoretically, a GDE would respond to rainfall and then show a decline in green fractional cover as soil stores are exhausted, while critically, also maintaining a higher green fractional cover compared to vegetation without access to groundwater.

To investigate the degree of this occurrence, the green fractional cover values from 2012 are directly compared with the values from 2015. These years are preceded by two above average and two below average rainfall years respectively, and the green fractional cover for the months of January, April, July and October are directly compared in Figure B9. The average of the four months is shown in the figure with error bars representing the variation. If the vegetation communities had similar access to water, the green fractional cover should be similar between years and the data should fall along the 1:1 line. However, the majority of vegetation communities are above this line showing that the green fractional cover has declined during the drying period. The largest declines are recorded for LMW_CPHG_WMPS26, SAWS_WMPS25, Deep_WT, LMW_SAWS_WMPS24 with average differences of 6, 5.7, 4.7 and 4 % green fractional cover respectively. These maintain an average median green cover fraction of > 12 % with the exception of LMW_CPHG_WMPS26. This suggests that this vegetation community in this particular polygon may have a less reliable water source.

It is important to note that this remote sensing approach may contain significant error due to the sparse nature of the vegetation in these landscapes. For example, in the LMW_CPHG_WMPS26 polygon there is one significant tree, around 23 low-lying shrubs and around a third of the ~100x100 m area is covered with hummock grasses (inferred from the May 2019 ESRI composite image). How the greenness of this vegetation is captured and represented by the 30x30 m LANDSAT pixels should be considered indicative given the sparsity of the cover. Specific plant water requirements and water sources can only be determined with a higher degree of confidence in this landscape, through site specific field investigations.

Additionally, the depth to groundwater may be a relevant factor in likelihood of specific vegetation types being able to access this as a source of water (provided it is of sufficient quality). The median green fractional cover of the selected representative polygons are compared with depth to groundwater in Figure B10. There is no clear relationship evident from this information and it is likely that the depth to groundwater (being so shallow across this site) is not a limiting

Attachment B: Supporting analysis for the identification of Type 3 GDEs

factor for vegetation to access this water source. For example, SAWS_WMPS25 has a relatively high median green fractional cover and the deepest depth to groundwater (14.5 m bgl).

The assessment using VegMachine is unable to definitively identify GDEs in the landscape with a high degree of confidence. However, the relative likelihood of each selected representative polygon containing a GDE has been determined semi-quantitatively. This is based on the median green fractional cover for the period from 2012–2018 with thresholds of 10 and 15 %. Polygons with a median of < 10%, 10–15 % and > 15% were considered to have a low, moderate and high likelihood of containing GDEs respectively. This is considered to be a conservative approach and assumes that differences in the relatively low green fractional cover, are due to the presence or absence of sparsely distributed individual trees and/or shrubs that are able to access groundwater. To improve the confidence that can be placed on this categorisation, site specific field investigations would be required. This may involve the timeseries measurement of individual plant water use and both plant and water isotopic sampling in combination with depth profiles of soil moisture and hydrochemistry.

Attachment B: Supporting analysis for the identification of Type 3 GDEs

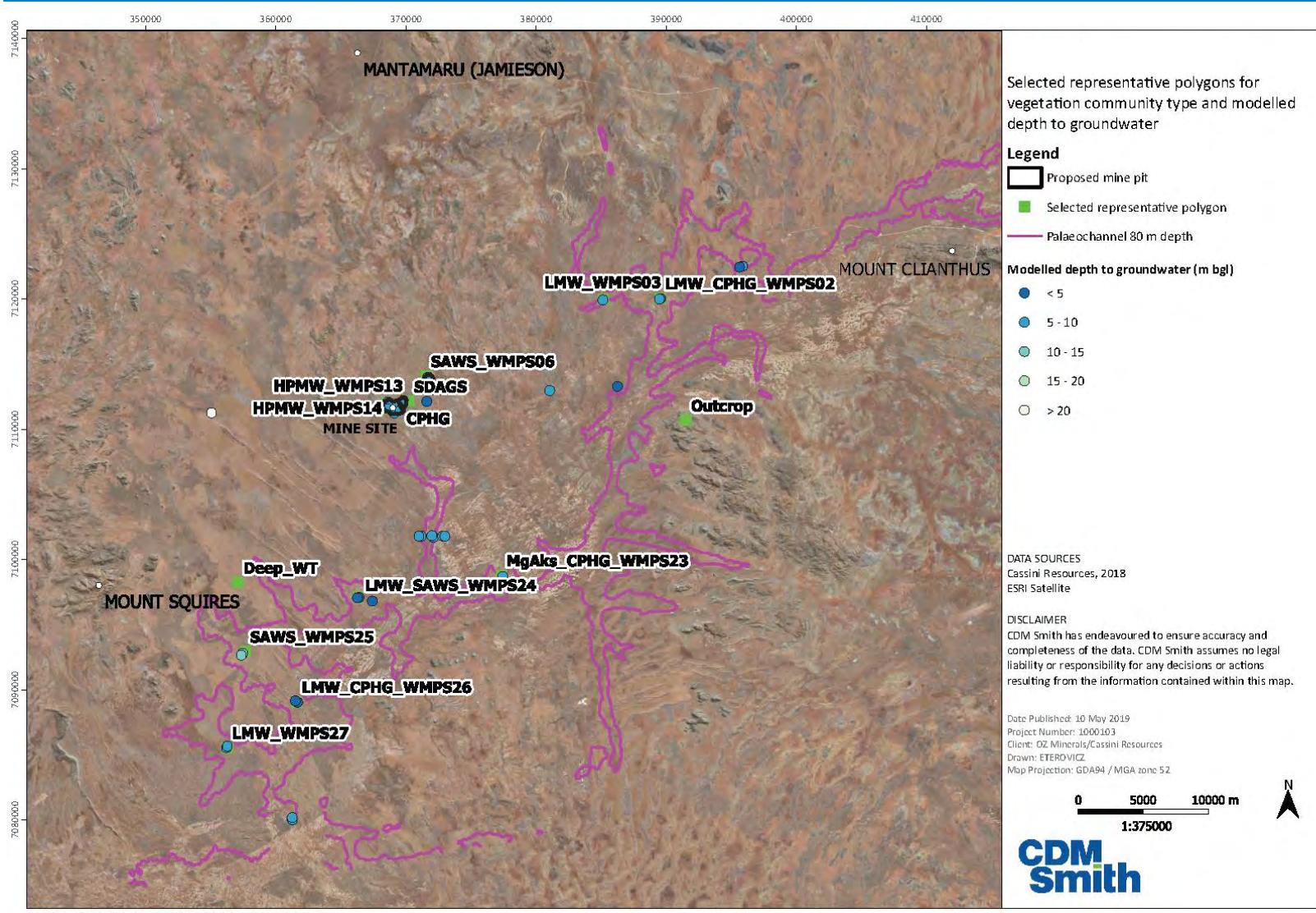


Figure B3 Location of representative polygons across the study area

Attachment B: Supporting analysis for the identification of Type 3 GDEs

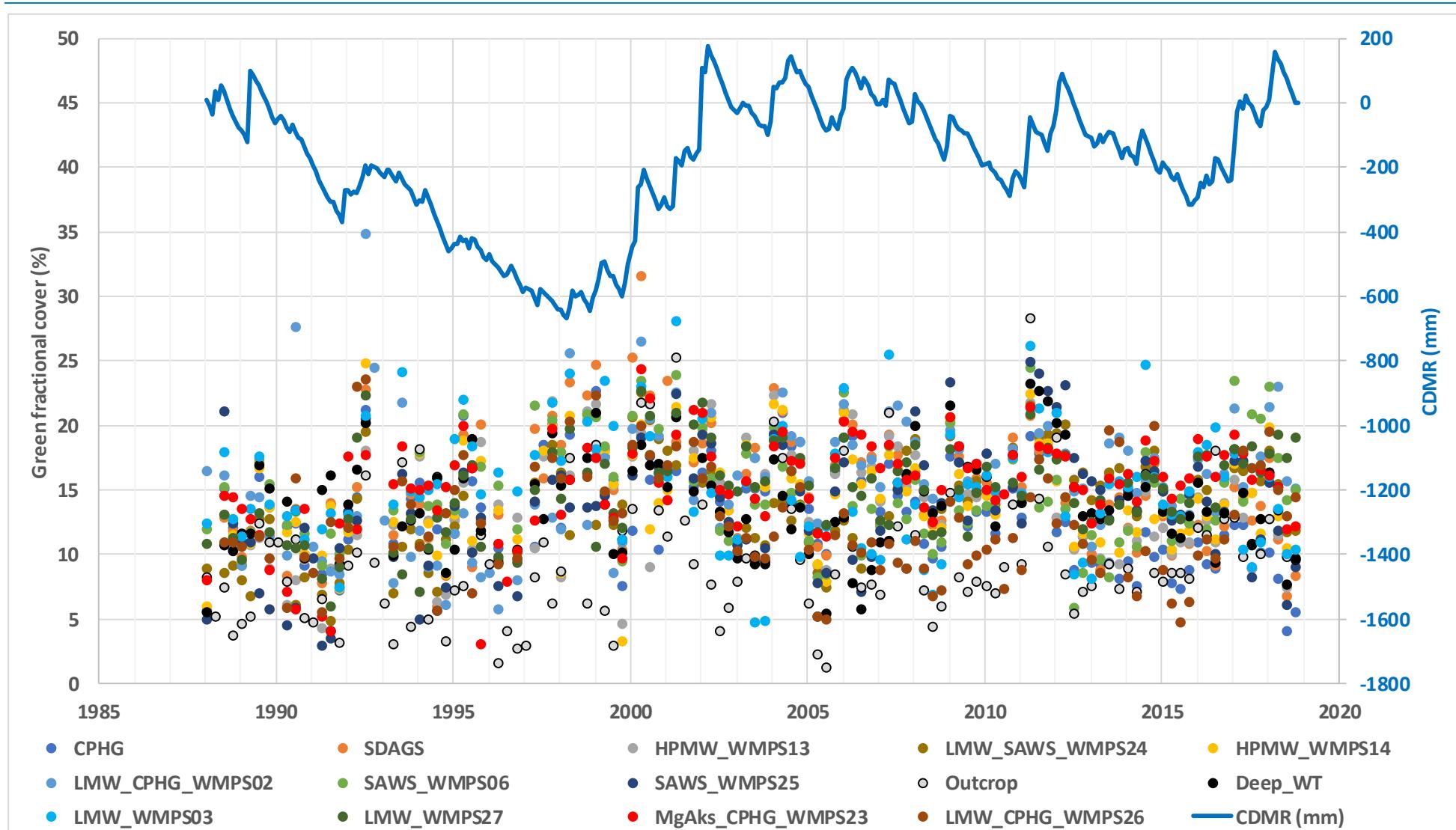


Figure B4 Time-series plot of green fractional cover for representative polygons

Attachment B: Supporting analysis for the identification of Type 3 GDEs

Table B1 Representative polygon details and ranking based on median green cover fraction

Location	Vegetation community	Identified potential GDE level ^[1]	1988-2018 (median and relative rank)	1999-2012 (median and relative rank)	2013-2018 (median and relative rank)	Depth to water (m bg)
LMW_CPHG_WMPS02	Low mallee woodland and hummock grassland	Level 1	15.8 (1)	18.1 (1)	16 (1)	5.00
LMW_WMPS27	Low mallee woodland	Level 1	15.2 (3)	16.3 (4)	16 (2)	8.22
MgAks_CPHG_WMPS23	Melaleuca shrubland and calcrete with hummock grassland	Level 1	15.7 (2)	17 (2)	15.9 (3)	6.39
LMW_SAWS_WMPS24	Low mallee woodland and sandplains with non-mulga acacias	Level 1	13.9 (8)	14.6 (10)	15.1 (4)	4.10
LMW_WMPS03	Low mallee woodland	Level 1	14.9 (4)	14.5 (11)	15 (5)	6.00
SAWS_WMPS25	Sandplains with non-mulga acacias	Unlikely	13.7 (9)	15.1 (7)	14.2 (6)	14.51
SAWS_WMPS06	Sandplains with non-mulga acacias	Unlikely	13.9 (7)	13.8 (12)	14.1 (7)	5.50
Deep_WT	Not surveyed	-	13.7 (10)	14.9 (8)	13.3 (8)	13.3*
HPMW_WMPS14	Hardpan mulga woodland	Level 2	14.1 (6)	15.4 (6)	12.9 (9)	5.49
SDAGS	Sand dune acacia – grevillea shrubland	Level 2	14.6 (5)	16.9 (3)	12.1 (10)	6.26
HPMW_WMPS13	Hardpan mulga woodland	Level 2	13.7 (11)	16.2 (5)	11.2 (11)	6.02
LMW_CPHG_WMPS26	Low mallee woodland and hummock grassland	Level 1	11.4 (13)	11.4 (13)	11.1 (12)	4.17
Outcrop	Not surveyed	-	9 (14)	9.4 (14)	9.8 (13)	7.9*
CPHG	Calcrete with hummock grassland	Level 2	12.3 (12)	14.7 (9)	9.3 (14)	5.49

[1] Level 1= Identified in field survey (Western Botanical, 2020); Level 2: Identified through literature review, see Table 3.

*value from modelled depth to water

Attachment B: Supporting analysis for the identification of Type 3 GDEs

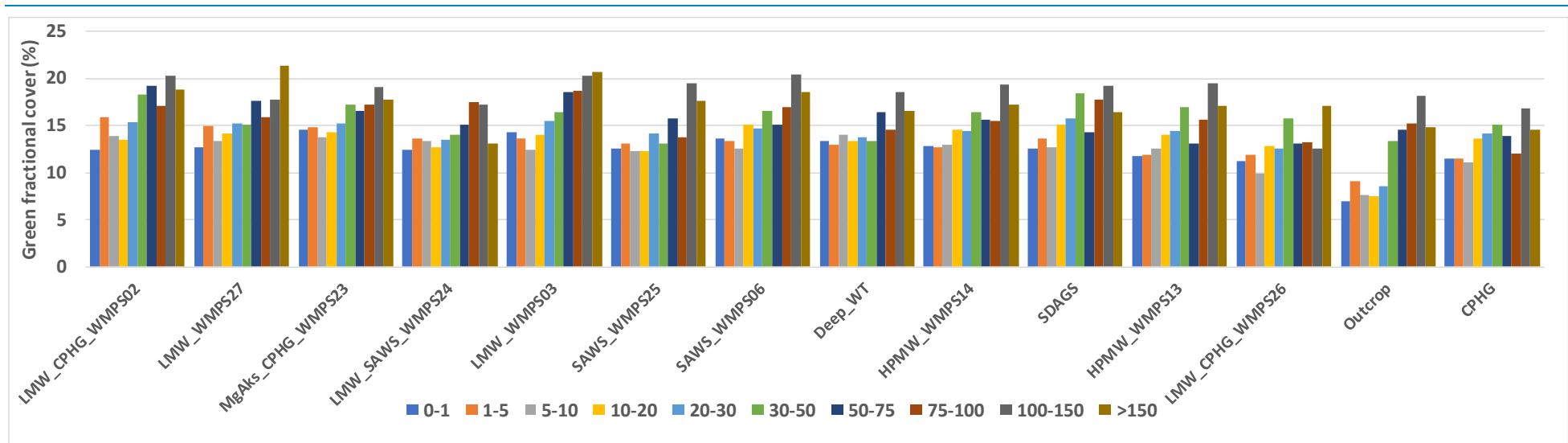


Figure B5

Relationship between green fractional cover and monthly rainfall totals (mm/month)

Attachment B: Supporting analysis for the identification of Type 3 GDEs

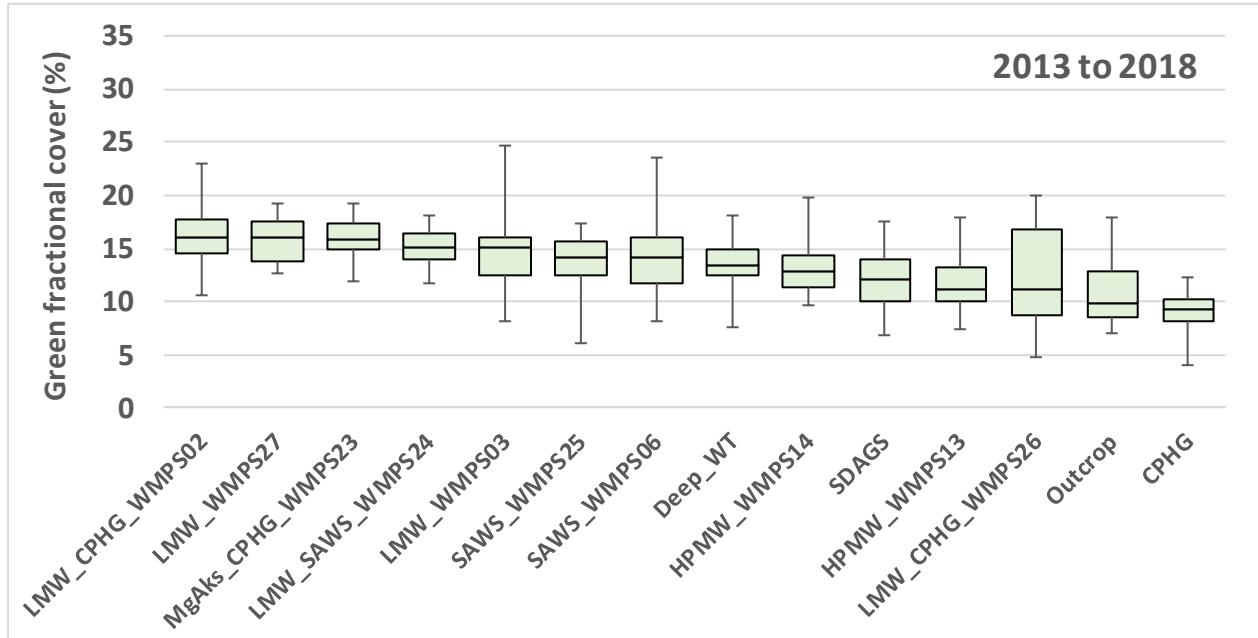


Figure B6 Box and whisker plot of green fractional cover for representative polygons from 2013–2018

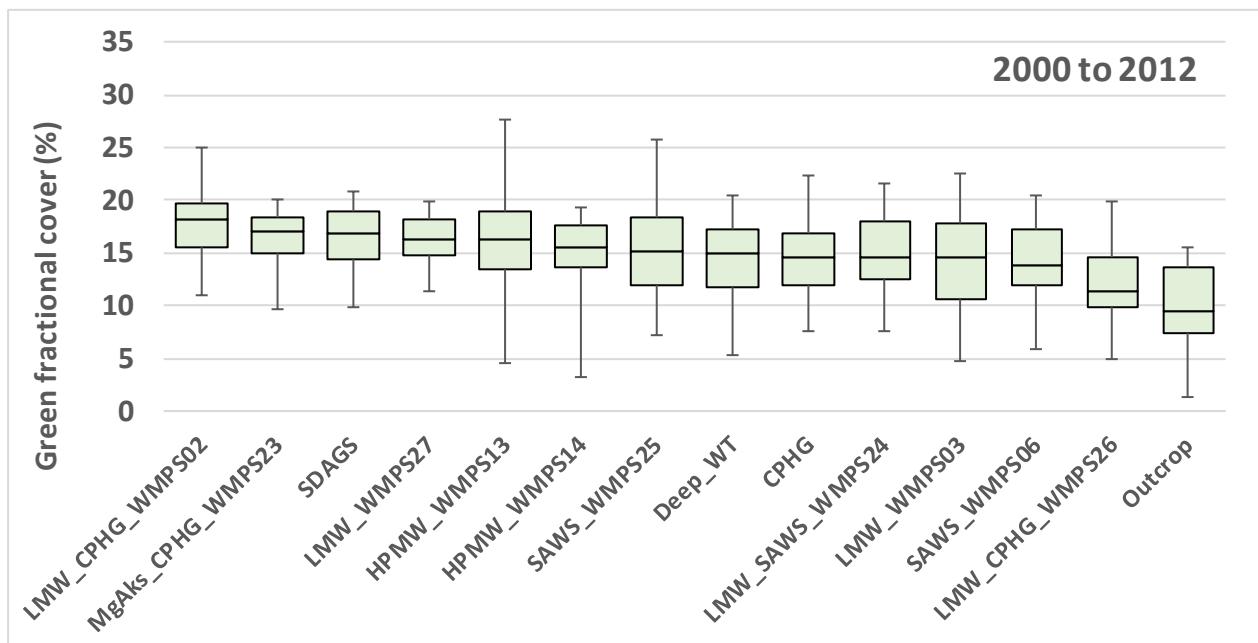


Figure B7 Box and whisker plot of green fractional cover for representative polygons from 2000–2012

Attachment B: Supporting analysis for the identification of Type 3 GDEs

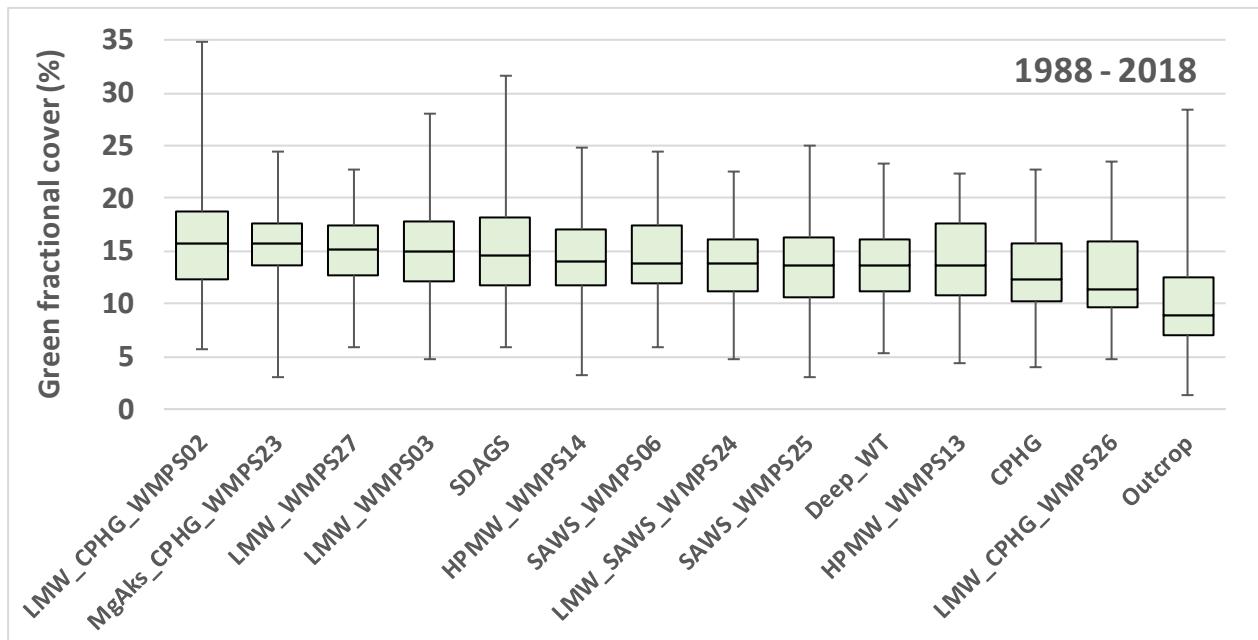


Figure B8 Box and whisker plot of green fractional cover for representative polygons from 1988–2018

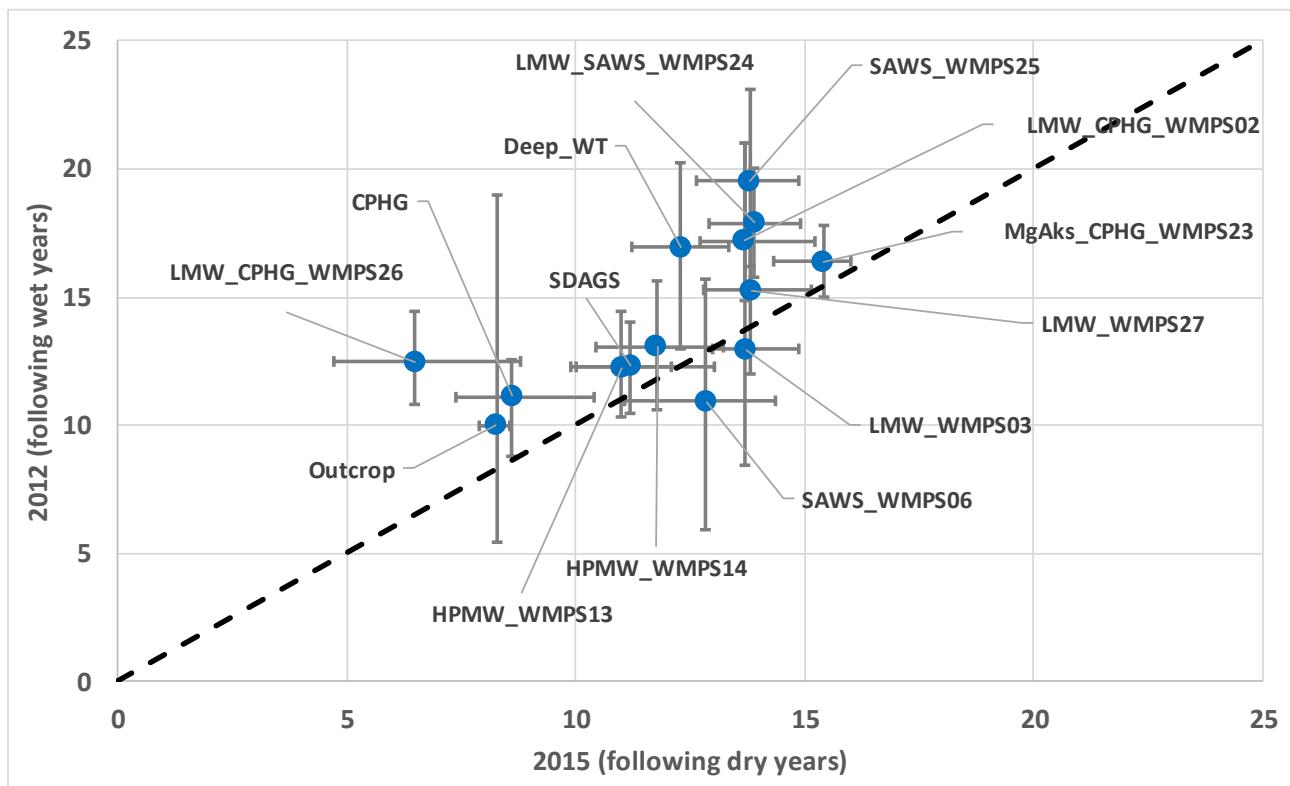


Figure B9 Green fractional cover comparison between years following wetting and drying conditions

Attachment B: Supporting analysis for the identification of Type 3 GDEs

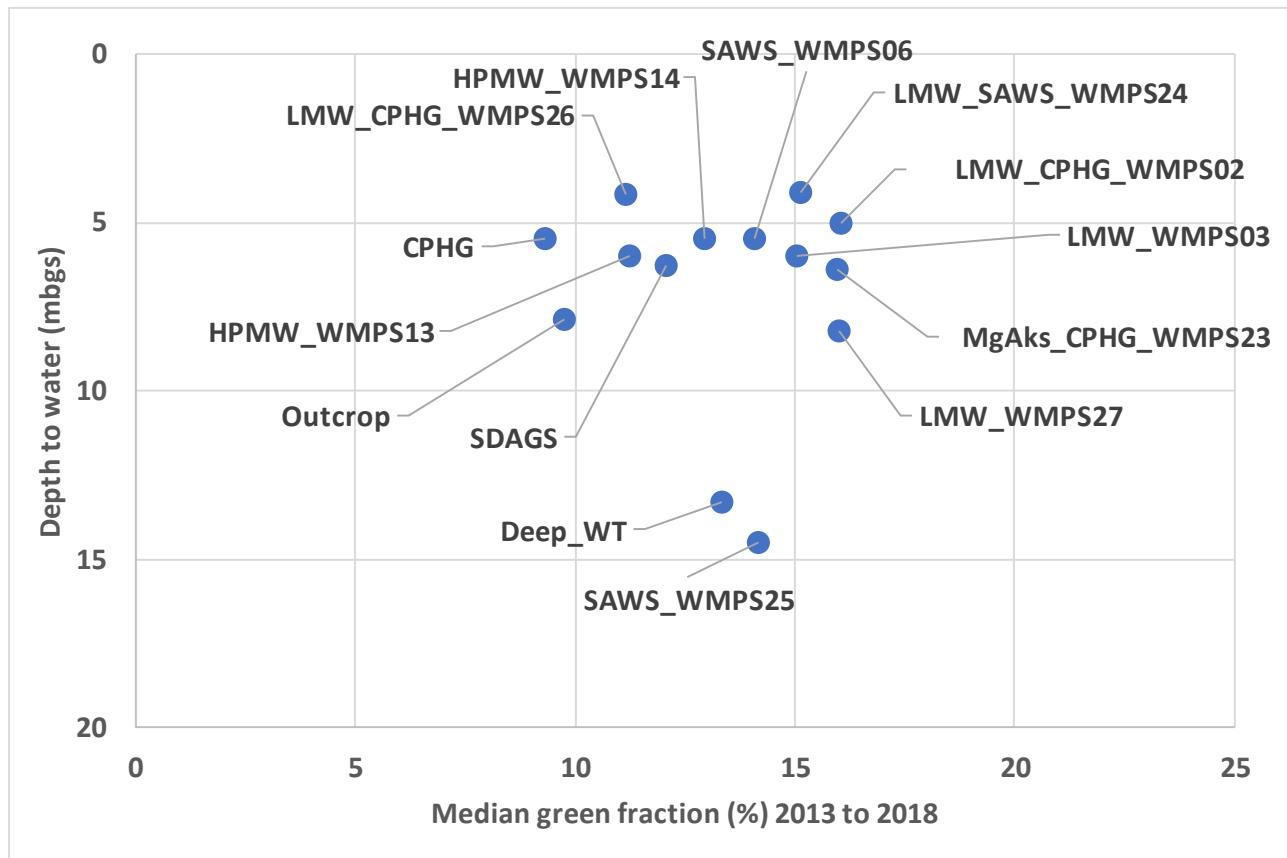


Figure B10

Relationship between depth to water and green fractional cover (2013–2018)



OZ
MINERALS