Site	KTF89
Described by	BRM/RM Date 25/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 570902 mE, 7543485 mN
Habitat	Crest of small stony hill.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus gamophylla* low mallee woodland over *Senna glutinosa* subsp. *glutinosa* scattered tall shrubs over *Triodia wiseana* open hummock
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees present outside quadrat. U1 ^*Eucalyptus gamophylla*\^tree mallee\5\i;M1 ^*Senna glutinosa* subsp. *glutinosa*\^shrub\4\bi;G1+ ^*Triodia wiseana*\^hummock

Name	Cover (%)	Height (cm)	Specimen
Acacia atkinsiana	0.1	70	
Acacia bivenosa	0.1	90	
Acacia inaequilatera	0.1	60	
Acacia ptychophylla	0.1	60	KTF75-05=
Amphipogon sericeus	0.1	30	KTF75-04=
Corymbia deserticola subsp. *deserticola*	0.1	280	
Eriachne pulchella	0.1	10	
Eucalyptus gamophylla	15	350	
Fimbristylis simulans	0.1	15	KTF75-01=
Hakea chordophylla	0.1	480	
Mirbelia viminalis	0.1	50	KTF89-01
Ptilotus calostachyus	0.1	3	
Ptilotus rotundifolius	0.1	50	
Schizachyrium fragile	0.1	5	
Senna glutinosa subsp. *glutinosa*	0.25	280	
Themeda triandra	0.1	80	
Triodia wiseana	25	30	

Site	KTF90
Described by	PL/SC Date 25/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 571138 mE, 7544525 mN
Habitat	Floodplain, drainage.
Soil	Dark reddish brown sandy clay loam to silty clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus xerothermica*, (*Corymbia hamersleyana*, *Atalaya hemiglauca*, *Hakea lorea* subsp. *lorea*) low open woodland over *Acacia pyrifolia* var. *pyrifolia* open shrubland *over Isotropis atropurpurea*, (*Bonamia erecta*, *Corchorus parviflorus*) low open shrubland over *Themeda triandra*, (*Eulalia simonii, *Cenchrus ciliaris, *C. setiger*) tussock grassland with *Triodia epactia* scattered hummock grasses.
Veg Condition	Very Good to Good: **Cenchrus* spp. present.
Fire Age	Burnt 3-5 years ago.
Notes	U1+ ^*Eucalyptus xerothermica,Corymbia hamersleyana,Atalaya hemiglauca,Hakea lorea* subsp. *lorea*\^tree\6\r;M1 ^*Acacia pyrifolia* var. *pyrifolia*\^shrub\3\r;M2 *Isotropis atropurpurea,Bonamia erecta,Corchorus parviflorus*\shrub\1\r;G1 ^*Themeda triandra,Eulalia simonii,Cenchrus ciliaris,Cenchrus setiger*\^tussock grass\1\c;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	30		
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	20		
Acacia adoxa var. *adoxa*	0.1	50		
Acacia dictyophleba	0.1	100		
Acacia pyrifolia var. *pyrifolia*	10	180		
Afrohybanthus aurantiacus	0.1	20		
Alternanthera nana	0.1	20		
Aristida holathera var. *holathera*	0.1	20		
Arivela viscosa	0.1	40		
Atalaya hemiglauca	1	220		
Boerhavia coccinea	0.1	5		
Bonamia erecta	0.5	20		
Capparis lasiantha	0.1	50		
Cenchrus ciliaris	5	50		
Cenchrus setiger	2	50		
Chrysopogon fallax	0.1	60		
Corchorus parviflorus	0.5	70		
Corymbia hamersleyana	2	700		
Crotalaria medicaginea var. *neglecta*	1	60		
Digitaria brownii	0.1	50		
Duperreya commixta	0.1	80		
Dysphania rhadinostachya	0.1	15	KTF90-01	Sterile.
Eragrostis eriopoda	0.1	30		
Eriachne aristidea	0.1	20		
Eriachne mucronata	0.1	30	KTF90-02	
Eucalyptus xerothermica	5	700		
Eulalia aurea	0.1	30		
Eulalia simonii	6	40		
Euphorbia australis var. *subtomentosa*	0.1	5		
Euphorbia tannensis subsp. *eremophila*	0.1	30		
Euphorbia trigonosperma	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Evolvulus alsinoides var. *villosicalyx*	0.1	5		
Goodenia forrestii	0.1	10		
Goodenia microptera	0.1	20		
Gossypium australe	0.1	120		
Grevillea wickhamii subsp. *hispidula*	0.1	210		
Hakea lorea subsp. *lorea*	0.5	400		
Heliotropium cunninghamii	0.1	20	KTF90-04	
Heliotropium pachyphyllum	0.1	30		
Hibiscus sturtii var. *campylochlamys*	0.1	30	KTF90-05	
Hibiscus sturtii var. *grandiflorus*	0.1	30		
Hibiscus sturtii var. *platychlamys*	0.1	20		
Indigofera colutea	0.1	20		
Indigofera monophylla	0.1	70		
Isotropis atropurpurea	2	60		
Jasminum didymum subsp. *lineare*	0.1	50		
Malvastrum americanum	0.1	50		N=2.
Melhania oblongifolia	0.1	20		
Paraneurachne muelleri	0.1	30		
Polycarpaea corymbosa var. *corymbosa*	0.1	5		
Polymeria ambigua	0.1	15		
Portulaca intraterranea	0.1	5	KTF84-01=	
Ptilotus astrolasius	0.1	30		
Ptilotus exaltatus	0.1	30		
Ptilotus fusiformis	0.1	30		
Salsola australis	0.1	30		
Santalum lanceolatum	0.1	150		
Senna notabilis	0.1	40		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	80		Ferruginous form.
Sporobolus australasicus	0.1	15		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	30		
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356) PN	0.1	15	KTF90-03	
Themeda triandra	25	50		
Trianthema pilosum	0.1	5		
Tribulopis angustifolia	0.1	5		
Tribulus hirsutus	0.1	5		
Trichodesma zeylanicum var. zeylanicum	0.1	50		
Trigastrotheca molluginea	0.1	15		
Triodia epactia	1	30		

Site	KTF91
Described by	BRM/RM Date 25/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 570622 mE, 7559177 mN
Habitat	Broad floodplain.
Soil	Dark reddish brown silty clay.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana* low open woodland over *Acacia bivenosa*, (*A. atkinsiana, A. ancistrocarpa*) tall open scrub over *Eremophila longifolia*, *Senna artemisioides* subsp. *oligophylla* scattered shrubs over *Triodia epactia* open hummock grassland and *Chrysopogon fallax, *Cenchrus setiger*, (**C. ciliaris*) open tussock grassland.
Veg Condition	Very Good to Good: **Cenchrus* spp. present.
Fire Age	Very long unburnt.
Notes	U1 ^*Corymbia hamersleyana*\^tree\6\r;M1+ ^*Acacia bivenosa,Acacia atkinsiana,Acacia ancistrocarpa*\^shrub\4\c;M2 *Eremophila longifolia,Senna artemisioides* subsp. *oligophylla*\shrub\3\bi;G1 ^*Triodia epactia*\^hummock grass\1\i;G2 *Chrysopogon fallax,Cenchrus setiger,Cenchrus ciliaris*\tussock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon fraseri subsp. *fraseri*	0.1	30	KTF91-08	
Abutilon otocarpum	0.1	25		
Acacia ancistrocarpa	3	240		
Acacia atkinsiana	3	350		
Acacia bivenosa	55	280		
Aristida contorta	0.1	25		
Arivela viscosa	0.1	30		
Bonamia erecta	0.1	40		
Capparis lasiantha	0.1	120		
Cenchrus ciliaris	1	40		N=100.
Cenchrus setiger	4	40		N=1000.
Chrysopogon fallax	7	90		
Corymbia hamersleyana	2.5	600		
Cucumis variabilis	0.1	70		
Digitaria brownii	0.1	30	KTF91-09	
Duperreya commixta	0.1	120		
Dysphania rhadinostachya	0.1	10	KTF91-03	Sterile.
Eragrostis cumingii	0.1	10		
Eremophila forrestii subsp. *forrestii*	0.1	110		
Eremophila longifolia	0.5	160		
Eulalia aurea	0.1	40		
Euphorbia biconvexa	0.1	30	KTF91-01	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Goodenia forrestii	0.1	20	KTF81-05=	
Goodenia microptera	0.1	5		
Gossypium australe	0.1	20		
Hakea lorea subsp. *lorea*	0.1	130		
Hibiscus sturtii var. *grandiflorus*	0.1	20	KTF91-06	
Notoleptopus decaisnei	0.1	15		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	3	KTF91-07	
Ptilotus calostachyus	0.1	30		
Ptilotus exaltatus	0.1	30		
Ptilotus obovatus var. *obovatus*	0.1	40		

Name	Cover (%)	Height (cm)	Specimen	Notes
Rhynchosia minima	0.1	30		
Senna artemisioides subsp. *oligophylla*	0.5	150	KTF91-02	
Senna notabilis	0.1	25		
Sida arsiniata	0.1	25	KTF91-04	
Sida fibulifera	0.1	15	KTF91-05	
Sida sp.	0.1	5	KTF91-10	Poor material; juvenile.
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	60		
Solanum diversiflorum	0.1	30		
Sporobolus australasicus	0.1	15		
Themeda triandra	0.1	90		
Trichodesma zeylanicum var. *zeylanicum*	0.1	50		
Triodia epactia	22	40		

Site	KTF92
Described by	PL/SC Date 25/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 571134 mE, 7545257 mN
Habitat	Stony rise.
Soil	Dark reddish brown clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *E. gamophylla* scattered low mallees over *Acacia atkinsiana, A. inaequilatera*, (*A. bivenosa*) tall open shrubland over *Triodia wiseana* open hummock
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\bi;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1 ^*Acacia atkinsiana*,^*Acacia inaequilatera,Acacia bivenosa*\^shrub\4\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen
Acacia atkinsiana	4	300	
Acacia bivenosa	1	200	
Acacia inaequilatera	3	300	
Aristida holathera var. *holathera*	0.1	15	
Codonocarpus cotinifolius	0.1	50	
Digitaria brownii	0.1	50	
Eriachne aristidea	0.1	10	
Eriachne pulchella	0.1	15	
Eucalyptus gamophylla	2	400	
Eucalyptus leucophloia subsp. *leucophloia*	1	400	
Fimbristylis simulans	0.1	15	
Hakea lorea subsp. *lorea*	0.1	100	
Lysiana casuarinae	0.1	100	
Ptilotus calostachyus	0.1	50	
Ptilotus rotundifolius	0.1	50	
Senna glutinosa subsp. *glutinosa*	0.1	150	
Senna glutinosa subsp. *glutinosa* x subsp. x *luerssenii*	0.1	210	
Senna glutinosa subsp. *pruinosa*	0.1	120	
Senna symonii	0.1	80	
Triodia wiseana	15	30	

Site	KTF93
Described by	BRM/RM Date 25/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 569467 mE, 7560321 mN
Habitat	Broad floodplain.
Soil	Dark reddish brown silty clay.
Rock Type	Ironstone.
Vegetation	*Eucalyptus victrix* scattered low trees over *Acacia bivenosa* tall open scrub over *Senna artemisioides* subsp. *oligophylla*, (*A. ancistrocarpa*) open shrubland over **Cenchrus ciliaris, *C. setiger* tussock grassland.
Veg Condition	Poor: high cover of **Cenchrus*; other weeds also present.
Fire Age	No sign of recent fire.
Notes	U1 ^*Eucalyptus vic*trix\^tree\6\bi;M1+ ^*Acacia bivenosa*\^shrub\4\c;M2 *Senna artemisioides* subsp. *oligophylla,Acacia ancistrocarpa*\shrub\3\r;G1 ^*Cenchrus ciliaris*,^*Cenchrus setiger*\^tussock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	30	KTF93-01	
Acacia ancistrocarpa	0.5	180		
Acacia bivenosa	40	320		
Acacia dictyophleba	0.1	180		
Cenchrus ciliaris	30	60		
Cenchrus setiger	30	60		N=150.
Corchorus tectus	0.1	40	KTF93-04A	Mixed collection; split from 93-04
Corchorus tridens	0.1	20	KTF93-14	
Crotalaria medicaginea var. *neglecta*	0.1	30		
Cucumis variabilis	0.1	120		
Cullen leucochaites	0.1	10	KTF93-05	
Cyperus vaginatus	0.1	40		
Enneapogon lindleyanus	0.1	50	KTF93-10	
Eragrostis falcata	0.1	30	KTF93-11	
Eriachne aristidea	0.1	20		
Eucalyptus victrix	1.5	600		
Euphorbia australis var. *subtomentosa*	0.1	10	KTF93-19	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Flaveria trinervia	0.1	30		N=2.
Goodenia forrestii	0.1	30		
Gossypium australe	0.1	90		
Hibiscus sturtii var. *grandiflorus*	0.1	30	KTF93-13	
Hibiscus sturtii var. *platychlamys*	0.1	30	KTF81-13=	
Indigofera linifolia	0.1	15	KTF93-15	
Malvastrum americanum	0.1	20		N=35.
Melaleuca glomerata	0.1	170	KTF93-17	
Melhania oblongifolia	0.1	40	KTF93-08	
Pluchea rubelliflora	0.1	5	KTF93-16	
Portulaca oleracea/intraterranea	0.1	10		
Pterocaulon sphacelatum	0.1	5	KTF93-09	
Ptilotus astrolasius	0.1	50		
Ptilotus clementii	0.1	30		
Ptilotus exaltatus	0.1	20		
Ptilotus obovatus var. *obovatus*	0.1	20		
Rhynchosia minima	0.1	50		

Name	Cover (%)	Height (cm)	Specimen	Notes
Salsola australis	0.1	20		
Senna artemisioides subsp. *oligophylla*	4	130	KTF93-07	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	70	KTF93-18	Closer to straight subsp. *helmsii*, but not quite right.
Senna notabilis	0.1	30		
Sida arsiniata	0.1	20	KTF91-04=	
Sida echinocarpa	0.1	50	KTF93-02	
Sida fibulifera	0.1	30	KTF93-06	
Sida fibulifera	0.1	40	KTF93-04B	'sens. lat.' Mixed collection; split from 93-04.
Sida fibulifera	0.1	5	KTF93-03	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	50		
Solanum diversiflorum	0.1	20		
Sporobolus australasicus	0.1	30		
Swainsona kingii	0.1	20	KTF93-12	Mauve flower. N=1
Tribulus hirsutus	0.1	10		
Triodia epactia	0.1	40		
Vachellia farnesiana	0.1	160		N=2.

Site	KTF94
Described by	PL/SC Date 25/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 569938 mE, 7559739 mN
Habitat	Low hill; crest and slopes.
Soil	Reddish brown clay loam.
Rock Type	Basalt, chert, mudstone.
Vegetation	*Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *A. spondylophylla*, (*Corchorus tectus*) low open shrubland over *Triodia wiseana* very open hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	Not a common unit; restricted geology (basal Wittenoom Formation?). Only NW and SE corners pegged. Similar to *Eremophila fraseri* sites from West Angelas. U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 *Acacia inaequilatera*\shrub\4\bi;M2 ^*Acacia spondylophylla,Corchorus tectus*\^shrub\1\r;G1+ ^*Triodia wiseana*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	110		
Acacia bivenosa	0.1	60		
Acacia dictyophleba	0.1	40		
Acacia inaequilatera	0.5	250		
Acacia spondylophylla	4	40		
Afrohybanthus aurantiacus	0.1	25		
Arivela viscosa	0.1	40		
Bonamia pilbarensis	0.1	25		
Corchorus tectus	0.25	60	KTF94-01	
Corymbia hamersleyana	0.25	450		
Dolichocarpa crouchiana	0.1	8		
Euphorbia biconvexa	0.1	30	KTF94-02	
Gossypium australe	0.1	120		Whim Creek form.
Grevillea pyramidalis subsp. *leucadendron*	0.1	70		
Hakea lorea subsp. *lorea*	0.1	50		
Heliotropium pachyphyllum	0.1	25		
Polymeria ambigua	0.1	30		
Ptilotus exaltatus	0.1	25		
Ptilotus rotundifolius	0.1	100		
Senna glutinosa subsp. *glutinosa*	0.1	70		
Tribulus hirsutus	0.1	25		
Triodia wiseana	9	40		

Site KTF95

Described by BRM/RM Date 25/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 569221 mE, 7560542 mN

Habitat Broad floodplain.

Soil Dark brown clay loam.

Vegetation *Corymbia hamersleyana*, (*Eucalyptus victrix*) scattered low trees over *Acacia bivenosa*, (*A. dictyophleba*) tall open shrubland over *Senna artemisioides* subsp. *oligophylla* (thinly sericeous form MET 15,035) low open shrubland over Eulalia aurea, (*Chrysopogon fallax, *Cenchrus ciliaris, *C. setiger*) closed tussock grassland with *Triodia epactia* scattered hummock grasses.

Veg Condition Very Good: scattered weeds.

Fire Age No sign of recent fire.

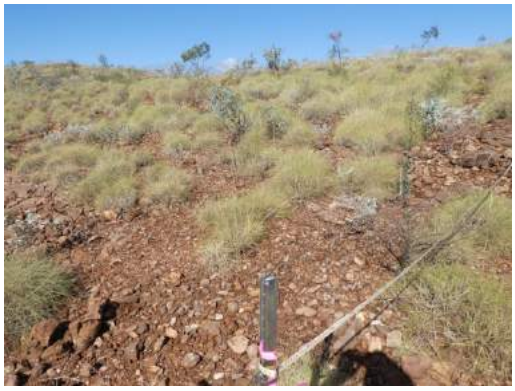
Notes U1 ^*Corymbia hamersleyana,Eucalyptus victrix*\^tree\6\bi;M1 ^*Acacia bivenosa,Acacia dictyophleba*\^shrub\4\r;M2 *Senna artemisioides* subsp. *oligophylla* (thinly sericeous form MET 15,035)\shrub\1\r;G1+ ^*Eulalia aurea, Chrysopogon fallax,Cenchrus ciliaris,Cenchrus setiger*\^tussock grass\1\d;G1 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	170		
Acacia bivenosa	9	280		
Acacia dictyophleba	1	250		
Acacia inaequilatera	0.1	30		
Arivela viscosa	0.1	30		
Cenchrus ciliaris	2	30		N=1000.
Cenchrus setiger	1	40		
Chrysopogon fallax	10	90		
Corchorus sp.	0.1	20	KTF95-09	Inadequate material.
Corchorus tridens	0.1	10	KTF95-03	
Corymbia hamersleyana	1	500		
Cynodon convergens	0.1	30		
Dysphania rhadinostachya	0.1	10	KTF91-03=	Sterile.
Enneapogon polyphyllus	0.1	30	KTF95-07	
Eragrostis cumingii	0.1	15		
Eucalyptus victrix	0.5	300		
Eulalia aurea	60	60		
Euphorbia biconvexa	0.1	30	KTF95-01	
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Flaveria trinervia	0.1	30	KTF95-04	N=5.
Goodenia forrestii	0.1	25	KTF81-05	
Gossypium australe	0.1	60		
Hakea lorea subsp. *lorea*	0.1	70		
Heliotropium cunninghamii	0.1	15	KTF95-05	
Indigofera linifolia	0.1	20	KTF93-15=	
Malvastrum americanum	0.1	5		N=80.
Notoleptopus decaisnei	0.1	10		
Paspalidium rarum	0.1	30	KTF95-08	
Pterocaulon sphacelatum	0.1	15	KTF93-09=	
Ptilotus astrolasius	0.1	40		
Ptilotus calostachyus	0.1	40		
Ptilotus exaltatus	0.1	30		
Rhynchosia minima	0.1	30		
Scaevola spinescens	0.1	30		

Name	Cover (%)	Height (cm)	Specimen	Notes
Senna artemisioides subsp. *oligophylla*	0.1	90	KTF95-12	
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	3	90	KTF95-02	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	30	KTF95-11	Closer to straight subsp. *helmsii*, but not quite right.
Seringia nephrosperma	0.1	90	KTF75-06=	
Sida fibulifera	0.1	20	KTF95-10	
Sporobolus australasicus	0.1	20		
Streptoglossa decurrens	0.1	20		
Themeda triandra	0.1	60		
Trichodesma zeylanicum var. *zeylanicum*	0.1	25		
Triodia epactia	1	60	KTF95-06	
Triodia wiseana	0.1	30		

Site	KTF96
Described by	PL/SC Date 25/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 570237 mE, 7559725 mN
Habitat	Low hill; crest and slopes.
Soil	Reddish brown clay loam.
Rock Type	Basalt, chert, mudstone.
Vegetation	*Corymbia hamersleyana* scattered low trees over *Acacia inaequilatera* scattered tall shrubs over *Indigofera rugosa, A. bivenosa* low open shrubland over *Triodia wiseana* open hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	Not a common unit; restricted geology (basal Wittenoom Formation?). Similar to *Erem. fraseri* sites from West Angelas. U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 *Acacia inaequilatera*\shrub\4\bi;M2 ^*Indigofera rugosa*,^*Acacia bivenosa*\^shrub\1\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	110		
Acacia bivenosa	2	60		
Acacia inaequilatera	2	250		
Acacia maitlandii	0.1	50		
Acacia spondylophylla	0.1	40		
Afrohybanthus aurantiacus	0.1	25		
Aristida holathera var. *holathera*	0.1	40		
Arivela viscosa	0.1	40		
Bonamia pilbarensis	0.1	25		
Corchorus tectus	0.25	60	KTF94-01=	
Corymbia hamersleyana	0.5	450		
Dolichocarpa crouchiana	0.1	8		
Dysphania rhadinostachya	0.1	15		Sterile.
Ehretia saligna var. saligna	0.1	70		
Enneapogon caerulescens	0.1	10		
Euphorbia biconvexa	0.1	30	KTF94-02=	
Goodenia triodiophila	0.1	40	KTF96-01	N=1.
Gossypium australe	0.1	50		
Gossypium robinsonii	0.1	80		
Grevillea pyramidalis subsp. *leucadendron*	0.75	70		
Hakea lorea subsp. *lorea*	0.1	50		
Heliotropium cunninghamii	0.1	40	KTF96-02	
Indigofera rugosa	3	60		
Iseilema membranaceum	0.1	25	KTF96-03	
Jasminum didymum subsp. *lineare*	0.1	70		
Notoleptopus decaisnei	0.1	20		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	10		
Polymeria ambigua	0.1	30		
Ptilotus exaltatus	0.1	60		
Ptilotus rotundifolius	0.1	100		
Senna glutinosa subsp. *glutinosa*	0.1	70		
Senna glutinosa subsp. x *luerssenii*	0.1	80		
Sporobolus australasicus	0.1	15		
Tribulus hirsutus	0.1	25		
Triodia wiseana	17	40		



Site KTF97

Described by BRM/RM Date 26/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 568862 mE, 7560983 mN

Habitat Broad floodplain.

Soil Dark brown clay loam.

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia bivenosa* shrubland over *Senna artemisioides* subsp. *oligophylla* scattered low shrubs over *Triodia epactia* hummock grassland with *Eulalia aurea*, (**Cenchrus ciliaris, *C. setiger*) very open tussock grassland.

Veg Condition Very Good: scattered weeds.

Fire Age No sign of recent fire.

Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia bivenosa*\^shrub\3\i;M2 *Senna artemisioides* subsp. *oligophylla*\shrub\2\bi;G1+ ^*Triodia epactia*\^hummock grass\1\c;G2 *Eulalia aurea,Cenchrus ciliaris,Cenchrus setiger*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	20	180		
Acacia inaequilatera	0.1	70		
Acacia sclerosperma subsp. *sclerosperma*	0.1	100	KTF97-07	
Acacia synchronicia	0.1	80		
Arivela viscosa	0.1	30		
Bothriochloa ewartiana	0.1	60	KTF97-03	
Cenchrus ciliaris	1	30		N=1000.
Cenchrus setiger	1	40		
Chrysopogon fallax	0.1	90		
Corchorus tectus	0.1	48	KTF93-04=	
Corymbia hamersleyana	0.5	500		
Cynodon convergens	0.1	30		
Dysphania rhadinostachya	0.1	5	KTF91-03=	Sterile.
Enneapogon polyphyllus	0.1	20	KTF95-07=	
Eulalia aurea	3	60		
Euphorbia biconvexa	0.1	30	KTF95-01=	
Euphorbia vaccaria var. *vaccaria*	0.1	10	KTF97-04	
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Gossypium australe	0.1	60		
Hakea lorea subsp. *lorea*	0.1	70		
Heliotropium cunninghamii	0.1	15	KTF95-05=	
Hibiscus sturtii var. *grandiflorus*	0.1	30	KTF97-02	
Indigofera linifolia	0.1	20	KTF93-15=	
Notoleptopus decaisnei	0.1	10		
Portulaca oleracea/intraterranea	0.1	15		
Ptilotus astrolasius	0.1	40		
Ptilotus calostachyus	0.1	40		
Ptilotus exaltatus	0.1	30		
Rhynchosia minima	0.1	30		
Senna artemisioides subsp. *oligophylla* (thinly sericeous form MET 15,035)	1.5	90	KTF97-01	
Sida arsiniata	0.1	5	KTF97-05	
Sporobolus australasicus	0.1	20		
Streptoglossa sp.	0.1	5		Grazed; poor condition.

Name	Cover (%)	Height (cm)	Specimen	Notes
Trichodesma zeylanicum var. *zeylanicum*	0.1	25		
Triodia epactia	35	60		

Site	KTF98
Described by	PL/SC Date 25/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 567459 mE, 7562236 mN
Habitat	Floodplain.
Soil	Dark reddish brown silty clay loam.
Rock Type	Ironstone.
Vegetation	*Acacia citrinoviridis*, (*Corymbia hamersleyana*) low woodland over *A. bivenosa* scattered shrubs over *Senna artemisioides* subsp. *oligophylla* scattered low shrubs over *Triodia epactia* very open hummock grassland and **Cenchrus ciliaris*, (**C. setiger*) very open tussock grassland.
Veg Condition	Good: **Cenchrus* spp. present.
Fire Age	No sign of recent fire.
Notes	U1+ ^*Acacia citrinoviridis,Corymbia hamersleyana*\^tree\6\i;M1 ^*Acacia bivenosa*\^shrub\3\bi;M2 *Senna artemisioides* subsp. *oligophylla*\shrub\1\bi;G1 ^*Triodia epactia*\^hummock grass\1\r;G2 *Cenchrus ciliaris,Cenchrus setiger*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	5		
Acacia bivenosa	2	150		
Acacia citrinoviridis	15	220		
Acacia inaequilatera	0.1	250		
Acacia pyrifolia var. *pyrifolia*	0.1	120		
Acacia synchronicia	0.1	60		
Acacia trachycarpa	0.1	110		
Alternanthera nana	0.1	15		
Aristida contorta	0.1	15		
Arivela viscosa	0.1	20		
Boerhavia coccinea	0.1	5		
Boerhavia repleta	0.1	5		
Cenchrus ciliaris	0.1	20		Long bristled form.
Cenchrus ciliaris	3	50		
Cenchrus setiger	0.5	50		
Chrysopogon fallax	0.1	60		
Corymbia hamersleyana	1	500		
Cynodon convergens	0.1	30		
Dichanthium sericeum subsp. *humilius*	0.1	5		
Dysphania kalpari	0.1	10		
Dysphania rhadinostachya	0.1	15		Sterile.
Enneapogon caerulescens	0.1	15		
Enneapogon polyphyllus	0.1	30		
Eulalia aurea	0.1	50		
Euphorbia biconvexa	0.1	20	KTF98-02	
Euphorbia boophthona	0.1	15		
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Gomphrena kanisii	0.1	15		
Goodenia forrestii	0.1	5		
Goodenia nuda	0.1	20		N=1.
Gossypium australe	0.1	20		
Hakea lorea subsp. *lorea*	0.1	60		
Paspalidium clementii	0.1	25		
Perotis rara	0.1	5		
Phyllanthus erwinii	0.1	5		
Polycarpaea corymbosa var.	0.1	5		

Name	Cover (%)	Height (cm)	Specimen	Notes
corymbosa				
Portulaca oleracea	0.1	5	KTF98-01	
Ptilotus exaltatus	0.1	15		
Ptilotus obovatus var. *obovatus*	0.1	20		
Rhynchosia minima	0.1	5		
Senna artemisioides subsp. *oligophylla*	0.5	100		
Sida arsiniata	0.1	15		
Sida echinocarpa	0.1	20		
Sida sp. L (A.M. Ashby 4202) PN	0.1	10		
Sporobolus australasicus	0.1	15		
Themeda triandra	0.1	50		
Tribulus macrocarpus	0.1	5		
Triodia epactia	9	40		

Site	KTF99
Described by	BRM/RM Date 26/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 573255 mE, 7554567 mN
Habitat	Elevated floodplain.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* tall open shrubland over *Triodia wiseana* open hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^*Corymbia hamersleyana*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\i;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	70		
Acacia dictyophleba	0.1	30		
Acacia inaequilatera	2.5	280		
Aristida holathera var. *holathera*	0.1	20		
Bonamia pilbarensis	0.1	10	KTF75-07=	
Corchorus sp.	0.1	30	KTF95-09=	Inadequate material.
Corymbia hamersleyana	3	700		
Eriachne pulchella	0.1	10		
Euphorbia tannensis subsp. *eremophila*	0.1	15	KTF99-02	
Hakea lorea subsp. *lorea*	0.1	300	KTF99-03	
Heliotropium inexplicitum	0.1	10	KTF99-01	
Hibiscus sturtii var. *platychlamys*	0.1	15	KTF99-06	
Paspalidium clementii	0.1	20	KTF99-04	
Ptilotus exaltatus	0.1	15		
Senna glaucifolia	0.1	70	KTF81-01=	
Senna glutinosa subsp. *glutinosa*	0.1	140		
Sida arsiniata	0.1	40	KTF91-04=	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	20		
Tribulus hirsutus	0.1	20		
Triodia wiseana	30	40		

Site	KTF100
Described by	PL/SC Date 25/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 567883 mE, 7562313 mN
Habitat	Flat semi-floodplain.
Soil	Dark reddish brown clay loam.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana* low open woodland over *Acacia inaequilatera* tall open shrubland over *A. ancistrocarpa*, *A. trachycarpa* scattered shrubs over *Triodia epactia* open hummock grassland and *Chrysopogon fallax, Eulalia aurea, *Cenchrus ciliaris*, **C. setiger* very open tussock grassland.
Veg Condition	Very Good: scattered weeds; old track.
Fire Age	No sign of recent fire.
Notes	Small old track through NW corner; vegetation unchanged. Only 2 pegs, at NW and SE corners. U1 ^*Corymbia hamersleyana*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\r;M2 *Acacia ancistrocarpa,Acacia trachycarpa*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\i;G2 *Chrysopogon fallax,Eulalia aurea,Cenchrus ciliaris,Cenchrus setiger*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	10		
Acacia ancistrocarpa	1	120		
Acacia atkinsiana	0.1	150		
Acacia bivenosa	0.1	180		
Acacia dictyophleba	0.1	50	KTF100-02	
Acacia elachantha	0.1	200		
Acacia inaequilatera	4	350		
Acacia pyrifolia var. *pyrifolia*	0.1	60		
Acacia synchronicia	0.1	30		
Acacia tenuissima	0.1	80		
Acacia trachycarpa	1	110		
Aristida contorta	0.1	10		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	30		
Boerhavia coccinea	0.1	5		
Bonamia erecta	0.1	20		
Bulbostylis barbata	0.1	10		
Cenchrus ciliaris	0.5	50		
Cenchrus setiger	0.5	50		
Chrysopogon fallax	1	80		
Corchorus lasiocarpus subsp. *parvus*	0.1	5		
Corymbia hamersleyana	3	800		
Cullen pogonocarpum	0.1	5	KTF100-01	
Cymbopogon obtectus	0.1	60		
Dysphania kalpari	0.1	5		
Dysphania rhadinostachya	0.1	15		Sterile.
Enneapogon polyphyllus	0.1	30		
Eremophila forrestii subsp. *forrestii*	0.1	50		
Eriachne pulchella	0.1	10		
Eulalia aurea	0.5	50		
Euphorbia australis var. *subtomentosa*	0.1	8		
Euphorbia boophthona	0.1	20		
Euphorbia trigonosperma	0.1	15		
Evolvulus alsinoides var. *villosicalyx*	0.1	5		
Goodenia microptera	0.1	5		

Name	Cover (%)	Height (cm)	Specimen	Notes
Goodenia nuda	0.1	30		N=35.
Gossypium australe	0.1	20		
Hakea lorea subsp. *lorea*	0.1	150		
Hibiscus sturtii var. *grandiflorus*	0.1	5		
Paraneurachne muelleri	0.1	10		
Paspalidium clementii	0.1	10		
Portulaca oleracea	0.1	5	KTF98-01=	
Ptilotus astrolasius	0.1	10		
Ptilotus exaltatus	0.1	5		
Ptilotus obovatus var. *obovatus*	0.1	30		
Rhynchosia minima	0.1	20		
Senna artemisioides subsp. *oligophylla*	0.1	80		
Sida arsiniata	0.1	10		
Sida echinocarpa	0.1	30		
Sporobolus australasicus	0.1	10		
Tribulus hirsutus	0.1	5		
Tribulus macrocarpus	0.1	10		
Triodia epactia	25	40		
Yakirra australiensis var. *australiensis*	0.1	5		

Site	KTF101
Described by	BRM/RM Date 26/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 574209 mE, 7551160 mN
Habitat	Broad creekwash / flowline.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana* scattered low trees over *Ptilotus astrolasius*, (*Corchorus parviflorus, Indigofera monophylla*) low open shrubland over *Triodia epactia*, *T. wiseana* very open hummock grassland with *Eriachne tenuiculmis*, (*E. mucronata*, **Cenchrus setiger*) very open tussock grassland.
Veg Condition	Excellent; only scattered weeds.
Fire Age	Burnt 3-5 years ago.
Notes	U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Ptilotus astrolasius,Corchorus* parviflorus, Indigofera *monophylla*\^shrub\1\r;G1+ ^*Eriachne tenuiculmis,Eriachne mucronata,Cenchrus setiger*\^tussock grass\1\r;G2 *Triodia epactia,Triodia wiseana*\hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia inaequilatera	0.1	160		
Acacia pyrifolia var. *pyrifolia*	0.1	60		
Afrohybanthus aurantiacus	0.1	30		
Aristida holathera var. *holathera*	0.5	30		
Arivela viscosa	0.1	20		
Boerhavia coccinea	0.1	30	KTF101-08	
Bonamia erecta	0.1	30		
Bonamia pilbarensis	0.1	10	KTF101-03	
Bulbostylis barbata	0.1	10		
Cenchrus ciliaris	0.1	30		N=5.
Cenchrus setiger	1	40		N=300.
Clerodendrum floribundum var. *angustifolium*	0.1	30	KTF101-05	
Corchorus parviflorus	1	25	KTF101-04	
Corchorus sp.	0.1	35	KTF101-06B	Inadequate material.
Corymbia hamersleyana	1.5	600		
Cucumis variabilis	0.1	70		
Cynodon convergens	0.1	25		
Dolichocarpa crouchiana	0.1	5	KTF101-14	
Dysphania rhadinostachya	0.1	20		Sterile.
Enneapogon caerulescens	0.1	30		
Enneapogon lindleyanus	0.1	30		
Eriachne aristidea	0.1	20		
Eriachne mucronata	1.5	40	KTF101-01	Typical form.
Eriachne pulchella	0.1	5		
Eriachne tenuiculmis	4	40	KTF101-02	
Euphorbia australis var. *subtomentosa*	0.1	20	KTF101-06	
Euphorbia biconvexa	0.1	20	KTF101-11	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Goodenia forrestii	0.1	30	KTF101-13	
Goodenia microptera	0.1	25		
Goodenia nuda	0.1	25	KTF101-09	N=3.
Goodenia triodiophila	0.1	30		
Gossypium australe	0.1	50		
Grevillea pyramidalis subsp. *leucadendron*	0.1	60		

Name	Cover (%)	Height (cm)	Specimen	Notes
Grevillea wickhamii	0.1	20		Juvenile.
Hakea lorea subsp. *lorea*	0.1	110		
Heliotropium cunninghamii	0.1	20	KTF101-07	
Heliotropium pachyphyllum	0.1	30	KTF101-12	
Indigofera colutea	0.1	25		
Indigofera monophylla	0.5	30		
Jasminum didymum subsp. *lineare*	0.1	90		
Portulaca oleracea/intraterranea	0.1	5		
Ptilotus astrolasius	3	30		
Ptilotus calostachyus	0.1	70		
Ptilotus exaltatus	0.1	5		
Ptilotus fusiformis	0.1	30		
Ptilotus obovatus var. *obovatus*	0.1	25		
Schizachyrium fragile	0.1	5		
Sida arsiniata	0.1	40	KTF101-06A	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	70		
Swainsona formosa	0.1	60		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	40		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	20	KTF101-10	
Themeda triandra	0.1	60		
Tribulus hirsutus	0.1	12		
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Trigastrotheca molluginea	0.1	25		
Triodia epactia	2	30		
Triodia wiseana	1	40		

Site KTF102
Described by PL/SC Date 26/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 566176 mE, 7563811mN
Habitat Small calcrete rises.
Soil Dark reddish brown clay loam.
Rock Type Calcrete, ironstone.
Vegetation *Corymbia hamersleyana, Hakea lorea* subsp. *lorea* scattered low trees over *Acacia bivenosa* tall open shrubland over *Triodia wiseana* open hummock grassland.
Veg Condition Very Good: signs of cattle; very occasional *Cenchrus.
Fire Age No sign of recent fire.
Notes U1 ^*Corymbia hamersleyana*,^*Hakea lorea* subsp. *lorea*\^tree\6\bi;M1 ^*Acacia bivenosa*\^shrub\4\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	4	210		
Acacia inaequilatera	0.1	150		
Acacia pyrifolia var. *pyrifolia*	0.1	50		
Acacia trachycarpa	0.1	120		
Aristida contorta	0.1	10		
Aristida holathera var. *holathera*	0.1	20		
Arivela viscosa	0.1	15		
Bonamia pilbarensis	0.1	15		
Cenchrus ciliaris	0.1	30		N=5.
Chrysopogon fallax	0.1	60		
Corchorus sp.	0.1	1		Seedling; not collected.
Corymbia hamersleyana	1	400		
Duperreya commixta	0.1	50		
Enneapogon caerulescens	0.1	10		
Eriachne aristidea	0.1	5		
Eriachne pulchella	0.1	10		
Euphorbia australis var. *subtomentosa*	0.1	5		
Euphorbia biconvexa	0.1	20		
Evolvulus alsinoides var. *villosicalyx*	0.1	10		
Goodenia forrestii	0.1	25		
Gossypium australe	0.1	50		
Grevillea pyramidalis subsp. *leucadendron*	0.1	180		
Hakea lorea subsp. *lorea*	1	500		
Notoleptopus decaisnei	0.1	15		
Portulaca oleracea/intraterranea	0.1	5		
Ptilotus astrolasius	0.1	40		
Ptilotus clementii	0.1	20		
Ptilotus exaltatus	0.1	10		
Scaevola spinescens	0.1	50		Broad leaf form.
Senna artemisioides subsp. *oligophylla*	0.1	40		
Senna glutinosa subsp. *glutinosa*	0.1	30		
Sida echinocarpa	0.1	5		
Solanum diversiflorum	0.1	5		
Sporobolus australasicus	0.1	5		
Tephrosia supina	0.1	20		
Themeda triandra	0.1	50		
Tribulus macrocarpus	0.1	5		
Trichodesma zeylanicum var. *zeylanicum*	0.1	10		

Name	Cover (%)	Height (cm)	Specimen	Notes
Triodia epactia	0.1	20		
Triodia wiseana	20	40		

Site	KTF103
Described by	BRM/RM Date 27/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 571075 mE, 7546370 mN
Habitat	Crest of a low hill.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Corymbia deserticola* subsp. *deserticola*, *Eucalyptus leucophloia* subsp. *leucophloia*, (*Hakea lorea* subsp. *lorea*) low open woodland over *Senna glutinosa* subsp. *glutinosa* scattered shrubs over *Triodia wiseana* open hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^*Corymbia deserticola* subsp. *deserticola*,^*Eucalyptus leucophloia* subsp. *leucophloia,Hakea lorea* subsp. *lorea* \^tree\6\r;M1 ^*Senna glutinosa* subsp. *glutinosa* \^shrub\3\bi;G1+ ^*Triodia wiseana* \^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	40		
Acacia tenuissima	0.1	50	KTF75-08=	
Amphipogon sericeus	0.1	40	KTF75-04=	
Aristida pruinosa	0.1	60	KTF103-01	
Bulbostylis barbata	0.1	10		
Corymbia deserticola subsp. *deserticola*	2.5	550		
Eriachne mucronata	0.1	30		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	50		
Eucalyptus leucophloia subsp. *leucophloia*	2	400		
Fimbristylis simulans	0.1	15	KTF75-01=	
Hakea chordophylla	0.1	160		
Hakea lorea subsp. *lorea*	0.5	210		
Indigofera monophylla	0.1	40		
Mirbelia viminalis	0.1	90	KTF89-01=	
Ptilotus calostachyus	0.1	70		
Ptilotus rotundifolius	0.1	70		
Schizachyrium fragile	0.1	5		
Senna glutinosa subsp. *glutinosa*	1	160		
Senna symonii	0.1	90	KTF103-02	
Triodia wiseana	25	30		

Site	KTF104
Described by	PL/SC Date 26/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 572690 mE, 7557697 mN
Habitat	Major drainage.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus victrix, Atalaya hemiglauca* low open woodland over *Acacia pyrifolia* var. *pyrifolia* scattered shrubs over *Corchorus crozophorifolius*, (*Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186), *Indigofera monophylla*) low open shrubland over *Triodia epactia*, (*T. wiseana*) very open hummock grassland with **Cenchrus ciliaris*, (**C. setiger, Cymbopogon ambiguus*) very open tussock grassland.
Veg Condition	Very Good: **Cenchrus* spp. present.
Fire Age	No sign of recent fire.
Notes	NE and SW corners not pegged. Ev (Ec) in broader drainage; not GDV, rather Potential GDV. U1+ ^*Eucalyptus victrix*,^*Atalaya hemiglauca*\^tree\6\r;M1 *Acacia pyrifolia* var. *pyrifolia*\shrub\3\bi;M2 ^*Corchorus crozophorifolius,Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186),*Indigofera monophylla*\^shrub\2\r;G1 ^*Triodia epactia,Triodia wiseana*\^hummock grass\1\r;G2 *Cenchrus ciliaris,Cenchrus setiger,Cymbopogon ambiguus*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	0.1	200		
Acacia pyrifolia var. *pyrifolia*	0.5	140		
Acacia tumida var. *pilbarensis*	0.1	240		
Adriana tomentosa var. *tomentosa*	0.1	140		
Afrohybanthus aurantiacus	0.1	40		
Aristida contorta	0.1	30		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	50		
Atalaya hemiglauca	2	400		
Cenchrus ciliaris	2	40		
Cenchrus setiger	1	50		
Corchorus crozophorifolius	3	90		
Cucumis variabilis	0.1	30		
Cymbopogon ambiguus	0.5	140	KTF104-01	Procerus form.
Cynodon dactylon	0.1	25		N=1.
Enneapogon lindleyanus	0.1	50		
Eriachne pulchella	0.1	20		
Eriachne tenuiculmis	0.1	50		
Eucalyptus victrix	3	900		
Eulalia aurea	0.1	70		
Euphorbia australis var. *subtomentosa*	0.1	8		
Euphorbia trigonosperma	0.1	40		
Heliotropium cunninghamii	0.1	30	KTF104-02	
Indigofera monophylla	0.25	40		
Notoleptopus decaisnei	0.1	30		
Phyllanthus maderaspatensis	0.1	40		
Polycarpaea corymbosa var. *corymbosa*	0.1	25		
Polymeria ambigua	0.1	30		
Ptilotus exaltatus	0.1	60		
Rhynchosia minima	0.1	60		
Sesbania cannabina	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Sporobolus australasicus	0.1	30		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.25	60		
Triodia epactia	3	80		
Triodia wiseana	0.5	90		

Site	KTF105
Described by	BRM/RM Date 27/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 571381 mE, 7546837 mN
Habitat	Broad drainage with narrow channels.
Soil	Dark brown silty clay.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana* scattered low trees over *Acacia pyrifolia* var. *pyrifolia*, (*Grevillea pyramidalis* subsp. *leucadendron*, *A. tumida* var. *pilbarensis*) tall open shrubland over *Corchorus crozophorifolius* scattered shrubs over *Indigofera monophylla* scattered low shrubs over *Triodia epactia*, (*T. wiseana*) hummock grassland and *Eriachne tenuiculmis*, **Cenchrus ciliaris*, (*Themeda triandra*, **C. setiger*) very open tussock grassland.
Veg Condition	Very Good: some weeds present, mainly **Cenchrus* spp.
Fire Age	No sign of recent fire.
Notes	U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia pyrifolia* var. *pyrifolia,Grevillea pyramidalis* subsp. *leucadendron,Acacia tumida* var. *pilbarensis*\^shrub\4\r;M2 *Corchorus crozophorifolius*\shrub\3\bi;M3 *Indigofera monophylla*\shrub\1\bi;G1+ ^*Triodia epactia*,*Triodia wiseana*\^hummock grass\1\c;G2 *Eriachne tenuiculmis,Cenchrus ciliaris,Themeda triandra,Cenchrus setiger*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	0.1	100	KTF105-05	
Acacia ptychophylla	0.1	70		
Acacia pyrifolia var. *pyrifolia*	5	350		
Acacia tumida var. *pilbarensis*	1	300		
Afrohybanthus aurantiacus	0.1	25		
Alectryon oleifolius subsp. *oleifolius*	0.1	280	KTF105-12	N=2.
Alternanthera nana	0.1	15	KTF105-15	
Amaranthus cuspidifolius	0.1	30	KTF105-07	
Arivela viscosa	0.1	30		
Atalaya hemiglauca	0.1	330		
Boerhavia coccinea	0.1	30	KTF105-06	
Bonamia pilbarensis	0.1	50	KTF105-10	
Cenchrus ciliaris	3	40		N=1000.
Cenchrus setiger	0.5	40		N=200.
Corchorus crozophorifolius	1	150	KTF105-03	
Corchorus parviflorus	0.1	40	KTF105-08	
Corymbia hamersleyana	3	600		
Crotalaria medicaginea var. *neglecta*	0.1	25		
Cucumis variabilis	0.1	175		
Cymbopogon ambiguus	0.1	120		
Duperreya commixta	0.1	70		
Dysphania rhadinostachya	0.1	5	KTF83-02=	Sterile.
Enneapogon lindleyanus	0.1	20	KTF93-10=	
Eriachne tenuiculmis	4	60		
Euphorbia biconvexa	0.1	50	KTF105-02	
Euphorbia tannensis subsp. eremophila	0.1	40	KTF105-01	
Evolvulus alsinoides var. *decumbens*	0.1	20	KTF105-16	
Flaveria trinervia	0.1	10		N=2.
Goodenia forrestii	0.1	30	KTF81-05=	
Gossypium australe	0.1	80	KTF105-09	Whim Creek form.

Name	Cover (%)	Height (cm)	Specimen	Notes
Gossypium robinsonii	0.1	280		
Grevillea pyramidalis subsp. *leucadendron*	2	270		
Grevillea wickhamii subsp. *hispidula*	0.1	160		
Hibiscus leptocladus	0.1	40	KTF105-11	
Indigofera monophylla	0.5	40		
Jasminum didymum subsp. *lineare*	0.1	120		
Malvastrum americanum	0.1	5		N=1.
Melhania oblongifolia	0.1	35		
Notoleptopus decaisnei	0.1	20		
Paspalidium clementii	0.1	25	KTF105-04	
Phyllanthus maderaspatensis	0.1	50		
Ptilotus astrolasius	0.1	50		
Ptilotus exaltatus	0.1	20		
Ptilotus fusiformis	0.1	40		
Ptilotus obovatus var. *obovatus*	0.1	40		
Rhynchosia minima	0.1	20		
Santalum lanceolatum	0.1	170		
Schizachyrium fragile	0.1	5		
Senna artemisioides subsp. *oligophylla*	0.1	80	KTF95-12=	
Senna glutinosa subsp. *glutinosa*	0.1	130	KTF105-13	
Sida rohlenae subsp. *rohlenae*	0.1	30	KTF105-14	
Swainsona formosa	0.1	30		
Tephrosia rosea var. *Fortescue creeks (M.I.H. Brooker 2186)*	0.1	25		
Themeda triandra	1.5	70		
Trachymene oleracea subsp. *oleracea*	0.1	70		
Tribulus hirsutus	0.1	25		
Tribulus platypterus	0.1	50		
Trichodesma zeylanicum var. *zeylanicum*	0.1	40		
Triodia epactia	40	30		
Triodia wiseana	1	50		
Waltheria indica	0.1	70		
Waltheria virgata	0.1	70	KTF105-17	

Site	KTF106
Described by	PL/SC Date 26/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 572265 mE, 7547907 mN
Habitat	Ridge; slopes and crest of footslope.
Soil	Dark reddish brown silty clay loam.
Rock Type	Ironstone.
Vegetation	*Corymbia deserticola* subsp. *deserticola*, (*C. hamersleyana*, *Eucalyptus leucophloia* subsp. *leucophloia*) low open woodland over *Triodia wiseana* open hummock grassland.
Veg Condition	Excellent.
Fire Age	Very long unburnt.
Notes	U1 ^*Corymbia deserticola* subsp. *deserticola, Corymbia hamersleyana,Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia elachantha	0.1	60		
Acacia ptychophylla	0.1	50		
Acacia tenuissima	0.1	90		
Corymbia deserticola subsp. *deserticola*	4	600		
Corymbia hamersleyana	1	500		
Eriachne ciliata	0.1	10		
Eriachne mucronata	0.1	40		Arid form.
Eriachne pulchella	0.1	20		
Eucalyptus leucophloia subsp. *leucophloia*	0.5	600		
Fimbristylis dichotoma	0.1	15		
Gompholobium oreophilum	0.1	60		Dead.
Hakea chordophylla	0.1	150		
Ptilotus calostachyus	0.1	40		
Schizachyrium fragile	0.1	15		
Senna glutinosa subsp. *glutinosa*	0.1	100		
Triodia wiseana	22	40		

Site	KTF107
Described by	BRM/RM Date 27/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 571405 mE, 7547202 mN
Habitat	Footslope of major range, gently sloping to S.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia deserticola* subsp. *deserticola*) scattered low trees over *Acacia ptychophylla* low open shrubland over *Triodia wiseana* hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^*Eucalyptus leucophloia* subsp. *leucophloia,Corymbia deserticola* subsp. *deserticola*\^tree\6\bi;M1 ^*Acacia ptychophylla*\^shrub\1\r;G1+ ^*Triodia wiseana*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen
Acacia adoxa var. *adoxa*	0.1	30	
Acacia bivenosa	0.1	160	
Acacia ptychophylla	4	70	
Capparis spinosa subsp. *nummularia*	0.1	160	
Codonocarpus cotinifolius	0.1	80	
Corymbia deserticola subsp. *deserticola*	0.5	500	
Eucalyptus gamophylla	0.1	70	
Eucalyptus leucophloia subsp. *leucophloia*	1.5	600	
Hakea chordophylla	0.1	50	
Ptilotus calostachyus	0.1	2	
Senna glutinosa subsp. *glutinosa*	0.1	70	
Senna glutinosa subsp. *x luerssenii*	0.1	160	
Triodia wiseana	35	40	

Site KTF108
Described by PL/SC Date 27/5/2020
Type Quadrat 50 x 50 m
Central Coord 50 572612 mE, 7557040 mN
Habitat Floodplain.
Soil Reddish brown silty clay loam.
Rock Type Calcrete, ironstone.
Vegetation *Eucalyptus xerothermica* low open woodland over *Acacia bivenosa* tall open shrubland over *Triodia angusta*, (*T. wiseana*) open hummock grassland with **Cenchrus setiger*, (*Chrysopogon fallax*) very open tussock grassland.
Veg Condition Very Good: **Cenchrus setiger* present.
Fire Age No sign of recent fire.
Notes U1 ^*Eucalyptus xerothermica*\^tree\6\r;M1 ^*Acacia bivenosa*\^shrub\4\r;G1+ ^*Triodia angusta,Triodia wiseana*\^hummock grass\1\i;G2 *Cenchrus setiger,Chrysopogon fallax*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	3	150		
Atalaya hemiglauca	0.1	300		
Cassytha capillaris	0.1	40		
Cenchrus setiger	2	60		
Chrysopogon fallax	0.5	100		
Codonocarpus cotinifolius	0.1	500		
Eragrostis desertorum	0.1	40		
Eucalyptus xerothermica	4	500		
Eulalia aurea	0.1	60		
Euphorbia vaccaria var. vaccaria	0.1	2	KTF106-01	Formal ID by M. Hislop (WAH); Intermediate morphology.
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Hakea lorea subsp. lorea	0.1	300		
Jasminum didymum subsp. *lineare*	0.1	80		
Melhania oblongifolia	0.1	40		
Rhynchosia minima	0.1	50		
Senna artemisioides subsp. *oligophylla*	0.1	50		
Senna glutinosa subsp. glutinosa x	0.1	50	REL20-02=	Hybrid of unknown origin.
Solanum diversiflorum	0.1	8		
Sporobolus australasicus	0.1	10		
Themeda triandra	0.1	80		
Tribulus macrocarpus	0.1	25		
Tribulus terrestris	0.1	20		N=1.
Triodia angusta	16	60		
Triodia wiseana	6	60		

Site	KTF109
Described by	BRM/RM Date 27/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 575127mE, 7553622 mN
Habitat	Floodplain.
Soil	Dark brown silty loam.
Rock Type	Ironstone.
Vegetation	*Hakea lorea* subsp. *lorea* scattered low trees over *Grevillea pyramidalis* subsp. *leucadendron* scattered tall shrubs over *Acacia pyrifolia* var. *pyrifolia*, (*Corchorus parviflorus*, *A. tumida* var. *pilbarensis*, Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)) open shrubland over *Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186), (*Indigofera monophylla*, *Corchorus crozophorifolius*) low open shrubland over *Eriachne tenuiculmis*, (**Cenchrus setiger*, **C ciliaris*) tussock grassland.
Veg Condition	Good: *Cenchrus spp. present; signs of cattle.
Fire Age	No sign of recent fire.
Notes	U1 ^*Hakea lorea* subsp. lorea\^tree\6\bi;M1 *Grevillea pyramidalis* subsp. *leucadendron*\shrub\4\bi;M2+ ^*Acacia pyrifolia* var. *pyrifolia,Corchorus parviflorus,Acacia tumida* var. *pilbarensis,Abutilon* sp. Dioicum (A.A. Mitchell PRP 1618)\^shrub\3\r;M3 *Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186),*Indigofera monophylla,Corchorus crozophorifolius*\shrub\2\r;G1^*Eriachne tenuiculmis,Cenchrus setiger,Cenchrus ciliaris*\^tussock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	0.5	180	KTF109-04	
Acacia pyrifolia var. *pyrifolia*	3	190		
Acacia tumida var. *pilbarensis*	0.5	190		
Afrohybanthus aurantiacus	0.1	20		
Aristida holathera var. *holathera*	0.1	35		
Arivela viscosa	0.1	60		
Atalaya hemiglauca	0.1	300		
Bonamia erecta	0.1	30		
Bonamia pilbarensis	0.1	30	KTF109-2,3	
Cenchrus ciliaris	1.5	30		
Cenchrus setiger	3	40		
Corchorus crozophorifolius	0.25	90	KTF105-03=	
Corchorus parviflorus	1	120	KTF105-08=	
Enneapogon lindleyanus	0.1	30	KTF109-01	
Eriachne tenuiculmis	35	60		
Euphorbia australis var. *subtomentosa*	0.1	20	KTF109-07	
Gomphrena cunninghamii	0.1	20		
Gossypium australe	0.1	80		
Grevillea pyramidalis subsp. *leucadendron*	2	350		
Hakea lorea subsp. *lorea*	1	400		
Hibiscus sturtii var. *platychlamys*	0.1	40	KTF81-13=	
Indigofera monophylla	1	50		
Jasminum didymum subsp. *lineare*	0.1	300		
Notoleptopus decaisnei	0.1	20		
Pentalepis trichodesmoides subsp. *trichodesmoides*	0.1	90	KTF109-05	N=5.
Phyllanthus maderaspatensis	0.1	40		
Polycarpaea longiflora	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus astrolasius	0.1	50		
Ptilotus exaltatus	0.1	5		
Ptilotus fusiformis	0.1	40		
Senna artemisioides subsp. *oligophylla*	0.1	90	KTF109-06	
Senna glutinosa subsp. *glutinosa*	0.1	120	KTF105-13=	
Sporobolus australasicus	0.1	30		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	4	60		
Themeda triandra	0.1	70		
Trigastrotheca molluginea	0.1	20		

Site KTF110

Described by PL/SC Date 27/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 573104 mE, 7554755 mN

Habitat Wide drainage; river.

Soil Dark reddish brown sandy to clay loam.

Rock Type Ironstone.

Vegetation *Eucalyptus camaldulensis* subsp. *refulgens, Melaleuca argentea* open forest over *Abutilon* sp. Dioicum (A.A. Mitchell PRP 1618) scattered shrubs over *Indigofera monophylla, Corchorus crozophorifolius*, (*Acacia pyrifolia* var. *pyrifolia, Gossypium robinsonii*, *C. parviflorus*) low open shrubland over **Cenchrus ciliaris*, (**C. setiger*) very open tussock grassland with *Cyperus vaginatus* scattered sedges.

Veg Condition Good: weeds present, mainly **Cenchrus* spp.

Fire Age Burnt 3-5 years ago.

Notes E and W corners not pegged.

U1+ ^*Eucalyptus camaldulensis* subsp. *refulgens*,^*Melaleuca argentea*\^tree\7\c;M1 *Abutilon* sp. Dioicum (A.A. Mitchell PRP 1618)\shrub\3\bi;M2 ^*Indigofera monophylla*,^*Corchorus crozophorifolius,Acacia pyrifolia* var. *pyrifolia,Gossypium robinsonii,Corchorus parviflorus*\^shrub\2\r;G1 ^*Cenchrus ciliaris,Cenchrus setiger*\^tussock grass\1\r;G2 *Cyperus vaginatus*\sedge\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	50		Form 4.
Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	0.5	180		
Acacia bivenosa	0.1	50		
Acacia pyrifolia var. *pyrifolia*	1	50		
Afrohybanthus aurantiacus	0.1	20		
Alternanthera nana	0.1	10		
Amaranthus undulatus	0.1	20		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	30		
Atalaya hemiglauca	0.1	180		
Boerhavia coccinea	0.1	10		
Bonamia pilbarensis	0.1	10		
Capparis spinosa subsp. *nummularia*	0.1	80		
Cenchrus ciliaris	5	40		
Cenchrus setiger	1	40		
Chrysopogon fallax	0.1	80		
Corchorus crozophorifolius	2	50		
Corchorus parviflorus	0.5	50		
Corchorus tectus	0.1	50	KTF110-01	
Cucumis variabilis	0.1	50		
Cymbopogon ambiguus	0.1	50		
Cymbopogon ambiguus	0.1	20		Procerus form.
Cyperus vaginatus	2	80		
Digitaria brownii	0.1	30		
Echinochloa colona	0.1	20		
Enneapogon caerulescens	0.1	20		
Enneapogon lindleyanus	0.1	40		
Eriachne tenuiculmis	0.1	15		
Eucalyptus camaldulensis subsp. *refulgens*	20	1600		
Euphorbia australis var. *subtomentosa*	0.1	5		

Name	Cover (%)	Height (cm)	Specimen	Notes
Euphorbia biconvexa	0.1	20		
Euphorbia vaccaria var. *erucoides*	0.1	10	KTF110-02	
Evolvulus alsinoides var. *decumbens*	0.1	10		
Gossypium australe	0.1	50		
Gossypium robinsonii	1	80		
Grevillea wickhamii subsp. *hispidula*	0.1	30		
Heliotropium cunninghamii	0.1	20	KTF110-03	
Indigofera monophylla	3	50		
Ipomoea muelleri	0.1	10		
Malvastrum americanum	0.1	40		N=15.
Melaleuca argentea	20	1600		
Melhania oblongifolia	0.1	30		
Notoleptopus decaisnei	0.1	30		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	10		
Phyllanthus maderaspatensis	0.1	20		
Pluchea rubelliflora	0.1	20		
Pterocaulon sphacelatum	0.1	30		
Ptilotus exaltatus	0.1	5		
Ptilotus fusiformis	0.1	20		
Ptilotus incanus	0.1	40	KTF110-04	
Rhynchosia minima	0.5	10		
Rumex vesicarius	0.1	5		N=1.
Senna notabilis	0.1	10		
Sesbania cannabina	0.1	50		
Setaria dielsii	0.1	10		
Setaria verticillata	0.1	20		N=10.
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	80		
Solanum diversiflorum	0.1	15		
Stemodia grossa	0.1	20		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	50		
Themeda triandra	0.1	50		
Vachellia farnesiana	0.1	80		N=5.
Waltheria indica	0.1	50		

Site	KTF111
Described by	BRM/RM Date 27/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 572009 mE, 7555128 mN
Habitat	Lower slope of low range, sloping E.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* tall open shrubland over *Triodia basitricha*, (*T. wiseana*) hummock grassland.
Veg Condition	Excellent.
Fire Age	Burnt 3-5 years ago.
Notes	U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia ancistrocarpa*\^shrub\4\r;G1+ ^*Triodia basitricha,Triodia wiseana*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen
Acacia ancistrocarpa	6	230	
Acacia spondylophylla	0.1	120	
Bonamia erecta	0.1	35	
Corymbia hamersleyana	1	250	
Cymbopogon ambiguus	0.1	90	
Hakea lorea subsp. *lorea*	0.1	140	
Senna glutinosa subsp. *pruinosa*	0.1	150	
Triodia basitricha	25	30	KTF111-01
Triodia wiseana	6	30	

Site KTF112

Described by PL/SC Date 27/5/2020

Type Quadrat 50 x 50 m

Central Coord 50 574537 mE, 7554019 mN

Habitat Major drainage.

Soil Dark reddish brown sandy clay loam.

Rock Type Ironstone.

Vegetation *Eucalyptus victrix* woodland over *Atalaya hemiglauca* scattered low trees over *Acacia pyrifolia* var. *pyrifolia* scattered shrubs over *Corchorus crozophorifolius*, (*Indigofera monophylla*) low open shrubland over **Cenchrus ciliaris*, (*Eriachne tenuiculmis*, **C. setiger*) open tussock grassland with *Triodia epactia* scattered hummock grasses.

Veg Condition Good: *Cenchrus spp. present.

Fire Age No sign of recent fire.

Notes Definitely dominated by Eucalyptus victrix, therefore Potential GDV. Occasional E. camaldulensis in broader veg type.

U1+ ^*Eucalyptus victrix*\^tree\7\i;U2 *Atalaya hemiglauca*\tree\6\bi;M1 *Acacia pyrifolia* var. *pyrifolia*\shrub\3\bi;M2 ^*Corchorus crozophorifolius,Indigofera monophylla*\^shrub\2\r;G1 ^*Cenchrus ciliaris,Eriachne tenuiculmis,Cenchrus setiger*\^tussock grass\1\i;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Dioicum (A.A. Mitchell PRP 1618)	0.1	200		
Acacia bivenosa	0.1	120		
Acacia pyrifolia var. *pyrifolia*	1	200		
Acacia tumida var. *pilbarensis*	0.1	100		
Aerva javanica	0.1	50		N=1.
Afrohybanthus aurantiacus	0.1	40		
Amaranthus undulatus	0.1	40		
Aristida contorta	0.1	40		
Aristida holathera var. *holathera*	0.1	30		
Atalaya hemiglauca	2	400		
Boerhavia coccinea	0.1	30		
Bonamia pilbarensis	0.1	20		
Cenchrus ciliaris	20	70	KTF112-02	
Cenchrus setiger	2	80		
Corchorus crozophorifolius	3	80		
Corchorus lasiocarpus subsp. *parvus*	0.1	60		
Corchorus parviflorus	0.1	90		
Corchorus tectus	0.1	70	KTF110-01=	
Cucumis variabilis	0.1	50		
Cymbopogon ambiguus	0.1	90		Procerus form.
Enneapogon lindleyanus	0.1	80		
Eremophila longifolia	0.1	150		
Eriachne tenuiculmis	3	40		
Eucalyptus victrix	28	1400		
Euphorbia australis var. *subtomentosa*	0.1	5		
Euphorbia biconvexa	0.1	50		
Evolvulus alsinoides var. *decumbens*	0.1	25		
Gossypium australe	0.1	40		
Gossypium robinsonii	0.1	90		
Grevillea wickhamii subsp. *hispidula*	0.1	300		
Hakea lorea subsp. lorea	0.1	320		
Heliotropium cunninghamii	0.1	40	KTF112-01	

Name	Cover (%)	Height (cm)	Specimen	Notes
Heliotropium pachyphyllum	0.1	50		
Indigofera monophylla	0.5	40		
Jasminum didymum subsp. *lineare*	0.1	100		
Notoleptopus decaisnei	0.1	30		
Phyllanthus maderaspatensis	0.1	40		
Ptilotus calostachyus	0.1	80		
Rhynchosia minima	0.1	50		
Salsola australis	0.1	50		
Sida fibulifera	0.1	25		
Solanum diversiflorum	0.1	60		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	50		
Themeda triandra	0.1	80		
Triodia epactia	0.5	70		

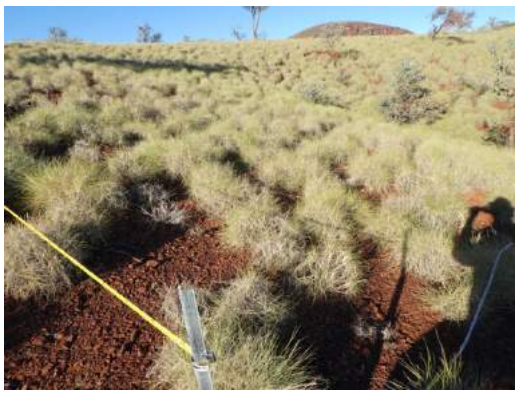
Site	KTF113
Described by	BRM/RM Date 28/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 568240 mE, 7538282 mN
Habitat	Lower slope of moderate range, W-facing.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia hamersleyana*) low open woodland over *Acacia monticola* tall open shrubland over *Grevillea pyramidalis* subsp. *leucadendron*, *Gossypium robinsonii* scattered shrubs over *Triodia wiseana* open hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^*Eucalyptus leucophloia* subsp. *leucophloia,Corymbia hamersleyana*\^tree\6\r;M1 ^*Acacia monticola*\^shrub\4\r;M2 *Grevillea pyramidalis* subsp. *leucadendron,Gossypium robinsonii*\shrub\3\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon cunninghamii	0.1	40	KTF113-02	
Acacia adoxa var. *adoxa*	0.1	30		
Acacia bivenosa	0.1	180		
Acacia inaequilatera	0.1	130		
Acacia monticola	7	220		
Acacia orthocarpa	0.25	170	KTF113-01	
Acacia pyrifolia var. *pyrifolia*	0.1	110		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	40		
Bonamia pilbarensis	0.1	5	KTF113-10	
Bulbostylis barbata	0.1	5		
Cheilanthes brownii	0.1	10	KTF113-14	
Clerodendrum floribundum var.	0.1	170	KTF113-15	
angustifolium				
Corchorus parviflorus	0.1	120	KTF113-05	
Corymbia hamersleyana	1	400		
Dampiera candicans	0.1	5		
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	30	KTF95-07=	
Eriachne ciliata	0.1	20	KTF113-04	
Eriachne mucronata	0.1	25		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	5		
Eucalyptus leucophloia subsp. *leucophloia*	1.5	450		
Euphorbia sp. (boophthona/tannensis)	0.1	40		Sterile.
Fimbristylis simulans	0.1	20	KTF75-01=	
Gossypium robinsonii	1	160		
Grevillea pyramidalis subsp. *leucadendron*	1	170		
Indigofera monophylla	0.1	30		
Mirbelia viminalis	0.1	40	KTF89-01=	
Paraneurachne muelleri	0.1	30		
Paspalidium clementii	0.1	10	KTF113-11	
Polycarpaea holtzei	0.1	5	KTF113-13	
Polycarpaea longiflora	0.1	20		
Ptilotus calostachyus	0.1	70		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus fusiformis	0.1	20		
Santalum lanceolatum	0.1	120		
Senna glutinosa subsp. *glutinosa*	0.25	170		
Sida sp. Articulation below (A.A. Mitchell PRP 1605)	0.25	290	KTF113-09	
Tephrosia densa	0.1	25	KTF113-12	
Tephrosia oxalidea	0.1	5	KTF113-06	
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	5	KTF113-03	
Tephrosia virens	0.5	130	KTF113-08	
Trigastrotheca molluginea	0.1	25		
Triodia wiseana	20	40		
Triumfetta maconochieana	0.1	40	KTF113-07	

Site	KTF114
Described by	PL/SC Date 28/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 573625 mE, 7550648 mN
Habitat	Undulating foot slopes; slopes and crest.
Soil	Dark reddish brown silty clay loam.
Rock Type	Ironstone.
Vegetation	*Corymbia deserticola* subsp. *deserticola, C. hamersleyana*, (*Eucalyptus leucophloia* subsp. *leucophloia*) low open woodland over *Acacia inaequilatera* scattered tall shrubs over *Ptilotus rotundifolius* scattered low shrubs over *Triodia wiseana* open hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	Only N and S corners pegged. U1 ^*Corymbia deserticola* subsp. *deserticola*,^*Corymbia hamersleyana,Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\bi;M2 *Ptilotus rotundifolius*\shrub\1\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia inaequilatera	1	240		
Corymbia deserticola subsp. *deserticola*	1	800		
Corymbia hamersleyana	0.75	600		
Dolichocarpa crouchiana	0.1	15		
Dysphania rhadinostachya	0.1	8		Sterile.
Eriachne ciliata	0.1	15		
Eriachne pulchella	0.1	20		
Eucalyptus leucophloia subsp. *leucophloia*	0.25	500		
Euphorbia boophthona	0.1	60		
Fimbristylis dichotoma	0.1	20	KTF114-01	
Fimbristylis simulans	0.1	15		
Paspalidium clementii	0.1	25		
Ptilotus rotundifolius	1.5	80		
Schizachyrium fragile	0.1	15		
Senna glutinosa subsp. *glutinosa*	0.1	50		
Triodia wiseana	25	60		



Site	KTF115
Described by	BRM/RM Date 28/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 567361 mE, 7537708 mN
Habitat	Mid-lower slope of spur.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus leucophloia* subsp*. leucophloia*, (*Corymbia hamersleyana*) low open woodland over *Triodia wiseana* hummock grassland with *Eriachne mucronata* scattered tussock grasses.
Veg Condition	Excellent.
Fire Age	Burnt 3-5 years ago.
Notes	U1 ^*Eucalyptus leucophloia* subsp. *leucophloia,Corymbia hamersleyana*\^tree\6\r;G1+ ^*Triodia wiseana*\^hummock grass\1\c;G2 *Eriachne mucronata*\tussock grass\1\bi

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var*. adoxa*	0.1	30		
Acacia maitlandii	0.1	40		
Acacia monticola	0.1	90		
Acacia tenuissima	0.1	60	KTF75-08=	
Arivela viscosa	0.1	30		
Bonamia pilbarensis	0.1	10	KTF113-10	
Corchorus parviflorus	0.1	90	KTF113-05=	
Corymbia hamersleyana	0.5	600		
Dampiera candicans	0.1	30		
Dolichocarpa crouchiana	0.1	10	KTF101-14=	
Eremophila longifolia	0.1	40	KTF115-02	
Eriachne ciliata	0.1	15	KTF113-04=	
Eriachne mucronata	1	30		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	10		
Eucalyptus leucophloia subsp*. leucophloia*	6	600		
Evolvulus alsinoides var*. villosicalyx*	0.1	30		
Fimbristylis dichotoma	0.1	30	KTF115-01	
Fimbristylis simulans	0.1	25	KTF75-01=	
Gompholobium oreophilum	0.1	30		
Gomphrena cunninghamii	0.1	20		
Goodenia stobbsiana	0.1	50		Dead.
Goodenia triodiophila	0.1	30		
Gossypium robinsonii	0.1	170		
Hakea lorea subsp. lorea	0.1	110		
Indigofera monophylla	0.1	30		
Jasminum didymum subsp*. lineare*	0.1	80		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	15	KTF113-11=	
Ptilotus calostachyus	0.1	70		
Ptilotus fusiformis	0.1	30		
Schizachyrium fragile	0.1	15		
Senna artemisioides subsp*. oligophylla*	0.1	70	KTF109-06=	
Senna glutinosa subsp*. glutinosa*	0.1	170		
Senna glutinosa subsp*. pruinosa*	0.1	50		
Sida sp. Articulation below (A.A. Mitchell *PRP 1605)*	0.1	270	KTF113-09=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Tephrosia densa	0.1	40	KTF115-03	
Tephrosia oxalidea	0.1	20	KTF113-06=	
Tephrosia virens	0.1	90	KTF113-08=	
Trigastrotheca molluginea	0.1	30		
Triodia wiseana	35	40		

Site	KTF116
Described by	PL/SC Date 28/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 569454 mE, 7540805 mN
Habitat	Low foothills, E aspect; almost flat plains.
Soil	Dark reddish brown clay loam.
Rock Type	Ironstone.
Vegetation	*Corymbia deserticola* subsp. *deserticola*, (*Eucalyptus leucophloia* subsp. *leucophloia*) low open woodland over *E. gamophylla* scattered low mallees over *Acacia atkinsiana*, *A. inaequilatera* tall open shrubland over *A. bivenosa* scattered shrubs over *Triodia wiseana*, (*T. epactia*) open hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^*Corymbia deserticola* subsp. *deserticola,Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\r;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1 ^*Acacia atkinsiana*,^*Acacia inaequilatera*\^shrub\4\r;M2 *Acacia bivenosa*\shrub\3\bi;G1+ ^*Triodia wiseana,Triodia epactia*\^hummock grass\1\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	5		
Acacia atkinsiana	3	400		
Acacia bivenosa	0.5	180		
Acacia inaequilatera	3	300		
Acacia tenuissima	0.1	80		
Amphipogon sericeus	0.1	40		
Aristida holathera var. *holathera*	0.1	30		
Chrysopogon fallax	0.1	50		
Corymbia deserticola subsp. *deserticola*	2	600		
Cymbopogon obtectus	0.1	60		
Duperreya commixta	0.1	50		
Enneapogon polyphyllus	0.1	20		
Eriachne pulchella	0.1	10		
Eucalyptus gamophylla	1	400		
Eucalyptus leucophloia subsp. *leucophloia*	1	300		
Eulalia aurea	0.1	40		
Euphorbia australis var. *subtomentosa*	0.1	5		
Euphorbia boophthona	0.1	10		
Goodenia microptera	0.1	10		
Hakea lorea subsp. *lorea*	0.1	20		
Hibiscus sturtii var. *platychlamys*	0.1	50		
Isotropis atropurpurea	0.1	40		
Jasminum didymum subsp. *lineare*	0.1	110		
Paraneurachne muelleri	0.1	30		
Ptilotus calostachyus	0.1	80		
Ptilotus clementii	0.1	5		
Ptilotus exaltatus	0.1	5		
Ptilotus helipteroides	0.1	15		
Ptilotus obovatus var. *obovatus*	0.1	60		
Schizachyrium fragile	0.1	5		
Senna artemisioides subsp. *helmsii*	0.1	150		
Senna artemisioides subsp. *oligophylla*	0.1	120		
Senna glutinosa subsp. *glutinosa*	0.1	120		
Senna glutinosa subsp. *glutinosa x*	0.1	180		Hybrid taxon.
Senna glutinosa subsp. *x luerssenii*	0.1	180		

Name	Cover (%)	Height (cm)	Specimen	Notes
Senna notabilis	0.1	20		
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1	50	KTF116-01	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	120		
Trichodesma zeylanicum var. *zeylanicum*	0.1	80		
Triodia epactia	5	50		
Triodia wiseana	10	30		
Vincetoxicum lineare	0.1	180		
Yakirra australiensis var. *australiensis*	0.1	5		

Site	KTF117
Described by	BRM/RM Date 28/5/2020
Type	Quadrat 62.5 x 40 m
Central Coord	50 566612 mE, 7536726 mN
Habitat	Mid to lower slope of spur of large range; E-facing.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus leucophloia* subsp. *leucophloia*, (*Corymbia hamersleyana*) low open woodland over *Acacia orthocarpa* scattered tall shrubs over *Triumfetta maconochieana* scattered low shrubs over *Triodia wiseana* open hummock grassland.
Veg Condition	Excellent.
Fire Age	Burnt 3-5 years ago.
Notes	U1 ^*Eucalyptus leucophloia* subsp. *leucophloia,Corymbia hamersleyana*\^tree\6\r;M1 ^*Acacia orthocarpa*\^shrub\4\bi;M2 *Triumfetta maconochieana*\shrub\1\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	30		
Acacia orthocarpa	0.5	220	KTF117-01	
Acacia pruinocarpa	0.1	70		
Acacia pyrifolia var. *pyrifolia*	0.1	160		
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	30		
Bonamia pilbarensis	0.1	10	KTF113-10	
Corchorus lasiocarpus subsp. parvus	0.1	90	KTF117-02	Formal ID by M. Hislop (WAH).
Corymbia hamersleyana	2	600		
Cymbopogon ambiguus	0.1	70		
Dampiera candicans	0.1	30		
Dodonaea coriacea	0.1	70		
Dolichocarpa crouchiana	0.1	10	KTF101-14=	
Eriachne ciliata	0.1	15	KTF113-04=	
Eriachne mucronata	0.1	30		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	10		
Eucalyptus leucophloia subsp. *leucophloia*	5	600		
Fimbristylis dichotoma	0.1	30	KTF115-01=	
Fimbristylis simulans	0.1	25	KTF75-01=	
Gompholobium oreophilum	0.1	30		
Gomphrena cunninghamii	0.1	20		
Goodenia cusackiana	0.1	20		
Goodenia stobbsiana	0.1	50		Dead.
Goodenia triodiophila	0.1	30		
Gossypium robinsonii	0.1	260		
Grevillea pyramidalis subsp. *leucadendron*	0.1	280		
Grevillea wickhamii subsp. *hispidula*	0.1	130		
Hakea chordophylla	0.1	110		
Indigofera monophylla	0.1	30		
Paraneurachne muelleri	0.1	40		
Paspalidium clementii	0.1	15	KTF113-11=	
Polycarpaea holtzei	0.1	3	KTF113-13=	
Polycarpaea longiflora	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus calostachyus	0.1	70		
Ptilotus fusiformis	0.1	30		
Schizachyrium fragile	0.1	15		
Senna artemisioides subsp. *oligophylla*	0.1	70	KTF109-06=	
Senna glutinosa subsp. *glutinosa*	0.1	170		
Sida sp. Articulation below (A.A. Mitchell PRP 1605)	0.1	270	KTF113-09=	
Tephrosia densa	0.1	40	KTF115-03	
Tephrosia oxalidea	0.1	20	KTF113-06=	
Tephrosia virens	0.1	90	KTF113-08=	
Triodia wiseana	25	40		
Triumfetta maconochieana	0.5	30	KTF113-07=	

Site	KTF118
Described by	PL/SC Date 28/5/2020
Type	Quadrat 50 x 50 m
Central Coord	50 566717 mE, 7537508 mN
Habitat	Footslope.
Soil	Dark reddish brown clay loam.
Rock Type	Ironstone.
Vegetation	*Corymbia deserticola* subsp. *deserticola*, (*Eucalyptus leucophloia* subsp. *leucophloia, C. hamersleyana*) low open woodland over *E. gamophylla* scattered low mallees over *Acacia monticola* scattered tall shrubs over *Triodia wiseana* open hummock grassland.
Veg Condition	Excellent.
Fire Age	Burnt 3-5 years ago.
Notes	U1 ^*Corymbia deserticola* subsp. *deserticola,Eucalyptus leucophloia* subsp. *leucophloia,Corymbia hamersleyana*\^tree\6\r;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1 ^*Acacia monticola*\^shrub\4\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	40		
Acacia ancistrocarpa	0.1	110		
Acacia atkinsiana	0.1	250		
Acacia bivenosa	0.1	140		
Acacia cowleana	0.1	160		
Acacia inaequilatera	0.1	100		
Acacia monticola	0.5	260		
Aristida inaequiglumis	0.1	120	KTF118-01	Formal ID by M. Hislop (WAH).
Aristida holathera var. *holathera*	0.1	40		
Corymbia deserticola subsp. *deserticola*	2	550		
Corymbia hamersleyana	0.1	110		
Eriachne pulchella	0.1	15		
Eucalyptus gamophylla	0.5	300		
Eucalyptus leucophloia subsp. *leucophloia*	1	400		
Euphorbia tannensis subsp. *eremophila*	0.1	30		
Fimbristylis simulans	0.1	25		
Goodenia stobbsiana	0.1	40		Dead.
Hakea chordophylla	0.1	300		
Hakea lorea subsp. *lorea*	0.1	100		
Hibiscus sturtii var. *campylochlamys*	0.1	35		
Jasminum didymum subsp. *lineare*	0.1	120		
Paspalidium clementii	0.1	25		
Ptilotus calostachyus	0.1	80		
Ptilotus fusiformis	0.1	30		
Schizachyrium fragile	0.1	20		
Senna artemisioides subsp. *oligophylla*	0.1	70		
Senna ferraria	0.1	90	KTF118-02	
Senna glutinosa subsp. *glutinosa*	0.1	150		
Triodia wiseana	16	60		
Vincetoxicum lineare	0.1	80		

Site	KTF119
Described by	RMJK Date 20/10/2020
Type	Quadrat 50 x 50 m
MGA Zone	50 574500 mE, 7511336 mN
Habitat	Stony plain.
Soil	Dark reddish brown clay loam.
Rock Type	Ironstone.
Vegetation	*Acacia pruinocarpa*, (*Corymbia deserticola* subsp. *deserticola*, *A. aptaneura*) low open woodland over *Triodia melvillei* open hummock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1+ ^Acacia pruinocarpa,Corymbia deserticola subsp. deserticola,Acacia aptaneura\^tree\6\r;G1 ^Triodia melvillei\^hummock grass\1\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	5	KTF119-10	
Acacia aptaneura	1.5	230	KTF119-04	
Acacia pruinocarpa	2.5	320		
Anthobolus leptomerioides	0.1	180	KTF119-02	
Aristida contorta	0.1	40		
Aristida sp.	0.1	40	KTF119-03	Inadequate material.
Corymbia deserticola subsp. *deserticola*	1.5	450		
Enneapogon polyphyllus	0.1	20	KTF119-06	
Eriachne aristidea	0.1	30		
Eriachne pulchella	0.1	5		
Goodenia microptera	0.1	20	KTF119-07	
Hibiscus burtonii	0.1	20	KTF119-08	
Maireana villosa	0.1	30	KTF119-11	
Paraneurachne muelleri	0.1	30		
Paspalidium clementii	0.1	20	KTF119-09	
Ptilotus exaltatus	0.1	5		
Ptilotus helipteroides	0.1	15		
Ptilotus rotundifolius	0.1	60		
Rhagodia sp. Hamersley (M. Trudgen 17794)	0.1	180		
Senna glutinosa subsp. *glutinosa*	0.1	180		
Sporobolus australasicus	0.1	10		
Triodia melvillei	25	40	KTF119-01	

Site	KTF122
Described by	RMJK Date 21/10/2020
Type	Quadrat 50 x 50 m
Central Coord	50 570030 mE, 7534443 mN
Habitat	Floodplain.
Soil	Dark reddish brown clay loam.
Rock Type	Mudstone.
Vegetation	*Hakea lorea* subsp. *lorea*, (*Acacia pruinocarpa*) low open woodland over *A. inaequilatera* tall open shrubland over *Triodia wiseana*, (*T. epactia*) very open hummock grassland over *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), *Chrysopogon fallax* scattered tussock grasses.
Veg Condition	Good to Poor: heavily grazed by cattle.
Fire Age	No sign of recent fire.
Notes	U1+ ^*Hakea lorea* subsp*. lorea,Acacia pruinocarpa*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\r;G1 *Themeda* sp. Hamersley Station (M.E. Trudgen 11431),*Chrysopogon fallax*\tussock grass\3\bi;G2 ^*Triodia wiseana*,*Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp.	0.1	10	KTF122-02	Poor material; best guess ? *A. oxycarpum* subsp. Prostrate.
Acacia dictyophleba	0.5	320	KTF122-08	Formal ID by M. Hislop (WAH).
Acacia bivenosa	0.1	90		
Acacia inaequilatera	6	380		
Acacia pruinocarpa	1.5	450		
Alternanthera nana	0.1	5	KTF122-03	
Boerhavia sp.	0.1	30		Dead.
Cenchrus ciliaris	0.1	30		
Chrysopogon fallax	0.5	90		
Cullen graveolens	0.1	30		
Duperreya commixta	0.1	120		
Enneapogon caerulescens	0.1	15		
Enneapogon lindleyanus	0.1	30		
Eremophila longifolia	0.1	130		
Eriachne pulchella	0.1	5		
Eulalia aurea	0.1	90		
Euphorbia biconvexa	0.1	30	KTF122-06	
Euphorbia sp. (*boophthona/tannensis*)	0.1	20		Sterile.
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Goodenia muelleriana	0.1	15		
Goodenia nuda	0.1	25	KTF122-01	
Hakea lorea subsp. *lorea*	8	550		
Indigofera linifolia	0.1	30		
Jasminum didymum subsp. *lineare*	0.1	150		
Notoleptopus decaisnei	0.1	15		
Pterocaulon sphacelatum	0.1	40	KTF122-04	
Ptilotus clementii	0.1	25		
Ptilotus exaltatus	0.1	5		
Ptilotus helipteroides	0.1	25		
Scaevola spinescens	0.1	60		
Sclerolaena cornishiana	0.1	40	KTF122-07	
Senna artemisioides subsp. *helmsii*	0.1	50		
Senna artemisioides subsp.	0.1	60		

Name	Cover (%)	Height (cm)	Specimen	Notes
oligophylla				
Senna notabilis	0.1	40		
Senna venusta	0.1	90		
Sida fibulifera	0.1	30		
Solanum diversiflorum	0.1	50		
Solanum lasiophyllum	0.1	90		
Sporobolus australasicus	0.1	5		
Streptoglossa bubakii	0.1	30	KTF122-05	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	1.5	130		
Themeda triandra	0.1	80		
Trichodesma zeylanicum var. *zeylanicum*	0.1	90		
Triodia epactia	1.5	50		
Triodia wiseana	7	60		
Urochloa occidentalis var. *occidentalis*	0.1	30		
Vachellia farnesiana	0.1	90		

Site	KTF123
Described by	RMJK Date 21/10/2020
Type	Quadrat 50 x 50 m
Central Coord	50 567843 mE, 7535914 mN
Habitat	Sloping plain.
Soil	Dark reddish brown clay loam.
Rock Type	Ironstone.
Vegetation	*Acacia aptaneura* scattered low trees over *A. atkinsiana, A. exigua* scattered tall shrubs over *A. pruinocarpa* open shrubland over *Triodia wiseana* hummock grassland.
Veg Condition	Excellent.
Fire Age	Very long unburnt.
Notes	U1 ^*Acacia aptaneura*\^tree\6\bi;M1 *Acacia atkinsiana,Acacia exigua*\shrub\4\bi;M2 ^*Acacia pruinocarpa*\^shrub\3\r;G1+ ^*Triodia wiseana*\^hummock grass\1\c.

Name	Cover (%)	Height (cm)	Specimen
Acacia aptaneura	0.5	300	KTF121-01=
Acacia atkinsiana	0.5	280	KTF123-02
Acacia exigua	0.25	280	KTF123-01
Acacia pruinocarpa	6	170	
Aristida holathera var. *holathera*	0.1	30	
Dodonaea petiolaris	0.1	70	KTF123-03
Ptilotus obovatus var. *obovatus*	0.1	50	
Senna glutinosa subsp. *glutinosa*	0.1	140	
Senna glutinosa subsp. *pruinosa*	0.1	160	
Senna glutinosa subsp. *x luerssenii*	0.1	170	
Triodia wiseana	50	50	

Site KTF124
Described by RMJK Date 21/10/2020
Type Quadrat 50 x 50 m
Central Coord 50 567086 mE, 7536080 mN
Habitat Floodplain between drainage channels.
Soil Dark reddish brown clay loam.
Rock Type Ironstone.
Vegetation *Acacia pruinocarpa* scattered low trees over *A. ancistrocarpa*, (*Senna glutinosa* subsp. *pruinosa*) open shrubland over *Triodia wiseana* open hummock grassland.
Veg Condition Excellent.
Fire Age No sign of recent fire.
Notes U1 ^*Acacia pruinocarpa*\^tree\6\bi;M1 ^*Acacia ancistrocarpa,Senna glutinosa* subsp. *pruinosa*\^shrub\3\r;G1+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	3	160		
Acacia bivenosa	0.1	140		
Acacia pruinocarpa	1.5	280		
Acacia sp.	0.1	90		Dead.
Acacia tenuissima	0.1	50	KTF124-03	
Amphipogon sericeus	0.1	30		
Aristida holathera var. *holathera*	0.1	30		
Corchorus lasiocarpus subsp. *parvus*	0.1	60	KTF124-04	
Dodonaea coriacea	0.1	60		
Enneapogon caerulescens	0.1	5		
Eriachne aristidea	0.1	30		
Eucalyptus leucophloia subsp. *leucophloia*	0.1	90		
Evolvulus alsinoides var. *villosicalyx*	0.1	10		
Gossypium australe	0.1	20		
Gossypium robinsonii	0.1	210		
Hakea chordophylla	0.1	160		
Paraneurachne muelleri	0.1	30		
Ptilotus auriculifolius	0.1	50		
Ptilotus calostachyus	0.1	60		
Ptilotus fusiformis	0.1	50		
Senna artemisioides subsp. *helmsii*	0.1	50		
Senna glutinosa subsp. *glutinosa*	0.1	160		
Senna glutinosa subsp. *pruinosa*	0.25	120		
Seringia exastia	0.1	50	KTF124-01	
Seringia sp.	0.1	60	KTF124-02	Poor material.
Sida sp. Articulation below (A.A. Mitchell PRP 1605)	0.1	160		
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1	70	KTF124-05	
Trachymene oleracea subsp. *oleracea*	0.1	60		
Trichodesma zeylanicum var. *zeylanicum*	0.1	160		
Triodia wiseana	12	50		

Site	KTF125
Described by	RMJK Date 22/10/2020
Type	Quadrat 50 x 50 m
Central Coord	50 568666 mE, 7534987 mN
Habitat	Clay plain.
Soil	Dark reddish brown clay loam.
Rock Type	Mudstone.
Vegetation	*Hakea lorea* subsp. *lorea* low open woodland over *Acacia victoriae*, **Vachellia farnesiana* scattered shrubs over *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), (*Chrysopogon fallax*) tussock grassland.
Veg Condition	Good: heavily grazed.
Fire Age	No sign of recent fire.
Notes	Equal to KTF70 but very dry and grazed. U1 ^*Hakea lorea* subsp. *lorea*\^tree\6\r;M1 ^*Acacia victoriae*,^*Vachellia farnesiana*\^shrub\3\bi;G1+ ^*Themeda* sp. Hamersley Station (M.E. Trudgen 11431),*Chrysopogon fallax*\^tussock grass\3\c.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia victoriae subsp. *victoriae*	0.5	150	KTF125-04	
Boerhavia burbidgeana	0.1	10	KTF125-07	
Chrysopogon fallax	4	90		
Cynodon convergens	0.1	20	KTF125-09	
Dichanthium sericeum subsp. *humilius*	0.1	40		
Glycine falcata	0.1	20	KTF125-02	
Hakea lorea subsp. *lorea*	9	600	KTF125-01	
Indigofera linifolia	0.1	40		
Notoleptopus decaisnei	0.1	5		
Operculina aequisepala	0.1	60		
Panicum sp.	0.1	40	KTF125-05	May be P. decompositum but base looks too fine.
Polymeria longifolia	0.1	10	KTF125-3,8	
Sida spinosa	0.1	40	KTF125-06	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	29	120		
Themeda triandra	0.1	50		
Trichodesma zeylanicum var. *zeylanicum*	0.1	50		
Urochloa occidentalis var. *occidentalis*	1	30		
Vachellia farnesiana	0.5	120		

Site	KTF126
Described by	RMJK Date 22/10/2020
Type	Quadrat 50 x 50 m
Central Coord	50 569286 mE, 7535252 mN
Habitat	Clay plain.
Soil	Dark reddish brown clay loam.
Rock Type	Calcrete, mudstone.
Vegetation	*Hakea lorea* subsp. *lorea,* (*Acacia aptaneura*, *Eucalyptus victrix*) low open woodland over *A. inaequilatera* tall open shrubland over *Triodia wiseana* open hummock grassland with *Themeda* sp. Hamersley Station (M.E. Trudgen 11431) scattered tussock grasses.
Veg Condition	Very Good to Good: signs of cattle.
Fire Age	No sign of recent fire.
Notes	U1 ^*Hakea lorea* subsp*. lorea,Acacia aptaneura*,*Eucalyptus victrix*\^tree\6\r;M1 ^*Acacia inaequilatera*\^shrub\4\r;G1 *Themeda* sp. Hamersley Station (M.E. Trudgen 11431)\tussock grass\3\bi;G2+ ^*Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia aptaneura	1	350	KTF121-01=	
Acacia bivenosa	0.1	160		
Acacia cowleana	0.1	210	KTF126-01	
Acacia inaequilatera	6	380		
Acacia pruinocarpa	0.1	120		
Acacia tenuissima	0.1	140		
Afrohybanthus aurantiacus	0.1	15		
Aristida contorta	0.1	30		
Chrysopogon fallax	0.1	110		
Dichanthium sericeum subsp. *humilius*	0.1	25		
Eremophila longifolia	0.1	150		
Eucalyptus victrix	0.25	450		
Euphorbia australis var. *subtomentosa*	0.1	15	KTF126-02	
Euphorbia sp. (boophthona/tannensis)	0.1	15		Sterile.
Evolvulus alsinoides var. *villosicalyx*	0.1	10		
Goodenia muelleriana	0.1	30		
Goodenia nuda	0.1	15		N=3.
Hakea lorea subsp. *lorea*	3	250		
Indigofera linifolia	0.1	20		
Salsola australis	0.1	5		
Senna glutinosa subsp. *glutinosa*	0.1	170	KTF126-04	
Senna notabilis	0.1	15		
Sida fibulifera	0.1	20	KTF126-03	
Solanum lasiophyllum	0.1	60		
Sporobolus australasicus	0.1	10		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.5	110		
Triodia wiseana	22	60		
Vachellia farnesiana	0.1	150		

Site	KTF127
Described by	RMJK Date 23/10/2020
Type	Quadrat 50 x 50 m
Central Coord	50 569510 mE, 7535086 mN
Habitat	Clay plain.
Soil	Dark reddish brown clay loam.
Rock Type	Calcrete, mudstone.
Vegetation	*Hakea lorea* subsp. *lorea*, (*Eucalyptus victrix*) low open woodland over **Vachellia farnesiana* scattered tall shrubs over *Eremophila longifolia* scattered shrubs over *Triodia epactia* very open hummock grassland with *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), (*Chrysopogon fallax*) very open tussock grassland.
Veg Condition	Very Good to Good: signs of cattle; some weeds.
Fire Age	No sign of recent fire.
Notes	U1+ ^*Hakea lorea* subsp. *lorea*,*Eucalyptus victrix*\^tree\6\r;M1 ^*Vachellia farnesiana*\^shrub\4\bi;M2 *Eremophila longifolia*\shrub\3\bi;G1 ^*Themeda* sp. Hamersley Station (M.E. Trudgen 11431),*Chrysopogon fallax*\^tussock grass\3\r;G2 *Triodia epactia*\hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia victoriae subsp. *victoriae*	0.1	40		
Chrysopogon fallax	0.5	90		
Cullen graveolens	0.1	30		
Cynodon convergens	0.1	30		
Enneapogon caerulescens	0.1	10		
Eremophila longifolia	0.25	140		
Eucalyptus victrix	1	600		
Euphorbia sp.	0.1	10		Dead.
Euphorbia sp. *(boophthona/tannensis)*	0.1	20		Sterile.
Hakea lorea subsp. lorea	2.5	600		
Heliotropium sp.	0.1	15		Inadequate material.
Indigofera linifolia	0.1	30		
Operculina aequisepala	0.1	30		
Phyllanthus exilis	0.1	30	PL23A	
Polymeria longifolia	0.1	30		
Ptilotus clementii	0.1	30		
Ptilotus exaltatus	0.1	5		
Rostellularia adscendens var. *clementii*	0.1	20	KTF127-01	
Salsola australis	0.1	20		
Senna artemisioides subsp. *x artemisioides*	0.1	20	KTF127-03	
Sida fibulifera	0.1	20		
Sida spinosa	0.1	40	KTF125-06=	
Solanum diversiflorum	0.1	10		
Solanum lasiophyllum	0.1	30		
Sporobolus australasicus	0.1	20		
Streptoglossa bubakii	0.1	20	KTF127-02	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	4	110		
Triodia wiseana	7	40		
Urochloa occidentalis	0.1	30		Sterile.
Vachellia farnesiana	1.5	320		

Site	KTF135
Described by	RM,AL Date 26/03/2021
Type	Quadrat 50 x 50 m
MGA Zone	50 573266 mE, 7511467 mN
Habitat	NW facing moderate slope.
Soil	Not recorded
Rock Type	Not recorded
Vegetation	*Acacia inaequilatera, Acacia macraneura* low open woodland over *Senna glutinosa* subsp. *glutinosa, Acacia synchronicia* tall open shrubland over *Indigofera monophylla, Ptilotus rotundifolius* low open shrubland over *Triodia epactia* hummock grassland over *Themeda triandra, Paraneurachne muelleri* very open perennial grassland over *Rhynchosia minima* scattered herbs
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^Acacia inaequilatera,Acacia macraneura\Acacia\^tree\6\bc; M1 ^Senna glutinosa subsp. glutinosa, Acacia synchronicia\Senna\^shrub\4\bc; M2 ^Indigofera monophylla,Ptilotus rotundifolius\Inidgofera\^shurb\2\bc; G1+ ^Triodia epactia\Triodia\^hummock grass\2\c; G2 ^Themeda triandra,Paraneurachne muelleri\Themeda\^tussock grass\2\bc; G3 ^Rhychosia minima\Rhynchosia\^forb\2\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
? Bothriochloa ewartiana	0.1	60	KTF135-04	
Abutilon lepidum	0.1	60	KTF135-02	Sens. Lat
Acacia inaequilatera	2	250		
Acacia macraneura	1.5	320	KTF135-08	
Acacia pruinocarpa	0.1	130		
Acacia synchronicia	0.5	360	KTF135-01	
Aristida contorta	0.1	30		
Boerhavia coccinea	0.1	30		
Chrysopogon fallax	0.1	60		
Corchorus lasiocarpus subsp. *parvus*	0.1	60	KTF135-17	
Cucumis variabilis	0.1	75		
Cymbopogon ambiguus	0.1	60		
Enneapogon polyphyllus	0.1	30		
Eremophila ? fraseri subsp. *fraseri*	0.1	70	KTF135-07	Sterile
Eremophila cuneifolia	0.1	60	KTF135-16	
Eriachne aristidea	0.1	30		
Eriachne mucronata	0.1	30		
Euphorbia trigonosperma	0.1	15	KTF135-13	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Gomphrena cunninghamii	0.1	20		
Gomphrena kanisii	0.1	30	KTF135-12	
Goodenia cusackiana	0.1	5		
Goodenia microptera	0.1	20		
Goodenia muelleriana	0.1	30	KTF135-18	
Goodenia muelleriana	0.1	20	KTF135-06	
Gossypium australe	0.1	45		
Gossypium australe (Burrup Peninsula form)	0.1	60	KTF135-15	
Indigofera monophylla	2	60		
Iseilema dolichotrichum	0.1	20	KTF135-05	
Paraneurachne muelleri	0.5	50		
Polycarpaea corymbosa var. *corymbosa*	0.1	15		

Name	Cover (%)	Height (cm)	Specimen	Notes
Polycarpaea holtzei	0.1	4		
Polycarpaea holtzei	0.1	20	KTF135-19	
Polycarpaea longiflora	0.1	20		
Polygala glaucifolia	0.1	5	KTF136-09=	
Portulaca oleracea	0.1	5		
Ptilotus ? xerophilus	0.1	60	KTF135-03	Sterile; inadequate material
Ptilotus auriculifolius	0.1	40	KTF135-10	
Ptilotus clementii	0.1	40		
Ptilotus exaltatus	0.1	25		
Ptilotus rotundifolius	0.5	60		
Rhynchosia minima	1.5	70		
Senna glutinosa subsp. *glutinosa*	3	210		
Senna glutinosa subsp. *pruinosa*	0.1	140		
Sida echinocarpa	0.1	40	KTF135-20	
Sida echinocarpa	0.1	60	KTF135-14	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	70	KTF135-09	
Sporobolus australasicus	0.1	10		
Streptoglossa bubakii	0.1	20	KTF135-11	S
Themeda triandra	3	75		
Trichodesma zeylanicum var. *zeylanicum*	0.1	50		
Triodia epactia	60	80		

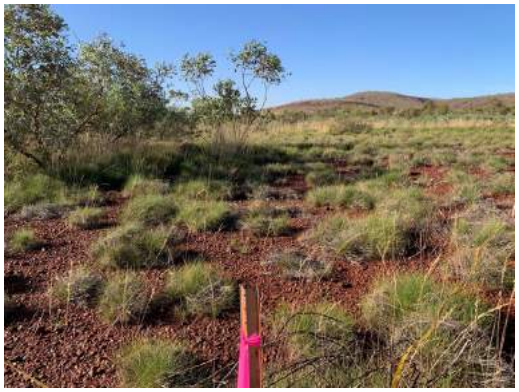
Site	KTF136
Described by	RM,AL Date 26/03/2021
Type	Quadrat 50 x 50 m
MGA Zone	50 573531 mE, 7512185 mN
Habitat	stony plain.
Soil	Not recorded
Rock Type	Ironstone
Vegetation	*Acacia aptaneura low open woodland over Triodia epactia* very open hummock grassland over *Aristida contorta, Chrysopogon fallax* scattered tussock grassland over *Ptilotus helipteroides* scattered herbs
Veg Condition	Very Good. weeds, cattle scats
Fire Age	No sign of recent fire.
Notes	U1 ^Acacia aptaneura*\Acacia\^tree\6\bc; G1+ ^Triodia epactia\Triodia\^hummock grass\2\bc; G2 ^Aristida contorta,Chrysopogon fallax\Aristida\^tussock grass\1\bc; G3 ^Ptilotus helipteroides\Ptilotus\^forb\1\bc

Name	Cover (%)	Height	Specimen	Notes
Abutilon lepidum	0.1	70		
Abutilon lepidum	0.1	35	KTF135-02=	
Abutilon otocarpum	0.1	60		
Acacia aptaneura	4	450		
Acacia pruinocarpa	0.1	170		
Acacia tetragonophylla	0.1	90		
Areocleome oxalidea	0.1	25	KTF136-06	
Aristida contorta	0.1	30	KTF136-01	
Aristida contorta	1.5	30		
Aristida latifolia	0.1	70	KTF136-11	
Bidens bipinnata	0.1	35		
Boerhavia coccinea	0.1	25		
Bulbostylis barbata	0.1	5		
Cenchrus ciliaris	0.1	60		
Cheilanthes sieberi subsp. *sieberi*	0.1	30		
Chrysopogon fallax	0.5	60		
Corchorus tridens	0.1	15		
Cucumis picrocarpus	0.1	70		
Cynodon convergens	0.1	30		
Dactyloctenium radulans	0.1	20		
Dichanthium sericeum subsp. *humilius*	0.1	30	KTF136-18	
Digitaria brownie	0.1	40		
Dysphania rhadinostachya	0.1	25		
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	30		
Eragrostis tenellula	0.1	30		
Eremophila ? fraseri subsp. *fraseri*	0.1	70	KTF135-07=	Sterile
Eremophila forrestii subsp. *forrestii*	0.1	70	KTF136-08	E
Eriachne pulchella	0.1	25		
Euphorbia biconvexa	0.1	25	KTF136-19	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Goodenia microptera	0.1	5	KTF136-22	
Goodenia muelleriana	0.1	25	KTF136-07	
Heliotropium heteranthum	0.1	5	KTF136-10	
Hibiscus burtonii	0.1	40		
Hibiscus sturtii var. *grandiflorus*	0.1	50	KTF136-21	
Iseilema membranaceum	0.1	10	KTF136-17	
Iseilema vaginiflorum	0.1	25	KTF136-16	Sens lat.
Lepidium phlebopetalum	0.1	5	KTF136-13	

Name	Cover (%)	Height	Specimen	Notes
Maireana planifolia x *villosa*	0.1	20	KTF136-24	
Paraneurachne muelleri	0.1	30		
Paspalidium clementii	0.1	25		
Perotis rara	0.1	15		
Polycarpaea corymbosa var. *corymbosa*	0.1	20		
Polygala glaucifolia	0.1	5	KTF136-09	
Portulaca oleracea	0.1	15		
Psydrax suaveolens	0.1	70		
Ptilotus exaltatus	0.1	30		
Ptilotus helipteroides	1	20		
Ptilotus roei	0.1	25	KTF136-02	
Rhynchosia minima	0.1	60		
Sclerolaena cornishiana	0.1	25	KTF136-03	
Senna glutinosa subsp. x *luerssenii*	0.1	50		
Senna notabilis	0.1	25		
Senna sp. Karijini (M.E. Trudgen 10392)	0.1	5	KTF136-23	
Sida fibulifera	0.1	20	KTF136-20	
Sida sp. L (A.M. Ashby 4202) PN	0.1	30	KTF136-14	
Solanum lasiophyllum	0.1	50		
Spermacoce brachystema	0.1	20	KTF136-05	
Sporobolus australasicus	0.1	60		
Tribulus astrocarpus	0.1	20	KTF136-15	
Triodia epactia	5	70		
Triodia melvillei	0.1	60	KTF136-12	
Urochloa occidentalis var. *occidentalis*	0.1	30	KTF136-04	
Vincetoxicum lineare	0.1	70		

Site	KTF137
Described by	RM,AL Date 27/03/2021
Type	Quadrat 50 x 50 m
MGA Zone	50 570046 mE, 7540178 mN
Habitat	gently sloping S facing slope
Soil	Not recorded
Rock Type	Ironstone
Vegetation	*Eucalyptus gamophylla, Acacia inaequilatera* low open woodland over *Acacia atkinsiana* scattered shrubs over *Triodia wiseana* open hummock grassland over *Fimbristylis simulans* scattered sedges
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^Eucalyptus gamophylla,Acacia inaequilatera\Eucalyptus\^tree\6\bc; M1 ^Acacia atkinsiana\Acacia\^shrub\3\bc; G1+ ^Triodia wiseana\Triodia\^hummock grass\2\i; G3 ^Fimbristylis simulans\Fimbristylis\^sedge\1\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia atkinsiana	1.5	120	137-06	
Acacia bivenosa	0.1	140		
Acacia inaequilatera	1.5	220		
Aristida holathera var. *holathera*	0.1	40		
Bulbostylis barbata	0.1	7		
Corymbia deserticola subsp. *deserticola*	0.1	320		
Dodonaea coriacea	0.1	100	137-05	
Duperreya commixta	0.1	170		
Dysphania rhadinostachya	0.1	30		
Eriachne ciliata	0.1	15	137-10	
Eriachne pulchella	0.1	15		
Eucalyptus gamophylla	3	320		
Eucalyptus leucophloia subsp. *leucophloia*	0.5	320	137-01	
Fimbristylis simulans	0.5	15		
Gompholobium oreophilum	0.1	5		
Grevillea ? pyrimidalis subsp. *leucadendron*	0.1	20	137-09	juvenile; inadequate material
Hakea lorea subsp. *lorea*	0.1	210		
Paraneurachne muelleri	0.1	30		
Polycarpaea holtzei	0.1	4	KTF135-19=	
Ptilotus calostachyus	0.1	60		
Ptilotus clementii	0.1	25		
Schizachyrium fragile	0.1	15	137-08	
Senna artemisioides subsp. *oligophylla*	0.1	75	137-02	
Senna artemisioides subsp. *oligophylla x ? S. glutinosa* subsp. *glutinosa*	0.1	120	137-04	
Senna glutinosa subsp. *glutinosa*	0.1	130		
Senna glutinosa subsp. *pruinosa*	0.1	130		
Senna notabilis	0.1	15		
Seringia exastia	0.1	50	137-03	
Triodia wiseana	25	60	137-07	



Site	KTF138
Described by	RM,AL Date 27/03/2021
Type	Quadrat 50 x 50 m
MGA Zone	50 574885 mE, 7512338 mN
Habitat	Plain.
Soil	Not recorded.
Rock Type	Ironstone.
Vegetation	*Acacia pteraneura, A pruinocarpa* low open forest over *Eremophila fraseri* subsp. *fraseri, Senna glutinosa* subsp. *glutinosa* scattered tall shrubs over *Triodia epactia* open hummock grassland over *Eriachne pulchella, Chrysopogon fallax, Enneapogon polyphyllus, Aristida contorta* very open tussock grassland
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^Acacia pteraneura,Acacia pruinocarpa\Acacia\^tree\6\c; M1 ^Eremophila fraseri subsp. fraseri,Senna glutinosa subsp. glutinosa\Eremophila\^shrub\4\bc; G1+ ^Triodia epactia\Triodia\^hummock grass\1\i; G2 ^Eriachne pulchella,Chrysopogon fallax,Enneapogon polyphyllus,Aristida contorta\Eriachne\^other grass\1\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	70		
Abutilon lepidum	0.1	60	KTF138-06	Sens. Lat
Abutilon otocarpum	0.1	15	KTF138-16	
Acacia atkinsiana	0.1	160	KTF137-06=	
Acacia pruinocarpa	10	420		
Acacia pteraneura	25	400	KTF138-01	
Acacia sclerosperma subsp. *sclerosperma*	0.1	230	KTF138-03	
Areocleome oxalidea	0.1	5		
Aristida contorta	0.5	50		
Aristida contorta	0.1	25	KTF136-01=	
Aristida inaequiglumis	0.1	70	KTF138-17	
Aristida latifolia	0.1	50	KTF138-20	
Bidens bipinnata	0.1	30		
Chrysopogon fallax	1	50		
Corchorus tridens	0.1	5		
Cullen leucochaites	0.1	60	KTF138-24	
Dichanthium sericeum	0.1	30		
Digitaria brownii	0.1	60		
Duperreya commixta	0.1	210		
Dysphania rhadinostachya	0.1	15		
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.5	25		
Eremophila fraseri subsp. *fraseri*	1.5	320		
Eremophila latrobei	0.1	90		
Eriachne aristidea	0.1	25		
Eriachne pulchella	1.5	15		
Euphorbia australis var. *hispidula*	0.1	5	KTF138-26	
Euphorbia australis var. *hispidula*	0.1	30	KTF138-27	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Gomphrena kanisii	0.1	30	KTF138-15	
Goodenia microptera	0.1	30		
Goodenia muelleriana	0.1	30	KTF138-22	
Goodenia nuda	0.1	10	KTF138-	

Name	Cover (%)	Height (cm)	Specimen	Notes
			02=	
Goodenia nuda	0.1	30	KTF138-02	
Grona muelleri	0.1	10	KTF138-19	
Hakea lorea subsp. *lorea*	0.1	450	KTF138-14	
Heliotropium heteranthum	0.1	5	KTF138-04	
Hibiscus burtonii	0.1	60		
Hibiscus sturtii var. *grandiflorus*	0.1	50	KTF138-21	
Indigofera monophylla	0.1	60		
Iseilema membranaceum	0.1	15	KTF138-30	
Iseilema vaginiflorum	0.1	30	KTF138-29	Sens. Lat.
Maireana planifolia	0.1	20	KTF138-10	
Malvastrum americanum	0.1	30	N=1	
Melhania oblongifolia	0.1	30		
Panicum decompositum	0.1	30		
Paraneurachne muelleri	0.1	30		
Paspalidium ? basicladum	0.1	30	KTF138-13	
Peripleura arida	0.1	40	KTF138-23	
Peripleura obovata	0.1	25	KTF138-28	
Peripleura virgata	0.1	30	KTF138-18	
Perotis rara	0.1	15		
Phyllanthus maderaspatensis	0.1	60		
Polygala glaucifolia	0.1	5	KTF136-09=	
Portulaca oleracea	0.1	15		
Pterocaulon serrulatum	0.1	50		
Ptilotus clementii	0.1	170		
Ptilotus exaltatus	0.1	60		
Ptilotus fusiformis	0.1	40	KTF138-09	ptilotus fusiformis
Ptilotus helipteroides	0.1	40		
Rhynchosia minima	0.1	30		
Salsola australis	0.1	40		
Sclerolaena cornishiana	0.1	15	KTF138-08	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	70	KTF138-12	
Senna glutinosa subsp. *glutinosa*	0.5	180		
Senna glutinosa subsp. x *luerssenii*	1.5	160		
Senna stricta x *S. glutinosa* subsp. *glutinosa*	0.1	130	KTF138-05	
Sida echinocarpa	0.1	50	KTF138-11	
Sida sp. L (A.M. Ashby 4202) PN	0.1	30	KTF136-14=	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	60	KTF135-09=	
Solanum horridum	0.1	30		
Solanum lasiophyllum	0.1	50		
Sporobolus australasicus	0.1	25		
Streptoglossa decurrens	0.1	25		
Tephrosia sp. Newman (A.A. Mitchell PRP 29) PN	0.1	30	KTF138-25	
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Triodia epactia	28	40		
Urochloa occidentalis var. *occidentalis*	0.1	30	KTF138-07	
Vincetoxicum lineare	0.1	70		

Site	KTF139
Described by	RM,AL Date 27/03/2021
Type	Quadrat 50 x 50 m
MGA Zone	50 574948 mE, 7510131 mN
Habitat	Clay plain with crabholes.
Soil	Not recorded.
Rock Type	Ironstone.
Vegetation	*Eremophila maculata* subsp. *brevifolia, Acacia synchronicia, Enchylaena tomentosa* low shrubland over *Triodia angusta* scattered hummock grasses over *Astrebla pectinata, Cynodon convergens, Dichanthium sericeum* scattered grasses over *Flaveria trinervia, Rhynchosia minima* scattered herbs
Veg Condition	Excellent, Very Good. some cattle scats
Fire Age	No sign of recent fire.
Notes	M1+ ^Eremophila maculata subsp. brevifolia,Acacia synchronicia,Enchylaena tomentosa\Eremophila\^shrub\2\i; G1 ^Triodia angusta\Triodia\^hummock grass\1\bc; G2 ^Astrebla pectinata,Diachanthium sericeum\Astrebla\^other grass\2\r; G3 ^Flaveria trinervia,Rhynchosia minima\Flaveria

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ? victoriae	0.1	60	KTF139-19	Inadequate material
Acacia synchronicia	1	80	KTF139-06	
Acacia xiphophylla	0.1	180		
Aristida contorta	0.1	30		
Aristida latifolia	0.1	70		
Aristida latifolia	0.1	60	KTF139-24	
Astrebla pectinate	5	60	KTF139-04	
Boerhavia paludosa	0.1	30		
Cenchrus ciliaris	0.1	30		
Corchorus tridens	0.1	15		
Crotalaria dissitiflora subsp. benthamiana	0.1	25	KTF139-10	
Cucumis picrocarpus	0.1	70		
Cynodon convergens	3	15	KTF139-26A	
Dactyloctenium radulans	0.1	15		
Dichanthium sericeum	2	30		
Dissocarpus paradoxus	0.1	40	KTF139-03	
Enchylaena tomentosa	0.5	70		
Enneapogon caerulescens	0.1	30		
Eragrostis eriopoda	0.1	15	KTF139-11	
Eragrostis xerophila	0.1	45	KTF139-26B	
Eremophila maculata subsp. brevifolia	11	70	KTF139-02	
Flaveria trinervia	15	50	KTF139-22	
Goodenia Pascua	0.1	15	KTF139-08	
Hibiscus verdcourtii	0.1	40	KTF139-14	
Iseilema vaginiflorum	0.1	30	KTF139-25	Sens. Lat
Neptunia dimorphantha	0.1	30		
Operculina aequisepala	0.1	20		
Panicum laevinode	0.1	40	KTF139-16	
Polymeria longifolia	0.1	20	KTF139-12	
Portulaca oleracea	0.1	10		
Ptilotus exaltatus	0.1	45		
Ptilotus exaltatus	0.1	30		
Rhagodia eremaea	0.1	40		
Rhynchosia minima	1	30	KTF139-05	

Name	Cover (%)	Height (cm)	Specimen	Notes
Rhynchosia minima	0.1	50		
Salsola australis	0.1	30		
Sclerolaena bicornis var. bicornis	0.1	30	KTF139-20	
Senna hamersleyensis	0.1	30	KTF139-17	
Senna sp. Karijini (M.E. Trudgen 10392)	0.1	60	KTF139-07	
Sida ? laevis	0.1	25	KTF139-09	Sterile; inadequate material
Sida fibulifera	0.1	25	KTF139-21	
Sida sp.	0.1	20	KTF139-15	Inadequate material
Sporobolus australasicus	0.1	20	KTF139-18	
Sporobolus australasicus	0.1	15		
Streptoglossa bubakii	0.1	25	KTF139-23	
Swainsona thompsoniana	0.1	15	KTF139-13	
Trianthema triquetrum	0.1	40		
Triodia angusta	1.5	40	KTF139-01	
Urochloa occidentalis var. occidentalis	0.1	15	KTF138-07=	

Site	KTF140
Described by	RM,AL Date 28/03/2021
Type	Quadrat 50 x 50 m
MGA Zone	50 567734 mE, 7563361 mN
Habitat	Floodplain.
Soil	Dark reddish brown.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana* scattered low trees over *Grevillea wickhamii* subsp. *aprica, Grevillea pyramidalis, Acacia ancistrocarpa, A. bivenosa, Gossypium australe* tall shrubland over *Triodia epactia hummock grassland over Cenchrus ciliaris, C. setiger* very open grassland *over Ptilotus exaltatus* scattered herbs
Veg Condition	Very Good. Cattle scats.
Fire Age	Burnt 3-5 years ago.
Notes	U1 ^Corymbia hamersleyana\Corymbia\^tree\6\bc; M1 ^Grevillea wickhamii subsp. aprica,Grevillea pyramidalis,Acacia ancistrocarpa,Acacia bivenosa,Gossypium australe\Grevillea\^shrub\3\i; G1+ ^Triodia epactia\Triodia\^hummock grass\2\c; G2 ^Cenchrus ciliaris,Cenchrus setiger\Cenchrus\^other grass\2\r; G3 ^Ptilotus exaltatus\Ptilotus\^forb\2\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon sp. Pilbara (W.R. Barker 2025) PN	0.1	40	KTF140-08	
Acacia ancistrocarpa	2.5	120		
Acacia atkinsiana	0.1	120	KTF137-06=	
Acacia bivenosa	1.5	120		
Acacia dictyophleba	0.1	190	KTF140-01	
Acacia melleodora	0.1	180	KTF140-02	
Acacia pyrifolia var. *pyrifolia*	0.5	180		
Aristida contorta	0.1	40	KTF140-04	
Aristida holathera var. *holathera*	0.1	40		
Aristida inaequiglumis	0.1	70	KTF140-30	
Arivela viscosa	0.1	60		
Boerhavia coccinea	0.1	25		
Bonamia erecta	0.1	25	KTF140-21	
Cenchrus ciliaris	4.5	60		
Cenchrus setiger	4.5	60		
Chrysopogon fallax	0.1	40		
Corchorus lasiocarpus subsp. *parvus*	0.1	60	KTF140-18	
Corchorus tridens	0.1	20		
Corymbia hamersleyana	1	450		
Crotalaria medicaginea var. *neglecta*	0.1	25	KTF140-10	
Cullen leucanthum	0.1	90	KTF140-28	Sens. Lat
Enneapogon caerulescens	0.1	30		
Eragrostis eriopoda	0.1	30	KTF140-06	
Eragrostis tenellula	0.1	25		
Eriachne aristidea	0.1	30		
Eriachne mucronata (typical form)	0.1	40	KTF140-05	
Euphorbia australis var. *subtomentosa*	0.1	25	KTF140-29	
Euphorbia biconvexa	0.1	15	KTF140-23	
Euphorbia tannensis subsp. *eremophila*	0.1	50	KTF140-26	
Euphorbia vaccaria var. *erucoides*	0.1	15	KTF140-15	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Gomphrena cunninghamii	0.1	15	KTF140-25	
Goodenia forrestii	0.1	30	KTF140-20	Sens. lat
Goodenia microptera	0.1	30		

Name	Cover (%)	Height (cm)	Specimen	Notes
Gossypium austral	1.5	110		
Gossypium australe (Burrup Peninsula Form)	0.1	110	KTF140-22	
Gossypium robinsonii	0.1	170		
Grevillea pyramidalis	1.5	190		
Grevillea pyramidalis subsp. *Leucadendron*	0.1	190	KTF140-11	
Grevillea wickhamii subsp. aprica	7	240	KTF140-13	
Hakea lorea subsp. *lorea*	0.1	160		
Heliotropium cunninghamii	0.1	25	KTF140-17	
Heliotropium pachyphyllum	0.1	40	KTF140-27	
Hibiscus sturtii var. *platychlamys*	0.1	60	KTF140-12	
Indigofera monophylla	0.1	60		
Melhania oblongifolia	0.1	50		
Notoleptopus decaisnei	0.1	15		
Paraneurachne muelleri	0.1	30		
Phyllanthus maderaspatensis	0.1	30		
Polycarpaea corymbosa var. *corymbosa*	0.1	15		
Polymeria ambigua	0.1	30	KTF140-16	Sens. Lat
Ptilotus astrolasius	0.1	50		
Ptilotus exaltatus	1	75		
Rhynchosia minima	0.1	50		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	120	KTF140-09	
Sida fibulifera	0.1	25	KTF140-24	
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	80	KTF140-19	Ferruginous form
Solanum diversiflorum	0.1	30		
Sporobolus australasicus	0.1	15		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	40	KTF140-03	
Trianthema pilosum	0.1	30		
Tribulus hirsutus	0.1	25		
Trichodesma zeylanicum var. *zeylanicum*	0.1	90		
Triodia epactia	32	60		
Triumfetta clementii	0.1	40	KTF140-07	t
Yakirra australiensis var. *australiensis*	0.1	15	KTF140-14	

Site	KTF141
Described by	RM,AL Date 28/03/2021
Type	Quadrat 50 x 50 m
MGA Zone	50 568416 mE, 7562772 mN
Habitat	Floodplain.
Soil	Dark reddish brown.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa, A. bivenosa, A. trachycarpa, Senna artemisioides* subsp. *oligophylla, Eremophila forrestii* open heath over *Ptilotus astrolasius, Ptilotus obovatus* var. *obovatus* low open shrubland over *Triodia epactia* very open hummock grassland over *Ptilotus exaltatus* scattered herbs
Veg Condition	Very Good. Cattle scats
Fire Age	Burnt 3-5 years ago.
Notes	U1 ^Corymbia hamersleyana\Corymbia\^tree\6\bc; M1+ ^Acacia ancistrocarpa,Acacia bivenosa,Acacia trachycarpa,Senna artemisioides subsp. oligophylla,Eremophila forrestii\Acacia\^shrub\3\c; M2 ^Ptilotus astrolasius,Ptilotus obovatus var. obovatus\Ptilotus\^shrub\1\bc; G1 ^Triodia epactia\Triodia\^hummock grass\2\bc; G2 ^Ptilotus exaltatus\Ptilotus\^forb\2\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	60	KTF141-07	Sens. lat.
Acacia ancistrocarpa	12	120		
Acacia bivenosa	10	140		
Acacia trachycarpa	10	130		
Aristida holathera var. holathera	0.1	40		
Aristida inaequiglumis	0.1	70	KTF140-30=	
Arivela viscosa	0.1	60		
Boerhavia coccinea	0.1	25		
Bonamia erecta	0.1	25	KTF140-21=	
Cenchrus ciliaris	0.1	60		
Cenchrus setiger	0.1	60		
Corchorus lasiocarpus subsp. parvus	0.1	60	KTF140-18=	
Corymbia hamersleyana	1	450		
Dysphania rhadinostachya	0.1	15		
Eragrostis eriopoda	0.1	30	KTF140-06=	
Eremophila forrestii	0.5	120		
Eremophila forrestii subsp. forrestii	0.1	60	KTF141-08	
Eriachne aristidea	0.1	30		
Eulalia aurea	0.1	80		
Euphorbia biconvexa	0.1	15	KTF140-23=	
Euphorbia tannensis subsp. eremophila	0.1	50	KTF140-26=	
Euphorbia vaccaria var. vaccaria	0.1	5	KTF141-09	
Goodenia forrestii	0.1	30	KTF140-20=	Sens. lat.
Goodenia microptera	0.1	30		
Gossypium australe (Burrup Peninsula Form)	0.1	110	KTF140-22=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Grevillea wickhamii subsp. aprica	0.1	5	KTF140-13=	
Hakea lorea subsp. lorea	0.1	340		
Heliotropium inexplicitum	0.1	15	KTF141-03	
Hibiscus sturtii var. grandiflorus	0.1	80	KTF141-06	
Hibiscus sturtii var. platychlamys	0.1	60	KTF140-12=	
Indigofera monophylla	0.1	70		
Paraneurachne muelleri	0.1	30		
Polymeria ambigua	0.1	30	KTF140-16=	Sens. Lat
Portulaca oleracea	0.1	30		
Ptilotus astrolasius	2	50		
Ptilotus calostachyus	0.1	70		
Ptilotus exaltatus	1	65		
Ptilotus fusiformis	0.1	15	KTF138-09=	
Ptilotus obovatus var. obovatus	0.5	40		
Scaevola spinescens	0.1	80		
Senna artemisioides subsp. oligophylla x subsp. helmsii	4	120	KTF140-09=	
Sida arsiniata	0.1	50	KTF141-02	
Sida echinocarpa	0.1	60	KTF141-05	
Sida fibulifera	0.1	25	KTF140-24=	
Solanum diversiflorum	0.1	30		
Sporobolus australasicus	0.1	15		
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	40	KTF140-03=	
Trianthema pilosum	0.1	30		
Tribulus hirsutus	0.1	25		
Tribulus macrocarpus	0.1	30	KTF141-04	
Triodia epactia	4	60		
Yakirra australiensis var. australiensis	0.1	15	KTF141-01	

Site	KTF142
Described by	RM,AL Date 28/03/2021
Type	Quadrat 50 x 50 m
MGA Zone	50 570798 mE, 7541979 mN
Habitat	Crest of low hill.
Soil	Dark reddish brown.
Rock Type	Ironstone.
Vegetation	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *Acacia atkinsiana* tall open shrubland over *Seringia exastia* low open shrubland over *Triodia wiseana* open hummock grassland over *Paraneurachne muelleri* scattered tussock grasses.
Veg Condition	Excellent.
Fire Age	Burnt 3-5 years ago.
Notes	U1 ^Eucalyptus leucophloia subsp. leucophloia\Eucalyptus\^tree\6\bc; M1 ^Acacia atkinsiana\Acacia\^shrub\4\bc; M2 ^Seringia exastia\Seringia\^shrub\2\bc; G1+ ^Triodia wiseana\Triodia\^hummock grass\2\i; G2 ^Paraneurachne muelleri\Paraneurachne\^other grass\1\bc

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia atkinsiana	4	250	KTF137-06=	
Amphipogon sericeus	0.1	30	KTF142-11	
Aristida holathera var. *holathera*	0.1	60	KTF142-06	
Aristida holathera var. *holathera*	0.1	60	KTF142-04	
Aristida inaequiglumis	0.1	60	KTF142-13	
Clerodendrum floribundum var. *angustifolium*	0.1	180	KTF142-01	
Corchorus crozophorifolius	0.1	70		
Dodonaea coriacea	0.1	60	KTF142-07	
Enneapogon polyphyllus	0.1	30	KTF142-03	
Eriachne mucronata (typical form)			KTF140-05=	
Eriachne pulchella	0.1	15		
Eucalyptus leucophloia subsp. *leucophloia*	1.5	550		
Fimbristylis simulans	0.1	15		
Gompholobium oreophilum	0.1	50		
Goodenia microptera	0.1	10		
Goodenia stobbsiana	0.1	60		
Grevillea wickhamii	0.1	90		
Hakea lorea subsp. *lorea*	0.1	60		
Hibiscus sturtii var. *campylochlamys*	0.1	20	KTF142-09	
Paraneurachne muelleri	0.5	30		
Polycarpaea holtzei	0.1	5		
Ptilotus calostachyus	0.1	80		
Ptilotus fusiformis	0.1	30		
Ptilotus obovatus var. *obovatus*	0.1	75		
Senna glutinosa subsp. *glutinosa*	0.1	160		
Senna notabilis	0.1	30		
Seringia exastia	4	60	KTF142-10	
Sida arenicola	0.1	150	KTF142-02	
Sida sp. Pilbara (A.A. Mitchell PRP 1543)	0.1	25	KTF142-08	
Themeda triandra	0.1	60	KTF142-05	
Triodia wiseana	25	60		

Site	KTF143
Described by	RM,AL Date 29/03/2021
Type	Quadrat 50 x 50 m
MGA Zone	50 571180 mE, 7560137 mN
Habitat	broad braided drainage line.
Soil	Not recorded.
Rock Type	Ironstone.
Vegetation	*Eucalyptus victrix, Atalaya hemiglauca* low woodland over *Trichodesma zeylanicum* var. *zeylanicum* open shrubland/herbland over *Triodia epactia* hummock grassland over **Cenchrus ciliaris*, **C. setiger* open grassland
Veg Condition	Very Good. Buffel, signs of cattle.
Fire Age	No sign of recent fire.
Notes	U1 ^Eucalyptus victrix,Atalya hemiglauca\Eucalyptus\^tree\6\i; M1 ^Trichodesma zeylanicum var. zeylanicum\Trichodesma\^shrub\3\bc; G1+ ^Triodia epactia\Triodia\^hummock grass\2\c; G2 ^Cenchrus ciliaris,Cenchrus setiger\Cencrhus\^other grass\2\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia dictyophleba	0.1		KTF140-01=	
Acacia pyrifolia	0.1	130		
Arivela viscosa	0.1	35		
Atalaya hemiglauca	8	420		
Boerhavia coccinea	0.1	30		
Cenchrus ciliaris	10	70		
Cenchrus setiger	10	60		
Corchorus crozophorifolius	0.1	60		
Corchorus crozophorifolius	0.1	95		
Crotalaria medicaginea var. *neglecta*	0.1	30	KTF143-07	
Cucumis variabilis	0.1	60		
Cymbopogon ambiguus	0.1	60	KTF143-13	
Cynodon convergens	0.1	30		
Eriachne mucronata	0.1	50		
Eriachne tenuiculmis	0.1	60	KTF143-01	
Eucalyptus victrix	12	650		
Euphorbia australis var. *subtomentosa*	0.1	30	KTF143-06	
Euphorbia tannensis subsp. *eremophila*	0.1	60	KTF143-12	
Euphorbia trigonosperma	0.1	50	KTF143-05	
Goodenia forrestii	0.1	25	KTF143-11	Sens. Lat
Hakea lorea subsp. *lorea*	0.1	60		
Heliotropium cunninghamii	0.1	20	KTF143-04	
Indigofera colutea	0.1	25	KTF143-02	
Indigofera monophylla	0.1	50		
Ipomoea muelleri	0.1	25	KTF143-09	
Notoleptopus decaisnei	0.1	35		
Pentalepis trichodesmoides subsp. *trichodesmoides*			ALRM01=	
Polymeria longifolia	0.1	30		
Pterocaulon sphacelatum	0.1	30	KTF143-08	
Ptilotus exaltatus	0.1	50		
Ptilotus fusiformis	0.1	40		
Rhynchosia minima	0.1	60		
Solanum diversiflorum	0.1	25		
Striga curviflora	0.1	25	KTF143-10	

Name	Cover (%)	Height (cm)	Specimen	Notes
Tephrosia densa	0.1	50		
Themeda triandra	0.1	70		
Trianthema pilosum	0.1	30		
Trichodesma zeylanicum var. *zeylanicum*	2.5	160		
Triodia epactia	45	75		
Triumfetta chaetocarpa	0.1	20	KTF143-03	

Site	KTF144
Described by	RM,AL Date 29/03/2021
Type	Quadrat 50 x 50 m
MGA Zone	50 570440 mE, 7560916 mN
Habitat	Broad braided drainage line.
Soil	Not recorded.
Rock Type	Ironstone.
Vegetation	*Eucalyptus victrix, Atalaya hemiglauca* low woodland over *Grevillea wickhamii* open shrubland over *Corchorus crozophorifolius* low open shrubland over *Triodia epactia* open hummock grassland over *Eriachne tenuiculmis*, **Cenchrus ciliaris, *C. setiger* very open grassland
Veg Condition	Very Good. Buffel, signs of cattle.
Fire Age	No sign of recent fire.
Notes	U1 ^Eucalyptus victrix,Atalya hemiglauca\Eucalyptus\^tree\6\i; M1 ^Grevillea wickhamii\Grevillea\^shrub\3\bc; M2 ^Corchorus crozophorifolius\Corchorus\^shurb\2\bc; G1+ ^Triodia epactia\Triodia\^hummock grass\2\i; G2 ^Eriachne tenuiculmis,Cenchrus ciliaris,Cenchrus setiger\Eriachne\^other grass\1\r

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	35		
Acacia pyrifolia var. *pyrifolia*	0.1	130		
Afrohybanthus aurantiacus	0.1	60		
Arivela viscosa	0.1	35		
Atalaya hemiglauca	1	420		
Boerhavia coccinea	0.1	30		
Bonamia pilbarensis	0.1	25	KTF144-04	
Cenchrus ciliaris	0.5	70		
Cenchrus setiger	0.5	60		
Corchorus crozophorifolius	5	90		
Cucumis variabilis	0.1	60		
Cynodon convergens	0.1	30		
Enneapogon lindleyanus	0.1	80	KTF144-05	
Eriachne pulchella	0.1	15		
Eriachne tenuiculmis	6.5	40	KTF144-01	
Eucalyptus victrix	11	650		
Euphorbia australis var. *subtomentosa*	0.1	15	KTF143-06=	
Euphorbia biconvexa	0.1	60	KTF144-02	
Euphorbia boophthona	0.1		KTF143-12=	
Euphorbia tannensis subsp. *eremophila*	0.1	60	KTF143-12=	
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Gomphrena cunninghamii	0.1	25	KTF144-03	
Grevillea wickhamii	2.5	190		
Hakea lorea subsp. *lorea*	0.1	120		
Indigofera monophylla	0.1	50		
Notoleptopus decaisnei	0.1	50		
Phyllanthus maderaspatensis	0.1	30		
Polycarpaea holtzei	0.1	5		
Polymeria longifolia	0.1	30		
Ptilotus exaltatus	0.1	70		
Rhynchosia minima	0.1	60		
Sporobolus australasicus	0.1	25		
Stemodia grossa	0.1	110		
Tephrosia densa	0.1	70		
Trianthema pilosum	0.1	30		
Trichodesma zeylanicum var. *zeylanicum*	0.1	160		
Triodia epactia	25	60		

Name	Cover (%)	Height (cm)	Specimen	Notes
Triumfetta chaetocarpa	0.1	60	KTF143-03=	
Vachellia farnesiana	0.1	150		
Waltheria indica	0.1	60		

Site KTF145

Described by RM,AL Date 29/03/2021

Type Quadrat 50 x 50 m

MGA Zone 50 570541 mE, 7539478 mN

Habitat Plain.

Soil Dark-reddish brown.

Rock Type Ironstone.

Vegetation *Corymbia deserticola, Acacia aptaneura* low open woodland over *Acacia ancistrocarpa* (*Senna glutinosa* subsp. *glutinosa*) shrubland over *Triodia epactia, Triodia wiseana* hummock grassland

Veg Condition Excellent.

Fire Age Burnt 3-5 years ago.

Notes

U1 ^Corymbia deserticola,Acacia aptaneura\Corymbia\^tree\6\bc; M1 ^Acacia ancistrocarpa),Senna glutinosa subsp.glutinosa)\Acacia\^shrub\3\i; G1+ ^Triodia epactia,Triodia wiseana\Triodia\^hummock grass\2\c

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ancistrocarpa	0.1	60 cm		
Acacia ancistrocarpa	25	170 cm		
Acacia aptaneura	0.5	320 cm		
Acacia bivenosa	0.1	90 cm		
Acacia cowleana	0.1	120 cm	KTF145-08	
Acacia pruinocarpa	0.1	280 cm		
Acacia pyrifolia var. pyrifolia	0.1	90 cm		
Aristida holathera var. *holathera*	0.1	30 cm		
Corymbia deserticola subsp. *deserticola*	1.5	500 cm		
Cymbopogon obtectus	0.1	60 cm	KTF145-05	
Duperreya commixta	0.1	90 cm		
Eriachne pulchella	0.1	25 cm		
Eulalia aurea	0.1	60 cm		
Hakea lorea subsp. *lorea*	0.1	280 cm		
Heliotropium pachyphyllum	0.1	30 cm	KTF145-07	
Jasminum didymum subsp. *lineare*	0.1	90 cm		
Paraneurachne muelleri	0.1	30 cm		
Peripleura obovata	0.1	35 cm	KTF145-02	
Polycarpaea holtzei	0.1	5 cm		
Psydrax suaveolens	0.1	90 cm		
Ptilotus calostachyus	0.1	60 cm		
Ptilotus exaltatus	0.1	50 cm		
Scaevola parvifolia subsp. *pilbarae*	0.1	25 cm	KTF145-01	
Senna artemisioides subsp. *oligophylla x ? S. glutinosa* subsp. *glutinosa*	0.1	70 cm	KTF145-04	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	60 cm	KTF145-06	
Senna glutinosa subsp. *glutinosa*	1	110 cm		
Senna glutinosa subsp. x *luerssenii*	0.1	110 cm		
Senna notabilis	0.1	5 cm		
Seringia ? exastia	0.1	50 cm	KTF145-09	Insufficient material
Solanum lasiophyllum	0.1	60 cm		
Triodia epactia	25	60 cm		
Triodia wiseana	7	60 cm	KTF145-03	
Vincetoxicum lineare	0.1	70 cm		

Site	KTFREL01
Described by	BRMMG Date 19/4/2020
Type	Relevé 50 x 50 m
Central Coord	50 572063 mE, 7516886 mN
Habitat	Plain.
Soil	Dark reddish brown (2.5YR 2.5/4) sandy clay loam.
Rock Type	Ironstone, quartz.
Vegetation	*Acacia aptaneura* scattered low trees over *A. tetragonophylla* scattered tall shrubs over *Eremophila fraseri* subsp. *fraseri* scattered shrubs over *Triodia epactia* open hummock grassland over *Eragrostis pergracilis*, (*E. cumingii*) very open bunch grassland.
Veg Condition	Excellent; a few **Bidens*.
Fire Age	No sign of recent fire.
Notes	Small patches of surrounding area burnt within last 1-2 years. U1 ^*Acacia aptaneura*\^tree\6\bi;M1 ^Acacia *tetragonophylla*\^shrub\4\bi;M2 *Eremophila fraseri* subsp. *fraseri*\shrub\3\bi;G1+ ^*Triodia epactia*\^hummock grass\1\i;G2 *Eragrostis pergracilis,Eragrostis cumingii*\other grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon otocarpum	0.1	12		
Acacia aptaneura	1	350	KTF01-04=	
Acacia tetragonophylla	0.5	300		
Aristida contorta	0.1	20		
Arivela viscosa	0.1	40		
Bidens bipinnata	0.1	30	KTF01-26=	N=10.
Blumea tenella	0.1	30	KTF01-07=	
Boerhavia coccinea	0.1	30	REL01-05	
Bulbostylis turbinata	0.1	10	REL01-12	
Calandrinia sp.	0.1	5	KTF01-09=	Sterile.
Cheilanthes sieberi subsp. *sieberi*	0.1	30	KTF01-08=	
Chloris pectinata	0.1	30	KTF01-30=	
Chrysopogon fallax	0.1	130		
Cucumis variabilis	0.1	50		
Dichanthium sericeum subsp. *humilius*	0.1	40		
Digitaria ctenantha	0.1	35	REL01-04	
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	30	KTF01-14=	
Eragrostis cumingii	2	20		
Eragrostis pergracilis	7	20		
Eremophila fraseri subsp. *fraseri*	1	160	REL01-06	
Eriachne pulchella	0.1	20		
Eulalia aurea	0.1	35		
Euphorbia ferdinandii var. *ferdinandii*	0.1	25	REL01-01	Formal ID by M. Hislop (WAH) KTP01-10=.
Euphorbia biconvexa	0.1	30	REL01-02	
Euphorbia boophthona	0.1	15	REL01-15	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Gomphrena canescens subsp. *canescens*	0.1	20	REL01-07	
Gomphrena lanata	0.1	12	REL01-11	
Goodenia muelleriana	0.1	15	KTF01-06=	
Grevillea berryana	0.1	250	REL01-08	

Name	Cover (%)	Height (cm)	Specimen	Notes
Hibiscus burtonii	0.1	20		
Iseilema membranaceum	0.1	20	KTF01-34=	
Nicotiana simulans	0.1	50	KTF01-25=	Formal ID by M. Hislop (WAH) 03-29=
Panicum effusum	0.1	60	REL01-13	
Paspalidium rarum	0.5	30	REL01-03	
Perotis rara	0.1	15		
Portulaca oleracea/intraterranea	0.1	3		
Pterocaulon sphacelatum	0.1	30	KTF01-40=	
Ptilotus auriculifolius	0.1	30		
Ptilotus exaltatus	0.1	6		
Ptilotus fusiformis	0.1	45		
Ptilotus gaudichaudii	0.1	30		
Ptilotus helipteroides	0.1	15		
Ptilotus polystachyus	0.1	35		
Ptilotus roei	0.1	5	KTF01-35=	
Ptilotus schwartzii var. *schwartzii*	0.1	30	REL01-14	
Ptilotus xerophilus	0.1	20	KTF01-32=	
Roebuckiella similis	0.1	25	REL01-09	
Senna notabilis	0.1	20		
Solanum ferocissimum	0.1	20	KTF01-17=	
Spermacoce brachystema	0.1	20	KTF01-19=	
Sporobolus australasicus	0.1	20		
Streptoglossa bubakii	0.1	15	KTF01-21=	
Themeda triandra	0.1	60		
Trichodesma zeylanicum var. *zeylanicum*	0.1	60		
Triodia epactia	20	40	KTF01-05=	

Site	KTFREL02
Described by	BRM/RM Date 24/5/2020
Type	Relevé 72 x 35 m
Central Coord	50 568092 mE, 7538780 mN
Habitat	Moderate creek with stony bed, flowing NW/SE.
Soil	Dark reddish brown sandy loam.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana* low open woodland over *Clerodendrum* floribundum var. *angustifolium* scattered tall shrubs over *Acacia pyrifolia* var. *pyrifolia scattered* shrubs over *Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186), (*Corchorus lasiocarpus* subsp. *parvus*) low open shrubland over *Triodia epactia* very open hummock grassland and *Cymbopogon ambiguus* very open tussock grassland.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1+ ^*Corymbia hamersleyana*\^tree\6\r;M1 *Clerodendrum floribundum* var. *angustifolium*\shrub\4\bi;M2 *Acacia pyrifolia* var. *pyrifolia*\shrub\3\bi;M3 ^*Tephrosia rosea* var. Fortescue creeks (M.I.H. Brooker 2186),*Corchorus lasiocarpus* subsp. *parvus*\^shrub\2\r;G1 ^*Cymbopogon ambiguus*\^tussock grass\3\r;G2 *Triodia epactia*\hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon cunninghamii	0.1	50	REL02-09	
Acacia pyrifolia var. *pyrifolia*	1	130		
Afrohybanthus aurantiacus	0.1	25		
Alternanthera nana	0.1	20	REL02-11	
Arivela viscosa	0.1	40		
Boerhavia coccinea	0.1	30	REL02-08	
Bonamia pilbarensis	0.1	20	REL02-06	
Clerodendrum floribundum var. *angustifolium*	0.5	280	REL02-04	
Corchorus lasiocarpus subsp. *parvus*	3	90	REL02-02	
Corymbia hamersleyana	5	800		
Crotalaria medicaginea var. *neglecta*	0.1	25		
Cymbopogon ambiguus	4	110		Procerus form.
Dodonaea lanceolata var. *lanceolata*	0.1	70	REL02-10	
Duperreya commixta	0.1	200		
Eriachne tenuiculmis	0.5	60		
Euphorbia biconvexa	0.1	30	REL02-03	
Euphorbia tannensis subsp. *eremophila*	0.1	20	REL02-05	
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Goodenia stobbsiana	0.1	30		
Gossypium robinsonii	0.1	70		
Grevillea pyramidalis subsp. *leucadendron*	0.1	180		
Grevillea wickhamii subsp. *hispidula*	0.1	230		
Indigofera monophylla	0.1	40		
Jasminum didymum subsp. *lineare*	0.1	110		
Notoleptopus decaisnei	0.1	20		
Phyllanthus maderaspatensis	0.1	35		
Polycarpaea longiflora	0.1	30		

Ptilotus astrolasius	0.1	30		
Ptilotus fusiformis	0.1	30		
Santalum lanceolatum	0.1	70		
Scaevola spinescens	0.1	60		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	40	REL02-07	Closer to straight subsp. *helmsii*, but not quite right.
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	30		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	7	90		
Themeda triandra	0.1	80		
Trichodesma zeylanicum var. *zeylanicum*	0.1	20		
Triodia epactia	5	30	REL02-01	
Waltheria indica	0.1	70	REL02-12	

Site	KTFREL04
Described by	RM/SY Date 19/4/2020
Type	Relevé 25 x 40 m
Central Coord	50 571020 mE, 7520593 mN
Habitat	Plain gently sloping to W.
Soil	Dark reddish brown silty clay.
Rock Type	Quartz.
Vegetation	*Acacia aptaneura* low open woodland over *A. tetragonophylla* scattered tall shrubs over *Eriachne benthamii* tussock grassland with **Bidens bipinnata* scattered herbs.
Veg Condition	Very Good: scattered **Bidens*.
Fire Age	No sign of recent fire.
Notes	U1+ ^*Acacia aptaneura*\^tree\6\r;M1 ^*Acacia tetragonophylla*\^shrub\4\bi;G1 ^*Eriachne benthamii*\^tussock grass\1\c;G2 *Bidens bipinnata*\forb\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia aptaneura	9	800	REL04-01	
Acacia tetragonophylla	2	650	KTF05-14=	
Areocleome oxalidea	0.1	10	KTF05-01=	
Aristida obscura	0.1	60	REL04-21	
Bidens bipinnata	0.5	30		N=30.
Blumea tenella	0.1	20	REL04-17	N=20.
Bulbostylis barbata	0.1	10	REL04-02	
Bulbostylis turbinata	0.1	10	REL04-29	
Calandrinia pumila	0.1	20	REL04-25	Formal ID by M. Hislop (WAH)
Calandrinia sp.	0.1	5	REL04-03	Sterile.
Centipeda minima subsp. *macrocephala*	0.1	10	REL04-16	
Cheilanthes sieberi subsp. *sieberi*	0.1	10	REL04-09	
Convolvulus clementii	0.1	70	REL04-11	
Cucumis picrocarpus	0.1	30	REL04-24	
Cucumis variabilis	0.1	70	REL04-20	
Dysphania glomulifera subsp. *eremaea*	0.1	15	REL04-14	
Eragrostis pergracilis	0.1	20	REL04-04	
Eriachne benthamii	65	90	BS02b	
Euphorbia drummondii	0.1	15	REL04-07	
Evolvulus alsinoides	0.1	10	KTF05-21=	Sterile.
Gomphrena lanata	0.1	15	REL04-28	
Goodenia muelleriana	0.1	10	REL04-12	
Goodenia prostrata	0.1	30	KTF06-05=	
Grevillea berryana	0.5	120	KTF05-16=	
Haloragis sp.	0.1	30	REL04-18	Inadequate material.
Mnesithea formosa	0.1	60	REL04-23	
Nicotiana simulans (type 2)	0.1	60	REL04-15	Formal ID by M. Hislop (WAH).
Perotis rara	0.1	20	REL04-13	
Phyllanthus erwinii	0.1	10	REL04-10	
Portulaca oleracea/intraterranea	0.1	15		
Ptilotus gaudichaudii	0.1	50	KTF05-08=	
Ptilotus helipteroides	0.1	10	KTF05-23=	

Ptilotus xerophilus	0.1	40	REL04-19	
Roebuckiella similis	0.1	20	REL04-06	
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	20	REL04-27	Closer to straight subsp. *helmsii*, but not quite right.
Sida platycalyx	0.1	30	REL04-26	
Sida sp. L (A.M. Ashby 4202) PN	0.1	20	REL04-05	
Spermacoce brachystema	0.1	20	REL04-08	
Streptoglossa bubakii	0.1	5	REL04-22	

Site KTFREL05

Described by RM/SY Date 20/4/2020

Type Relevé 25 x 40 m

Central Coord 50 571100 mE, 7519422 mN

Habitat Plain gently sloping to west

Soil Dark reddish brown silty clay.

Vegetation *Acacia aptaneura* low woodland over *Triodia epactia* scattered hummock grasses with *Aristida obscura* scattered tussock grasses and **Bidens bipinnata* open herbland.

Veg Condition Very Good: some weeds; evidence of cattle.

Fire Age No sign of recent fire.

Notes U1+ ^*Acacia aptaneura*\^tree\6\i;G1 ^*Bidens bipinnata*\^forb\1\i;G2 *Triodia epactia,Aristida* obscura\hummock grass,tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	50	REL05-07	
Abutilon oxycarpum subsp. Prostrate (A.A. Mitchell PRP 1266) PN	0.1	15	REL05-36	
Acacia aptaneura	15	800	REL05-01	
Acacia tetragonophylla	0.5	400	KTF05-14=	
Areocleome oxalidea	0.1	10	REL05-32	
Aristida obscura	1	60	REL05-10	
Arivela viscosa	0.1	80		
Bidens bipinnata	2	30		N=30.
Blumea tenella	0.1	20	REL04-17=	N=2.
Bulbostylis barbata	0.1	10	REL04-02=	
Calandrinia sp.	0.1	3	REL04-03=	Sterile.
Cheilanthes sieberi subsp. *sieberi*	0.1	15	REL04-09=	
Convolvulus clementii	0.1	40	REL05-37	
Cucumis melo	0.1	30	REL05-03	
Cucumis picrocarpus	0.1	40	REL04-24=	
Cucumis variabilis	0.1	70	REL04-20=	
Dichanthium sericeum subsp. *humilius*	0.1	40	REL05-25	
Dodonaea petiolaris	0.1	50	REL05-23	
Dysphania kalpari	0.1	20	REL05-34	
Enneapogon polyphyllus	0.1	30	REL05-28	
Eremophila forrestii x *latrobei*	0.1	90	REL05-12	
Eriachne benthamii	60	90	BS02b=	
Euphorbia biconvexa	0.1	40	REL05-26	
Euphorbia drummondii	0.1	20	REL05-15	
Evolvulus alsinoides	0.1	20	KTF05-21=	Sterile.
Glycine canescens	0.1	40	REL05-22	
Goodenia heterochila	0.1	40	REL05-21	
Goodenia nuda	0.1	40	REL05-16	N=6.
Goodenia prostrata	0.1	40	REL05-06	
Goodenia prostrata	0.1	40	REL05-14	MM: SPECIMEN MISSING; field det assumed correct.
Grevillea berryana	0.1	120	KTF05-16=	
Hibiscus burtonii	0.1	60	REL05-30	
Indigofera georgei	0.1	90	REL05-18	
Maireana villosa	0.1	40	REL05-33	
Nicotiana simulans (type 2)	0.1	50	REL04-15=	Formal ID by M. Hislop (WAH).

Name	Cover (%)	Height (cm)	Specimen	Notes
Panicum effusum	0.1	20	REL05-31	
Panicum effusum	0.1	20	REL05-04	
Paspalidium rarum	0.1	30	REL05-11	
Perotis rara	0.1	15	REL04-13=	
Phyllanthus erwinii	0.1	7	REL04-10=	
Portulaca oleracea/intraterranea	0.1	20		
Ptilotus gaudichaudii	0.1	50	REL05-02	
Ptilotus helipteroides	0.1	10	KTF05-23=	
Ptilotus obovatus var. *obovatus*	0.1	60	REL05-20	
Ptilotus polystachyus	0.1	60	REL05-09	
Roebuckiella similis	0.1	25	REL04-06=	
Sida sp. L (A.M. Ashby 4202) PN	0.1	10	REL04-05=	
Sida sp. L (A.M. Ashby 4202) PN	0.1	20	REL05-27	
Solanum ferocissimum	0.1	30	REL05-08	N=50.
Solanum lasiophyllum	0.1	40	REL05-35	
Spermacoce brachystema	0.1	20	REL04-08=	
Sporobolus australasicus	0.1	20	REL05-29	
Swainsona sp.	0.1	20	REL05-13	Juvenile; inadequate material.
Themeda ? triandra	0.1	70	REL05-38	
Tribulus astrocarpus	0.1	5	KTF05-02=	
Trichodesma zeylanicum var. *zeylanicum*	0.1	60	REL05-17	Juvenile.
Triodia epactia	0.5	60	REL05-19	
Triodia melvillei	0.1	90	REL05-24	

Site KTFREL06

Described by RM/SY Date 22/4/2020

Type Relevé 20 x 70 m

Central Coord 50 546753 mE, 7601882 mN

Habitat Low-lying depression of broad plain.

Soil Dark reddish brown silty clay.

Vegetation *Corymbia hamersleyana* scattered low trees over *Acacia ancistrocarpa* tall open shrubland over *A. trachycarpa* scattered shrubs over *Triodia epactia*, (*T. wiseana*) open hummock grassland and *Chrysopogon fallax* scattered tussock grasses.

Veg Condition Very Good: signs of cattle; occasional **Cenchrus setiger*.

Fire Age No sign of recent fire.

Notes U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia ancistrocarpa*\^shrub\4\r;M2 *Acacia trachycarpa*\shrub\3\bi;G1 *Chrysopogon fallax*\tussock grass\2\bi;G2+ ^*Triodia epactia,Triodia wiseana*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	30	REL06-14	
Acacia ancistrocarpa	3	300		
Acacia colei	0.1	190	REL06-09	Sterile.
Acacia inaequilatera	0.1	180		
Acacia trachycarpa	1.5	110		
Afrohybanthus aurantiacus	0.1	20		
Aristida holathera var. *holathera*	0.1	30	REL06-23	
Arivela viscosa	0.1	40		
Boerhavia burbidgeana	0.1	90		
Bonamia erecta	0.1	25	REL06-16	
Carissa lanceolata	0.1	150	KTF15-20=	
Cenchrus setiger	0.1	50		N=15.
Chrysopogon fallax	1	90		
Corymbia hamersleyana	1.5	450		
Crotalaria medicaginea var. *neglecta*	0.1	20	KTF16-05=	
Cynodon convergens	0.1	15	KTF15-02=	
Dichanthium sericeum subsp. *sericeum*	0.1	50	KTF14-02=	
Digitaria brownii	0.1	15	REL06-01	
Duperreya commixta	0.1	110		
Dysphania rhadinostachya subsp. *inflata*	0.1	5	KTF16-16=	
Eriachne aristidea	0.1	5	REL06-04	
Euphorbia australis var. *subtomentosa*	0.1	20	REL06-18	Also REL06-20.
Euphorbia biconvexa	0.1	10	REL06-05	
Euphorbia trigonosperma	0.1	40	KTF16-04=	Match to WAH ID.
Evolvulus alsinoides	0.1	20	REL06-10	Sterile.
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Goodenia forrestii	0.1	30	REL06-22	
Goodenia microptera	0.1	7		
Grevillea wickhamii	0.1	3		Sterile.
Heliotropium pachyphyllum	0.1	10	REL06-07	
Indigofera monophylla	0.1	40	REL06-15	
Iseilema dolichotrichum	0.1	20	KTF16-11=	
Isotropis atropurpurea	0.1	15	REL06-17	
Notoleptopus decaisnei	0.1	20	KTF15-28=	
Paraneurachne muelleri	0.1	35		
Paspalidium clementii	0.1	30	REL06-03	
Phyllanthus maderaspatensis	0.1	10		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus exaltatus	0.1	5		Juvenile.
Rhynchosia minima	0.1	40		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	5	REL06-12	
Senna glutinosa subsp. *glutinosa*	0.1	200		
Senna notabilis	0.1	10		
Seringia nephrosperma	0.1	70	REL06-08	
Sida spinosa	0.1	40	REL06-11	
Solanum diversiflorum	0.1	3		
Sporobolus australasicus	0.1	15		
Themed sp. Hamersley station	0.1	50	REL06-21	Formal ID by M. Hislop (WAH).
Tribulus macrocarpus	0.1	25		
Trichodesma zeylanicum var. *zeylanicum*	0.1	15		
Triodia epactia	20	40		
Triodia wiseana	4	30	KTF15-21=	
Triumfetta chaetocarpa	0.1	15	REL06-19	
Triumfetta clementii	0.1	30	REL06-13	
Urochloa occidentalis var. *ciliata*	0.1	40	REL06-06	

Site	KTFREL07
Described by	PL/AL Date 19/4/2020
Type	Relevé 60 x 30 m
Central Coord	50 573930 mE, 7513309 mN
Habitat	Plain, with groved Mulga vegetation.
Soil	Reddish brown clay loam with crab holes.
Rock Type	Ironstone.
Vegetation	*Acacia aptaneura* low open woodland over *Chrysopogon fallax* very open tussock grassland over *Triodia epactia* scattered hummock grasses and **Bidens bipinnata* scattered herbs.
Veg Condition	Good: donkey scats; scattered weeds.
Fire Age	No sign of recent fire.
Notes	U1+ ^*Acacia aptaneura*\^tree\6\r;G1 ^*Chrysopogon fallax*\^tussock grass\2\r;G2 *Triodia epactia,Bidens bipinnata*\hummock grass,forb\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	40		
Abutilon otocarpum	0.1	40		
Acacia aptaneura	4	500	KTF01-04=	
Alternanthera denticulata	0.1	30		
Aristida contorta	0.1	30		
Arivela viscosa	0.1	35		
Bidens bipinnata	0.5	40		N=700.
Blumea tenella	0.1	10		
Boerhavia coccinea	0.1	40		
Bulbostylis turbinata	0.1	15		
Calandrinia sp.	0.1	8	REL07-03	Sterile.
Centipeda minima subsp. *macrocephala*	0.1	8		
Cheilanthes sieberi subsp. *sieberi*	0.1	30		
Chloris pectinata	0.1	50	REL07-06	
Chrysopogon fallax	4	160		
Convolvulus clementii	0.1	50		
Corchorus tridens	0.1	20		
Cucumis picrocarpus	0.1	70		
Cyperus iria	0.1	15		
Dactyloctenium radulans	0.1	10		
Dichanthium sericeum subsp. *humilius*	0.1	40		
Digitaria brownii	0.1	70		
Digitaria ctenantha	0.1	30		
Duperreya commixta	0.1	120		
Echinochloa colona	0.1	45	REL07-12	
Elytrophorus spicatus	0.1	10		
Enneapogon caerulescens	0.1	30		
Enneapogon polyphyllus	0.1	40		
Eragrostis cumingii	0.25	20		
Eragrostis tenellula	0.1	30		
Eremophila forrestii subsp. *forrestii*	0.1	160		
Eriachne benthamii	0.1	60		
Euphorbia boophthona	0.1	40		
Evolvulus alsinoides var. *decumbens*	0.1	40		
Evolvulus alsinoides var. *villosicalyx*	0.1	30		

Name	Cover (%)	Height (cm)	Specimen	Notes
Gomphrena cunninghamii	0.1	30		
Goodenia muelleriana	0.1	40		
Goodenia nuda	0.1	40	KTF01-02=	N=5.
Goodenia prostrata	0.1	8	REL07-08b	
Iseilema macratherum	0.1	30	REL07-10	
Iseilema membranaceum	0.1	30	REL07-05a	
Maireana planifolia	0.1	50		
Malvastrum americanum	0.1	50		N=1.
Nicotiana simulans (type 1)	0.1	70	REL07-09	Formal ID by M. Hislop (WAH).
Nicotiana simulans (type 2)	0.1	40	REL07-02	Formal ID by M. Hislop (WAH)REL04-15=.
Paspalidium clementii	0.1	40		
Paspalidium rarum	0.1	25		
Peripleura arida	0.1	35	REL07-07	
Perotis rara	0.1	15		
Phyllanthus erwinii	0.25	10		
Pterocaulon sphacelatum	0.1	10		
Ptilotus exaltatus	0.1	40		
Ptilotus gaudichaudii	0.1	40		
Ptilotus helipteroides	0.1	40		
Ptilotus roei	0.1	25	KTF09-18=	
Ptilotus xerophilus	0.1	45	REL07-11	
Rhynchosia minima	0.1	30		
Roebuckiella similis	0.1	15	REL07-04	
Salsola australis	0.1	25		
Sclerolaena cornishiana	0.1	15	KTF07-12=	
Senna notabilis	0.1	30		
Sida sp. L (A.M. Ashby 4202) PN	0.1	20		
Sida spinosa	0.1	40	REL07-01	
Solanum ferocissimum	0.1	25		
Spermacoce brachystema	0.25	20		
Sporobolus australasicus	0.1	50		
Streptoglossa bubakii	0.1	10		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.1	120	REL07-05b	
Themeda triandra	0.1	100		
Tribulus astrocarpus	0.1	30		
Triodia epactia	2	50		
Urochloa occidentalis var. *occidentalis*	0.1	40		
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.25	40		
Vincetoxicum lineare	0.1	60		

Site	KTFREL08
Described by	PL/AL Date 24/4/2020
Type	Relevé 50 x 50 m
Central Coord	50 547619 mE, 7601588 mN
Habitat	Major drainage; narrow in parts, with ephemeral pools; island along S boundary.
Soil	Dark reddish brown loamy sand.
Rock Type	Calcrete, ironstone.
Vegetation	*Eucalyptus victrix*, (*E. camaldulensis* subsp. *refulgens*) woodland over *Melaleuca glomerata*, (*Acacia colei*) tall open shrubland over *Carissa lanceolata* scattered shrubs over *Eulalia aurea, *Cenchrus setiger*, (**C. ciliaris*) very open tussock grassland with *Triodia epactia* scattered hummock grasses.
Veg Condition	Very Good: cattle disturbance (tracks, scats and grazing); scattered weeds, mainly **Cenchrus* spp.
Fire Age	No sign of recent fire.
Notes	Too difficult to establish a 50x50 or 40x62 given the nature of drainage. NB. Relabeled from Q39 to REL08, hence specimen numbers. U1+ ^*Eucalyptus victrix,Eucalyptus camaldulensis* subsp. *refulgens*\^tree\7\i;M1 ^*Melaleuca glomerata,Acacia colei*\^shrub\4\r;M2 *Carissa lanceolata*\shrub\3\bi;G1 ^*Eulalia aurea*,^*Cenchrus setiger,Cenchrus ciliaris*\^tussock grass\1\r;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	40		
Acacia ancistrocarpa	0.1	210		
Acacia arida	0.1	60	KTF37-27=	
Acacia citrinoviridis	0.1	250		
Acacia colei	2	300		Sterile.
Acacia pyrifolia var. *pyrifolia*	0.1	220		
Acacia tumida var. *pilbarensis*	0.1	100		
Aeschynomene indica	0.1	110		
Afrohybanthus aurantiacus	0.1	40		
Alternanthera angustifolia	0.1	25		
Alternanthera nana	0.1	25		
Amaranthus undulatus	0.1	25		
Ammannia baccifera	0.1	30		
Ammannia multiflora	0.1	25		
Arivela viscosa	0.1	40		
Basilicum polystachyon	0.1	50		
Bergia pedicellaris	0.1	10		
Blumea tenella	0.1	20		
Boerhavia coccinea	0.1	40		
Bothriochloa ewartiana	0.25	130	KTF37-21=	Formal ID by M. Hislop (WAH).
Carissa lanceolata	1	190		
Cenchrus ciliaris	1	80		
Cenchrus setiger	2	90		
Centipeda minima subsp. *macrocephala*	0.1	10		
Chrysopogon fallax	0.25	90		
Corchorus tridens	0.1	25		
Crotalaria medicaginea var. *neglecta*	0.1	50		
Cucumis picrocarpus	0.1	25		
Cucumis variabilis	0.1	80		
Cynodon convergens	0.1	40		

Name	Cover (%)	Height (cm)	Specimen	Notes
Cyperus bifax	0.1	40	KTF39-08	
Cyperus difformis	0.1	35	KTF37-11=	
Cyperus ixiocarpus	0.1	50		
Cyperus squarrosus	0.1	15		
Dactyloctenium radulans	0.1	15		
Echinochloa colona	0.1	40		
Eleocharis atropurpurea	0.25	10	KTF37-08=	
Elytrophorus spicatus	0.1	20		
Enteropogon ramosus	0.1	40		
Eragrostis cumingii	0.25	20		
Eragrostis tenellula	0.5	30		
Eragrostis xerophila	0.1	30		
Eucalyptus camaldulensis subsp. *refulgens*	4	1400		
Eucalyptus victrix	14	1300		
Eulalia aurea	2	60		
Euphorbia australis var. *subtomentosa*	0.1	15	KTF39-02	
Euphorbia trigonosperma	0.1	35	KTF37-04=	Match to WAH ID.
Evolvulus alsinoides var. *decumbens*	0.1	25		
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Fimbristylis littoralis	0.1	30	KTF37-10=	
Glinus oppositifolius	0.1	8	KTF39-03	
Gomphrena cunninghamii	0.1	10		
Goodenia forrestii	0.1	35		
Goodenia lamprosperma	0.1	40		
Goodenia microptera	0.1	20		
Gossypium australe	0.1	40		
Gossypium robinsonii	0.1	120		
Heteropogon contortus	0.1	70		
Indigofera linnaei	0.1	25		
Indigofera monophylla	0.1	60		
Ipomoea muelleri	0.1	40		
Ipomoea polymorpha	0.1	10		
Iseilema membranaceum	0.1	30	KTF39-07	
Jasminum didymum subsp. *lineare*	0.1	80		
Lipocarpha microcephala	0.1	15	KTF39-01	
Malvastrum americanum	0.1	40		N=1.
Marsilea hirsuta	0.1	10	KTF39-04	
Melaleuca glomerata	7	320		
Melhania oblongifolia	0.1	30		
Paspalidium rarum	0.1	30		
Phyllanthus erwinii	0.1	10		
Phyllanthus exilis	0.1	30		
Phyllanthus maderaspatensis	0.1	40		
Pluchea rubelliflora	0.1	40		
Polygala glaucifolia	0.1	8	KTF39-06	
Polymeria sp. nov. (aff. site 1365)	0.1	15	KTF39-05	Formal ID by M. Hislop (WAH).
Polymeria ambigua	0.1	25		
Portulaca oleracea	0.1	15	KTF64-05=	
Pterocaulon sphacelatum	0.1	25		
Ptilotus exaltatus	0.1	20		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ptilotus fusiformis	0.1	40		
Rhynchosia minima	0.1	40		
Rostellularia adscendens var. *clementii*	0.1	10		
Rotala diandra	0.1	8		
Rotala mexicana	0.1	5	KTF37-15a=	
Schoenoplectiella laevis	0.5	25		
Scleromitrion galioides	0.1	25		
Senna artemisioides subsp. helmsii	0.1	80		
Senna notabilis	0.1	20		
Sida fibulifera	0.1	25		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	60		
Sida spinosa	0.1	40		
Solanum diversiflorum	0.1	30		
Sporobolus australasicus	0.1	25		
Stemodia grossa	0.1	30		
Streptoglossa bubakii	0.1	30		
Synaptantha tillaeacea var. *tillaeacea*	0.1	8	KTF39-09	
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	50		
Themeda triandra	0.1	110	KTF37-01=	Formal ID by M. Hislop (WAH).
Themeda triandra	0.1	90		
Tribulus macrocarpus	0.1	20		
Trichodesma zeylanicum var. *zeylanicum*	0.1	40		
Triodia epactia	1	60		
Triumfetta chaetocarpa	0.1	40	KTF67-02=	
Urochloa occidentalis var. *ciliata*	0.1	60		
Vachellia farnesiana	0.5	100		N=6.
Vigna lanceolata var. *lanceolata*	0.1	30		
Wahlenbergia tumidifructa	0.1	35		
Waltheria indica	0.1	30		

Site	KTFREL09
Described by	PL/AL Date 25/4/2020
Type	Relevé 50 x 50 m
Central Coord	50 558659 mE, 7591403 mN
Habitat	Moderate drainage with stony surface.
Soil	Dark reddish brown loamy sand.
Rock Type	Calcrete, ironstone.
Vegetation	*Eucalyptus victrix, Acacia citrinoviridis* scattered low trees over Melaleuca *glomerata* tall open shrubland over *Triodia epactia* very open hummock grassland.
Veg Condition	Very Good: scattered weeds.
Fire Age	No sign of recent fire.
Notes	Species poor. *Acacia* narrow floodplain bank to S (see map note MNPL19). U1 ^*Eucalyptus victrix*,^*Acacia citrinoviridis*\^tree\6\bi;M1+ ^*Melaleuca glomerata*\^shrub\4\r;G1 ^*Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	40		Form 1.
Acacia aptaneura	0.1	400		
Acacia citrinoviridis	0.5	220		
Aeschynomene indica	0.1	40		
Afrohybanthus aurantiacus	0.1	40		
Alysicarpus muelleri	0.1	30	REL09-03	
Aristida holathera var. *holathera*	0.1	30		
Arivela viscosa	0.1	50		
Bergia pedicellaris	0.1	8		
Bidens bipinnata	0.1	60		N=100.
Cenchrus ciliaris	0.1	40		N=2.
Cenchrus setiger	0.1	50		N=50.
Corchorus sidoides subsp. *sidoides*	0.1	25	KTF45-24=	
Corchorus tridens	0.1	25		
Crotalaria medicaginea var. *neglecta*	0.1	30		
Cucumis variabilis	0.1	90		
Cynodon convergens	0.1	40		
Cyperus pulchellus	0.1	25	REL09-01	
Duperreya commixta	0.1	80		
Echinochloa colona	0.1	25		N=1.
Elytrophorus spicatus	0.1	25		
Enneapogon caerulescens	0.1	25		
Eragrostis cumingii	0.1	30		
Eragrostis elongata	0.1	30	REL09-02	
Eragrostis tenellula	0.1	30		
Eriachne aristidea	0.1	25		
Eriachne mucronata	0.1	35		
Eriachne pulchella	0.1	15		
Eriachne tenuiculmis	0.1	40		
Eucalyptus victrix	0.5	800		
Eulalia aurea	0.1	80		
Euphorbia trigonosperma	0.1	40		
Evolvulus alsinoides var. *decumbens*	0.1	30		
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Fimbristylis microcarya	0.1	25		
Gomphrena cunninghamii	0.1	25		
Gonocarpus ephemerus	0.1	8	REL09-05	
Goodenia microptera	0.1	25		
Gossypium robinsonii	0.1	50		

Name	Cover (%)	Height (cm)	Specimen	Notes
Ipomoea muelleri	0.1	10		
Ipomoea polymorpha	0.1	25		
Iseilema membranaceum	0.1	30	REL09-04	
Marsilea hirsuta	0.1	10		
Melaleuca glomerata	9	380		
Notoleptopus decaisnei	0.1	30		
Paspalidium rarum	0.1	40		
Phyllanthus exilis	0.1	20		
Ptilotus calostachyus	0.1	80		
Ptilotus exaltatus	0.1	30		
Ptilotus fusiformis	0.1	50		
Rostellularia adscendens var. *clementii*	0.1	20		
Schoenoplectiella laevis	0.1	25		
Scleromitrion galioides	0.1	25		
Senna glutinosa subsp. *glutinosa*	0.1	160		
Senna glutinosa subsp. x *luerssenii*	0.1	16		
Sesbania cannabina	0.1	70		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	20		
Stemodia grossa	0.1	30		
Themeda triandra	0.1	80		
Trachymene oleracea subsp. *oleracea*	0.1	30	AL10=	
Triodia epactia	4	60		
Urochloa occidentalis var. *occidentalis*	0.1	40		
Vincetoxicum lineare	0.1	50		
Waltheria indica	0.1	30		

Site	KTFREL10
Described by	RM/SY Date 25/4/2020
Type	Relevé 50 x 50 m
Central Coord	50 561691 mE, 7585676 mN
Habitat	Minor drainage flowing E-W.
Soil	Dark reddish brown silty clay loam to light clay.
Rock Type	Ironstone.
Vegetation	*Corymbia hamersleyana* scattered low trees over *Acacia atkinsiana, A. tumida* var. *pilbarensis* tall open shrubland over *Triodia epactia* very open hummock grassland and *Themeda triandra* scattered tussock grasses.
Veg Condition	Excellent: very occasional **Bidens*.
Fire Age	Burnt 3-5 years ago.
Notes	U1 ^*Corymbia hamersleyana*\^tree\6\bi;M1 ^*Acacia atkinsiana*,^*Acacia tumida* var. *pilbarensis*\^shrub\4\r;G1 *Themeda triandra*\tussock grass\2\bi;G2+ ^*Triodia epactia*\^hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia adoxa var. *adoxa*	0.1	40	REL10-10	
Acacia ancistrocarpa	0.1	180		
Acacia atkinsiana	2.5	300		
Acacia tumida var. *pilbarensis*	1	400	REL10-01	
Afrohybanthus aurantiacus	0.1	40		
Alternanthera nana	0.1	20	KTF29-18=	
Aristida contorta	0.1	30		
Arivela viscosa	0.1	30		
Bidens bipinnata	0.1	30		N=10.
Bulbostylis barbata	0.1	5		
Corchorus tectus	0.1	15	KTF29-11=	
Corchorus tridens	0.1	7		
Corymbia hamersleyana	1.5	500		
Crotalaria medicaginea var. *neglecta*	0.1	30	REL10-03	
Cucumis variabilis	0.1	90		
Cynodon convergens	0.1	10		
Digitaria brownii	0.1	30	REL06-01=	
Duperreya commixta	0.1	90		
Enneapogon polyphyllus	0.1	10		
Eragrostis cumingii	0.1	20	REL10-06	
Eriachne aristidea	0.1	20		
Eriachne pulchella	0.1	5		
Eriachne tenuiculmis	0.1	40	KTF29-16=	
Eulalia aurea	0.1	60		
Evolvulus alsinoides var. *villosicalyx*	0.1	15		
Fimbristylis simulans	0.1	15	REL10-02	
Gompholobium oreophilum	0.1	20		
Goodenia forrestii	0.1	20	REL10-04	
Goodenia microptera	0.1	20		
Goodenia stobbsiana	0.1	15		
Grevillea wickhamii	0.1	120		Sterile.
Hibiscus coatesii	0.1	30	REL10-08	
Hibiscus verdcourtii	0.1	30		
Indigofera monophylla	0.1	30		
Jasminum didymum subsp. *lineare*	0.1	90		
Notoleptopus decaisnei	0.1	20		
Paspalidium clementii	0.1	30	REL06-03=	

Name	Cover (%)	Height (cm)	Specimen	Notes
Perotis rara	0.1	20		
Phyllanthus maderaspatensis	0.1	30		
Pterocaulon sphacelatum	0.1	5	REL10-05	
Ptilotus calostachyus	0.1	30		
Ptilotus exaltatus	0.1	30		
Ptilotus sp.	0.1	5	KTF43-04=	Inadequate material; juvenile.
Senna notabilis	0.1	30		
Sida fibulifera	0.1	5		
Solanum diversiflorum	0.1	25		
Sporobolus australasicus	0.1	20		
Streptoglossa bubakii	0.1	20	REL10-07	
Tephrosia sp. NW Eremaean (S. van Leeuwen et al. PBS 0356) PN	0.1	10	REL10-11	
Themeda triandra	0.5	50		
Trachymene oleracea subsp. *oleracea*	0.1	30		
Triodia epactia	7	40		
Urochloa occidentalis var. *ciliata*	0.1	20	REL06-06=	

Site	KTFREL11
Described by	PL/SC Date 23/5/2020
Type	Relevé 25 x 100 m
Central Coord	50 568883 mE, 7528815 mN
Habitat	Creek bed.
Soil	Dark reddish brown sandy clay; bit of cracking clay nearby.
Rock Type	Ironstone.
Vegetation	*Eucalyptus victrix* low open woodland over **Vachellia farnesiana* scattered tall shrubs over *Eriachne benthamii* very open tussock grassland with *Dichanthium sericeum* subsp. *sericeum* very open bunch grassland.
Veg Condition	Good: scattered weeds; signs of cattle.
Fire Age	No sign of recent fire.
Notes	U1+ ^*Eucalyptus victrix*\^tree\6\r;M1 ^*Vachellia farnesiana*\^shrub\4\bi;G1 ^*Eriachne benthamii*\^tussock grass\1\r;G2 *Dichanthium sericeum* subsp. *sericeum*\other grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon malvifolium	0.1	25		
Alternanthera nodiflora	0.1	30		
Alysicarpus muelleri	0.1	50		
Aristida latifolia	0.1	50		
Astrebla lappacea	0.1	60	REL11-04	N=2.
Blumea tenella	0.1	15		
Boerhavia paludosa	0.1	40		
Cenchrus ciliaris	0.1	50		N=10.
Cenchrus setiger	0.1	50		N=5.
Centipeda minima subsp. *macrocephala*	0.1	15		
Chloris pectinata	0.1	40		N=10.
Chrysopogon fallax	0.1	50		
Crotalaria dissitiflora subsp. *benthamiana*	0.1	40		
Cullen cinereum	0.25	30		
Cullen graveolens	0.1	25		
Cynodon convergens	0.1	15		
Cyperus bifax	0.1	20		
Dactyloctenium radulans	0.1	5		
Desmodiopsis campylocaulon	0.1	40		
Dichanthium sericeum subsp. *humilius*	0.1	50		
Dichanthium sericeum subsp. *sericeum*	4	50	REL11-01	
Enneapogon caerulescens	0.1	50		
Eragrostis leptocarpa	0.1	40	REL11-07	
Eragrostis tenellula	0.1	20		
Eragrostis xerophila	0.1	30		
Eriachne benthamii	4	60		
Eucalyptus victrix	9	1200		
Euphorbia australis var. *subtomentosa*	0.1	15		
Euphorbia biconvexa	0.1	30	REL11-05	
Glycine falcata	0.1	25	REL11-09	N=15. PL kept for study.
Hibiscus verdcourtii	0.1	30		
Ipomoea lonchophylla	0.1	40		
Ipomoea muelleri	0.1	10		
Iseilema macratherum	0.1	30	REL11-06	

Name	Cover (%)	Height (cm)	Specimen	Notes
Iseilema vaginiflorum	0.25	25	REL11-03	
Malvastrum americanum	0.1	40		N=50.
Neptunia dimorphantha	0.1	10		
Operculina aequisepala	0.1	200		
Panicum laevinode	0.1	60	REL11-02	
Polymeria longifolia	0.1	25		
Ptilotus gomphrenoides	0.1	10		
Rhynchosia minima	0.1	40		
Rostellularia adscendens var. *clementii*	0.1	15		
Sesbania cannabina	0.1	70		
Sida sp. L (A.M. Ashby 4202) PN	0.1	25		
Sporobolus australasicus	0.1	5		
Stemodia kingii	0.1	20		
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	0.1	15	REL11-08	Formal ID by M. Hislop (WAH).
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	0.1	70		N=2.
Urochloa occidentalis var. *ciliata*	0.1	30		
Urochloa occidentalis var. *occidentalis*	0.1	40		
Vachellia farnesiana	1	300		N=30.
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	40		

Site	KTFREL12
Described by	PL/SC Date 23/5/2020
Type	Relevé 50 x 50 m
Central Coord	50 568807 mE, 7539203 mN
Habitat	Minor flowline.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus xerothermica*, (*Corymbia hamersleyana*) low open woodland over *E. gamophylla* scattered low mallees over *Acacia tumida* var. *pilbarensis*, (*A. bivenosa*) tall open scrub over *Triodia epactia* open hummock grassland and *Eulalia simonii*, (*Themeda triandra*) very open
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^*Eucalyptus xerothermica,Corymbia hamersleyana*\^tree\6\r;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1+ ^*Acacia tumida* var. *pilbarensis,Acacia bivenosa*\^shrub\4\c;G1 ^*Triodia epactia*\^hummock grass\1\i;G2 *Eulalia simonii,Themeda triandra*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon cunninghamii	0.1	90	REL12-01	
Acacia atkinsiana	0.1	250		
Acacia bivenosa	1	250		
Acacia dictyophleba	0.1	190		
Acacia monticola	0.1	250		
Acacia tumida var. *pilbarensis*	35	300		
Aristida holathera var. *holathera*	0.1	25		
Arivela viscosa	0.1	40		
Bonamia erecta	0.1	40		
Capparis lasiantha	0.1	60		
Capparis umbonata	0.1	100		
Cenchrus ciliaris	0.1	70		
Chrysopogon fallax	0.1	110		
Corymbia deserticola subsp. *deserticola*	0.1	600		
Corymbia hamersleyana	1	600		
Cucumis variabilis	0.1	50		
Digitaria brownii	0.1	80		
Duperreya commixta	0.1	90		
Dysphania rhadinostachya	0.1	25		Sterile.
Eucalyptus gamophylla	1	400		
Eucalyptus xerothermica	2	700		
Eulalia simonii	6	40		N=300.
Euphorbia biconvexa	0.1	25	REL12-03	
Evolvulus alsinoides var. *villosicalyx*	0.1	25		
Goodenia stellata	0.1	10		
Gossypium robinsonii	0.1	260		
Hibiscus leptocladus	0.1	10	REL12-02	
Hibiscus sturtii var. *platychlamys*	0.1	80		
Indigofera monophylla	0.1	50		
Jasminum didymum subsp. *lineare*	0.1	100		
Paraneurachne muelleri	0.1	30		
Phyllanthus erwinii	0.1	10		
Ptilotus fusiformis	0.1	40		
Rhynchosia minima	0.1	30		
Senna artemisioides subsp.	0.1	70		

Name	Cover (%)	Height (cm)	Specimen	Notes
oligophylla x subsp. *helmsii*				
Senna notabilis	0.1	30		
Sida echinocarpa	0.1	70		
Sida sp. L (A.M. Ashby 4202) PN	0.1	25		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	20		Ferruginous form.
Tephrosia sp. Bungaroo Creek (M.E. Trudgen 11601)	0.1	30		
Themeda triandra	1	70		
Triodia epactia	22	60		

Site KTFREL13
Described by PL/AL Date 25/4/2020
Type Relevé 50 x 50 m
Central Coord 50 563441 mE, 7583309 mN
Habitat Floodplain adjacent to a major drainage line.
Soil Dark reddish brown silty clay loam.
Vegetation *Eucalyptus victrix* scattered low trees over *Acacia citrinoviridis* tall open scrub over *Triodia epactia* open hummock grassland.
Veg Condition Very Good: signs of cattle; occasional **Malvastrum*.
Fire Age No sign of recent fire
Notes Mapping note PLMN26 converted to a relevé.
U1 ^*Eucalyptus victrix*\^tree\6\bi;M1+ ^*Acacia citrinoviridis*\^shrub\4\c;G1 ^*Triodia epactia*\^hummock grass\1\i.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia citrinoviridis	40	300		
Acacia pyrifolia var. *pyrifolia*	0.1	150		
Aeschynomene indica	0.1	50		
Arivela viscosa	0.1	40		
Boerhavia coccinea	0.1	15		
Corchorus crozophorifolius	0.1	60		
Corchorus tridens	0.1	15		
Cucumis melo	0.1	50		
Cucumis picrocarpus	0.1	15		
Cucumis variabilis	0.1	50		
Cullen cinereum	0.1	10		
Cullen pogonocarpum	0.1	15		
Dichanthium sericeum subsp. *humilius*	0.1	20		
Eriachne tenuiculmis	0.1	40		
Eucalyptus victrix	1	700		
Euphorbia australis var. *glabra*	0.1	10		N=3.
Euphorbia australis var. *subtomentosa*	0.1	10		
Evolvulus alsinoides var. *villosicalyx*	0.1	20		
Gomphrena affinis subsp. *pilbarensis*	0.1	20		
Goodenia nuda	0.1	20		N=1.
Gossypium australe	0.1	120		
Indigofera monophylla	0.1	40		
Ipomoea lonchophylla	0.1	30		
Ipomoea muelleri	0.1	15		
Malvastrum americanum	0.1	40		N=10.
Notoleptopus decaisnei	0.1	20		
Operculina aequisepala	0.1	50		
Phyllanthus maderaspatensis	0.1	20		
Portulaca oleracea/intraterranea	0.1	15		Small flower.
Ptilotus carinatus	0.1	25		
Ptilotus gomphrenoides	0.1	15		
Rhynchosia minima	0.1	20		
Rostellularia adscendens var. *clementii*	0.1	20		
Sesbania cannabina	0.1	60		
Sida spinosa	0.1	30		
Solanum diversiflorum	0.1	30		
Streptoglossa bubakii	0.1	30		
Trachymene oleracea subsp.	0.1	30	AL10=	

Name	Cover (%)	Height (cm)	Specimen	Notes
oleracea				
Triodia epactia	20	40		
Urochloa occidentalis var. *occidentalis*	0.1	15		
Vigna sp. Hamersley Clay (A.A. Mitchell PRP 113)	0.1	15		

Site	KTFREL14
Described by	PL/SC Date 23/5/2020
Type	Relevé 50 x 50 m
Central Coord	50 572596 mE, 7548391 mN
Habitat	Hill crest.
Soil	Dark reddish brown silty clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus leucophloia* subsp. *leucophloia* scattered low trees over *E. gamophylla* scattered low mallees over *Triodia wiseana* open hummock grassland and *Eriachne mucronata* scattered tussock grasses.
Veg Condition	Excellent.
Fire Age	No sign of recent fire.
Notes	U1 ^*Eucalyptus leucophloia* subsp. *leucophloia*\^tree\6\bi;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;G1+ ^*Triodia wiseana*\^hummock grass\1\i;G2 *Eriachne mucronata*\tussock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia pruinocarpa	0.1	130		
Arivela viscosa	0.1	30		
Bulbostylis barbata	0.1	10		
Capparis spinosa subsp. *nummularia*	0.1	100		
Corchorus incanus subsp. *incanus*	0.1	50	REL14-01	
Corymbia ferriticola	0.1	100		
Dampiera candicans	0.1	40		
Dolichocarpa crouchiana	0.1	8	REL14-02	
Enneapogon caerulescens	0.1	25		
Eriachne mucronata	0.5	30		Typical form. Erect hairs under sheaths.
Eriachne pulchella	0.1	10		
Eucalyptus gamophylla	2	300		
Eucalyptus leucophloia subsp. *leucophloia*	1	400		
Ficus brachypoda	0.1	20		
Jasminum didymum subsp. *lineare*	0.1	80		
Polycarpaea longiflora	0.1	30		
Ptilotus fusiformis	0.1	35		
Streptoglossa decurrens	0.1	15		
Trichodesma zeylanicum var. *zeylanicum*	0.1	30		
Triodia wiseana	28	40		

Site	KTFREL16
Described by	PL/SC Date 24/5/2020
Type	Relevé 20 x 125 m
Central Coord	50 572325 mE, 7556275 mN
Habitat	Floodplain/soak area, low lying; semi-calcareous.
Soil	Reddish brown silty clay loam.
Rock Type	Calcrete.
Vegetation	*Eucalyptus xerothermica*, (*Hakea lorea* subsp. *lorea*, *Corymbia hamersleyana*) low open woodland over *Pluchea ferdinandi-muelleri* low open shrubland over *Triodia angusta* open hummock grassland with *Eulalia aurea*, (*Eragrostis desertorum*) very open tussock grassland.
Veg Condition	Very Good: signs of cattle; 1 x **Tribulus terrestris*.
Fire Age	Very long unburnt.
Notes	Small narrow flow depression between creek and slightly elevated calcareous floodplain. U1 ^*Eucalyptus xerothermica,Hakea lorea* subsp. *lorea,Corymbia hamersleyana*\^tree\6\r;M1 ^*Pluchea ferdinandi-muelleri*\^shrub\1\r;G1+ ^*Triodia angusta*\^hummock grass\1\i;G2 *Eulalia aurea,Eragrostis desertorum*\tussock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Cassytha capillaris	0.1	40		
Codonocarpus cotinifolius	0.1	500		
Corchorus incanus subsp. *incanus*	0.1	40	REL14-01=	
Corchorus lasiocarpus subsp. *parvus*	0.1	40		
Corymbia hamersleyana	0.25	400		
Duperreya commixta	0.1	50		
Eragrostis desertorum	0.5	40	KTF78-01=	
Eremophila longifolia	0.1	160		
Eucalyptus xerothermica	7	800		
Eulalia aurea	3	60		
Gossypium australe	0.1	40		
Hakea lorea subsp. *lorea*	0.5	500		
Jasminum didymum subsp. *lineare*	0.1	60		
Lepidium pedicellosum	0.1	40		
Pimelea ammocharis	0.1	70		
Pluchea ferdinandi-muelleri	4	90		
Rhynchosia minima	0.1	50		
Santalum lanceolatum	0.1	140		
Scaevola amblyanthera var. *centralis*	0.1	25	KTF78-02=	
Scaevola spinescens	0.1	50		Broad leaf form.
Senna artemisioides subsp. *oligophylla*	0.1	40		
Senna artemisioides subsp. *oligophylla* x subsp. *helmsii*	0.1	60		
Senna glutinosa subsp. *glutinosa*	0.1	160		
Tribulus terrestris	0.1	25		N=1.
Triodia angusta	28	50		

Site	KTFREL18
Described by	PL/SC Date 26/5/2020
Type	Relevé 20 x 125 m
Central Coord	50 571220 mE, 7545706 mN
Habitat	Moderate drainage.
Soil	Dark reddish brown clay loam.
Rock Type	Ironstone.
Vegetation	*Eucalyptus xerothermica*, (*Corymbia deserticola* subsp. *deserticola*, *C. hamersleyana*) low woodland over *E. gamophylla* scattered low mallees over *Acacia atkinsiana* scattered tall shrubs over *A. elachantha*, (*A. monticola, A. cowleana*) open shrubland over *Triodia epactia* very open hummock grassland and *Eulalia simonii,* (*Themeda triandra*) closed tussock grassland.
Veg Condition	Excellent; some **Cenchrus* present, but only along the road.
Fire Age	No sign of recent fire.
Notes	U1+ ^*Eucalyptus xerothermica,Corymbia deserticola* subsp. *deserticola,Corymbia hamersleyana*\^tree\6\i;U2 *Eucalyptus gamophylla*\tree mallee\5\bi;M1 *Acacia atkinsiana*\shrub\4\bi;M2 ^*Acacia elachantha,Acacia monticola,Acacia cowleana*\^shrub\3\r;G1 ^*Eulalia simonii,Themeda triandra*\^tussock grass\1\d;G2 *Triodia epactia*\hummock grass\1\r.

Name	Cover (%)	Height (cm)	Specimen	Notes
Abutilon lepidum	0.1	70		Form 4.
Abutilon macrum	0.1	40		
Acacia adoxa var. *adoxa*	0.1	20		
Acacia atkinsiana	2	300		
Acacia bivenosa	0.1	250		
Acacia citrinoviridis	0.1	300		
Acacia cowleana	0.5	140		
Acacia dictyophleba	0.1	220	KTF100-02=	
Acacia elachantha	2	160		
Acacia inaequilatera	0.1	250		
Acacia monticola	0.5	150		
Acacia ptychophylla	0.1	120		
Acacia tenuissima	0.1	50		
Acacia tumida var. *pilbarensis*	0.1	300		
Alternanthera nana	0.1	30		
Arivela viscosa	0.1	80		
Bonamia erecta	0.1	20		
Cenchrus ciliaris	2	90		
Cenchrus setiger	2	90		
Chrysopogon fallax	0.1	50		
Corymbia deserticola subsp. *deserticola*	1	500		
Corymbia hamersleyana	1	400		
Crotalaria medicaginea var. *neglecta*	0.1	30		
Cucumis variabilis	0.1	20		
Duperreya commixta	0.1	80		
Eriachne aristidea	0.1	20		
Eucalyptus gamophylla	2	400		
Eucalyptus xerothermica	10	900		
Eulalia simonii	60	70		Not collected.
Euphorbia trigonosperma	0.1	20		
Evolvulus alsinoides var. *decumbens*	0.1	10		

Name	Cover (%)	Height (cm)	Specimen	Notes
Evolvulus alsinoides var. *villosicalyx*	0.1	30		
Goodenia microptera	0.1	15		
Goodenia stellata		0.1		N=10.
Gossypium australe	0.1	60		
Grevillea wickhamii subsp. *hispidula*	0.1	200		
Hakea lorea subsp. *lorea*	0.1	200		
Hibiscus leptocladus	0.1	20		
Hibiscus sturtii var. *campylochlamys*	0.1	10		
Indigofera monophylla	0.1	40		
Isotropis atropurpurea	0.1	30		
Jasminum didymum subsp. *lineare*	0.1	150		
Malvastrum americanum	0.1	20		N=10.
Melhania oblongifolia	0.1	20		
Phyllanthus erwinii	0.1	15		
Ptilotus exaltatus	0.1	60		
Rhynchosia minima	0.1	40		
Santalum lanceolatum	0.1	100		
Senna artemisioides subsp. *oligophylla*	0.1	50		
Senna glutinosa subsp. *glutinosa*	0.1	120		
Senna glutinosa subsp. *pruinosa*	0.1	120		
Senna notabilis	0.1	30		
Sida sp. L (A.M. Ashby 4202) PN	0.1	20		
Sida sp. spiciform panicles (E. Leyland s.n. 14/8/90)	0.1	80		Ferruginous form.
Themeda triandra	15	80		
Trichodesma zeylanicum var. *zeylanicum*	0.1	60		
Triodia epactia	10	70		

Site	KTFREL20
Described by	PL/SC Date 27/5/2020
Type	Relevé 25 x 100 m
Central Coord	50 572335 mE, 7556527 mN
Habitat	Moderate drainage, deeply incised, adjacent to calcareous floodplain.
Soil	Dark reddish brown sandy clay loam.
Rock Type	Calcrete, ironstone.
Vegetation	*Eucalyptus camaldulensis* subsp. *refulgens* open woodland over *Acacia ampliceps* scattered tall shrubs over *Themeda triandra* scattered tussock grasses and *Triodia epactia* scattered hummock grasses.
Veg Condition	Very Good: occasional **Cenchrus setiger*; signs of cattle.
Fire Age	No sign of recent fire.
Notes	GDV; no permanent water. Drainage ~10m wide at S end. U1+ ^*Eucalyptus camaldulensis* subsp. *refulgens*\^tree\7\r;M1 ^*Acacia ampliceps*\^shrub\4\bi;G1 ^*Themeda triandra*\^tussock grass\1\bi;G2 *Triodia epactia*\hummock grass\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ampliceps	1	600		
Acacia bivenosa	12	250		
Acacia monticola	0.1	90		
Acacia pyrifolia var. *pyrifolia*	0.1	300		
Acacia tumida var. *pilbarensis*	0.1	300		
Adriana tomentosa var. *tomentosa*	0.1	60		
Afrohybanthus aurantiacus	0.1	50		
Arivela viscosa	0.1	40		
Capparis spinosa subsp. *nummularia*	0.1	60		
Cassytha capillaris	0.1	60		
Cenchrus setiger	0.1	60		N=15.
Crotalaria medicaginea var. *neglecta*	0.1	60		
Cymbopogon ambiguus	0.75	70	REL20-01	Procerus form.
Cyperus vaginatus	50	90		
Eriachne tenuiculmis	0.1	50		
Eucalyptus camaldulensis subsp. *refulgens*	6	1200		
Gossypium robinsonii	0.1	150		
Indigofera monophylla	0.1	60		
Isotropis atropurpurea	0.1	70		
Melaleuca argentea	40	1800		
Phyllanthus maderaspatensis	0.1	5		
Pluchea rubelliflora	0.25	40		
Rhynchosia minima	0.1	40		
Senna glutinosa subsp. *glutinosa* x	0.1	70	REL20-02	Hybrid of unknown origin.
Sesbania cannabina	0.1	300		
Stemodia grossa	0.1	40		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	50		
Themeda triandra	0.5	110		
Trichodesma zeylanicum var. *zeylanicum*	0.1	60		
Triodia epactia	0.5	60		
Triodia wiseana	0.1	70		
Triumfetta chaetocarpa	0.1	30	REL20-03	

Name	Cover (%)	Height (cm)	Specimen	Notes
Typha domingensis	0.1	100		

Site	KTFREL21
Described by	RMJK Date 22/10/2020
Type	Relevé 50 x 50 m
Central Coord	50 568853 mE, 7535134 mN
Habitat	Clay plain.
Soil	Dark reddish brown clay loam.
Rock Type	Mudstone.
Vegetation	*Hakea lorea* subsp. *lorea*, (*Eucalyptus victrix*) low open woodland over **Vachellia farnesiana* scattered shrubs over *Themeda* sp. Hamersley Station (M.E. Trudgen 11431), (*Chrysopogon fallax*) tussock grassland.
Veg Condition	Good: impacted by cattle (grazed and trampled); scattered **Vachellia*.
Fire Age	No sign of recent fire.
Notes	Equal to KTF70 but very dry and grazed. U1 ^*Hakea lorea* subsp. *lorea*,*Eucalyptus victrix*\^tree\6\r;M1 ^*Vachellia farnesiana*\^shrub\3\bi;G1+ ^*Themeda* sp. Hamersley Station (M.E. Trudgen 11431),*Chrysopogon fallax*\^tussock grass\3\c.

Name	Cover (%)	Height (cm)	Specimen
Acacia victoriae subsp. *victoriae*	0.1	150	KTF125-04=
Boerhavia burbidgeana	0.1	10	KTF125-07=
Chrysopogon fallax	4	90	
Corymbia hamersleyana	0.1	500	
Cynodon convergens	0.1	20	KTF125-09=
Dichanthium sericeum subsp. *humilius*	0.1	40	
Eremophila longifolia	0.1	90	
Eucalyptus victrix	1	800	REL21-01
Euphorbia biconvexa	0.1	20	REL21-02
Glycine falcata	0.1	20	KTF125-02=
Hakea lorea subsp. *lorea*	7	600	KTF125-01=
Indigofera linifolia	0.1	40	
Notoleptopus decaisnei	0.1	5	
Operculina aequisepala	0.1	60	
Panicum sp.	0.1	40	KTF125-05=
Polymeria longifolia	0.1	10	KTF125-03=
Sida spinosa	0.1	40	KTF125-06=
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	28	120	
Themeda triandra	0.1	50	
Trichodesma zeylanicum var. *zeylanicum*	0.1	50	
Triodia wiseana	0.1	40	
Urochloa occidentalis var. *occidentalis*	0.5	30	
Vachellia farnesiana	0.5	120	

Site KTFREL22

Described by PL/SC Date 27/5/2020

Type Relevé 25 x 100 m

Central Coord 50 572497 mE, 7556920 mN

Habitat Moderate drainage.

Soil Dark reddish brown silty clay loam.

Rock Type Calcrete, ironstone.

Vegetation *Eucalyptus camaldulensis* subsp. *refulgens*, (*Melaleuca argentea*) open forest over *Acacia ampliceps*, (A. *bivenosa, Gossypium robinsonii, A. tumida* var. *pilbarensis*) tall open scrub over *Cymbopogon ambiguus*, (**Cenchrus ciliaris*, **C. setiger*, *Themeda triandra*) open tussock grassland with *Triodia epactia* scattered hummock grasses and *Cyperus vaginatus* scattered sedges.

Veg Condition Very Good to Good: weeds present, mainly **Cenchrus* spp.; signs of cattle.

Fire Age Very long unburnt.

Notes *Melaleuca argentea* varies in density along this section. Definitely drier than REL20 to S. On banks, dense tall closed scrub of *Acacia bivenosa, A. ampliceps* and *Eucalyptus camaldulensis* open woodland; not mapped separately as it's only a tiny sliver. Very difficult to set up a quadrat in veg as banks are very dense.
U1+ ^*Eucalyptus camaldulensis* subsp. *refulgens,Melaleuca argentea*\^tree\7\c;M1 ^*Acacia ampliceps,Acacia bivenosa,Gossypium robinsonii,Acacia tumida* var. *pilbarensis*\^shrub\4\c;G1 ^*Cymbopogon ambiguus,Cenchrus ciliaris,Cenchrus setiger,Themeda triandra*\^tussock grass\1\i;G2 *Triodia epactia,Cyperus vaginatus*\hummock grass,sedge\1\bi.

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia ampliceps	20	600		
Acacia bivenosa	8	400		
Acacia pyrifolia var. *pyrifolia*	0.25	250		
Acacia spondylophylla	0.1	50		
Acacia tumida var. *pilbarensis*	1	350		
Afrohybanthus aurantiacus	0.1	40		
Atalaya hemiglauca	0.1	400		
Cenchrus ciliaris	3	60		
Cenchrus setiger	3	50		
Codonocarpus cotinifolius	0.1	300		
Corchorus crozophorifolius	0.1	60		
Corchorus lasiocarpus subsp. *parvus*	0.1	110		
Cymbopogon ambiguus	6	180	REL20-01=	Procerus form.
Cyperus vaginatus	1	80		
Enneapogon lindleyanus	0.1	60		
Eriachne tenuiculmis	0.25	40		
Eucalyptus camaldulensis subsp. *refulgens*	32	1900		
Eulalia aurea	0.1	60		
Euphorbia trigonosperma	0.1	40		
Gossypium robinsonii	4	300		
Grevillea wickhamii subsp. *hispidula*	0.1	300		
Indigofera monophylla	0.1	50		
Isotropis atropurpurea	0.1	70		
Melaleuca argentea	8	1800		
Notoleptopus decaisnei	0.1	40		
Phyllanthus maderaspatensis	0.1	40		
Pluchea rubelliflora	0.1	40		

Name	Cover (%)	Height (cm)	Specimen	Notes
Rhynchosia minima	0.1	50		
Senna artemisioides subsp. *oligophylla*	0.1	90		
Senna glutinosa subsp. *glutinosa*	0.1	220		
Stemodia grossa	0.1	40		
Tephrosia rosea var. Fortescue creeks (M.I.H. Brooker 2186)	0.1	40		
Themeda triandra	2	70		
Triodia epactia	1	60		
Triumfetta chaetocarpa	0.1	50	REL22-01	MM - SPECIMEN MISSING; assumed ID based on field name.
Vachellia farnesiana	0.1	100		N=1.

Site	KTFREL23
Described by	RM,AL Date 29/3/2021
Type	Relevé 100m
MGA Zone	50 572829 mE, 7556692 mN
Habitat	Broad braided drainage line.
Soil	Light brown.
Rock Type	Ironstone.
Vegetation	*Eucalyptus camaldulensis* woodland over *Melaleuca argentea*, *Sesbania formosa* low open forest over *Gossypium robinsonii* tall open shrubland over *Cyperus vaginatus* open sedgeland
Veg Condition	Very Good. Occasional weeds.
Fire Age	Burnt 3-5 years ago/No sign of recent fire.
Notes	U1 ^Eucalyptus camaldulensis\Eucalyptus\^tree\7\i; U2+ ^Melaleuca argentea,Sesbania formosa\Melaleuca\^tree\6\c; M1 ^Gossypium robinonsii\Gossypium\^shrub\4\bc; G1 ^Cyperus vaginatus\Cyperus\^sedge\2\i

Name	Cover (%)	Height (cm)	Specimen	Notes
Acacia bivenosa	0.1	60 cm		
Acacia pyrifolia var. *pyrifolia*	0.1	250 cm		
Atalaya hemiglauca	0.1	120 cm	REL23-01	
Capparis spinosa subsp. *nummularia*	0.1	50 cm	REL23-08	
Cenchrus ciliaris	0.1	30 cm		
Cenchrus setiger	0.1	60 cm		
Corchorus crozophorifolius	0.1	70 cm		
Corchorus tridens	0.1	30 cm	REL23-03	
Cucumis variabilis	0.1	30 cm		
Cymbopogon ambiguus	0.1	60 cm	KTF143-13=	
Cynodon dactylon	0.1	25 cm		
Cyperus vaginatus	25	60 cm		
Echinochloa colona	0.1	30 cm	REL23-10	
Enneapogon lindleyanus	0.1	50 cm	KTF144-05=	
Eragrostis falcata	0.1	30 cm	REL23-09	
Eucalyptus camaldulensis subsp. *refulgens*	21	1500 cm		
Euphorbia australis var. *subtomentosa*	0.1	60 cm	KTF143-06=	
Gomphrena canescens	0.1	25 cm		
Gossypium robinsonii	2.5	350 cm		
Indigofera monophylla	0.1	60 cm		
Melaleuca argentea	50	900 cm		
Phyllanthus maderaspatensis	0.1	50 cm		
Pluchea rubelliflora	0.1	30 cm	REL23-06	
Pluchea rubelliflora	0.1	30 cm	REL23-05	
Rhynchosia minima	0.1	40 cm	REL23-02	
Rhynchosia minima	0.1	50 cm		
Sesbania formosa	11	350 cm		
Stemodia grossa	0.1	60 cm		
Stemodia grossa	0.1	25 cm	REL23-04	
Tephrosia densa	0.1	70 cm		
Themeda triandra	0.1	60 cm		
Triodia epactia	0.1	30 cm		
Typha domingensis	0.1	90 cm		
Urochloa piligera	0.1	30 cm	REL23-07	
Vachellia farnesiana	0.1	70 cm		
Waltheria indica	0.1	25 cm		

Appendix 11

Locations of Flora of Conservation Significance

Species	Status	Date	Location	Latitude	Longitude	Datum	Abundance (No. / %)	Specimen No.	Comments
Aristida jerichoensis var. subspinulifera	P3	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=10	KTF03-36	
Aristida lazaridis	P2	23-Apr-20	No site	-22.280379	117.65335	GDA94	n=1	PL41	
Astrebla lappacea	P3	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	2%	KTF59-13	
Astrebla lappacea	P3	20-Apr-20	KTF08	-22.326451	117.668855	GDA94	60%	KTF08-1,27	
Astrebla lappacea	P3	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=1	KTF17-27	
Astrebla lappacea	P3	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=2	REL11-04	
Astrebla lappacea	P3	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=300	KTF04-41	
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	n=1		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	n=1	KTF72-17	
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	21-Apr-20	KTF22	-22.316351	117.670516	GDA94	n=1		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	22-Apr-20	KTF34	-21.684518	117.440875	GDA94	n=1		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	27-Apr-20	No site	-21.668784	117.396126	GDA94	n=5		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	21-Apr-20	KTF74	-21.675647	117.413046	GDA94	n=60		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	27-Apr-20	No site	-21.667808	117.396133	GDA94	n=75		
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	20-Apr-20	KTF73	-21.669606	117.396232	GDA94	n=200	KTF73-01	
Dolichocarpa sp. Hamersley Station (A.A. Mitchell PRP 1479)	P3	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=200	KTF70-24	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.275818	117.646194	GDA94	n=1	BB03=	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.275445	117.64695	GDA94	n=1	BB03=	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.274645	117.645966	GDA94	n=1	BB03=	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.274553	117.646286	GDA94	n=1	BB03=	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.274362	117.646625	GDA94	n=2	BB03=	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.274317	117.646741	GDA94	n=3	BB03	
Eremophila magnifica subsp. *magnifica*	P4	28-Apr-20	No site	-22.275747	117.646019	GDA94	n=3	BB09	
Euphorbia australis var. *glabra*	P3	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=1	KTF12-07	
Euphorbia australis var. *glabra*	P3	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	n=1	KTF72-05	
Euphorbia australis var. *glabra*	P3	21-Apr-20	KTF19	-21.675465	117.41654	GDA94	n=1	KTF19-29	
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.342242	117.668855	GDA94	n=1		
Euphorbia australis var. *glabra*	P3	22-Apr-20	No site	-21.67695	117.44966	GDA94	n=1		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.316722	117.67319	GDA94	n=2	PL07=	
Euphorbia australis var. *glabra*	P3	25-Apr-20	KTFREL13	-21.853074	117.613975	GDA94	n=3		
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316706	117.672792	GDA94	n=3	PL07=	
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316293	117.671974	GDA94	n=5		
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.303267	117.678445	GDA94	n=5		
Euphorbia australis var. *glabra*	P3	21-Apr-20	KTF22	-22.316351	117.670516	GDA94	n=6		

Species	Status	Date	Location	Latitude	Longitude	Datum	Abundance (No. / %)	Specimen No.	Comments
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316547	117.671771	GDA94	n=10	PL07=	
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.3161	117.672925	GDA94	n=10		
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.30314	117.678454	GDA94	n=10		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.302905	117.678599	GDA94	n=10		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.302303	117.677761	GDA94	n=10		
Euphorbia australis var. *glabra*	P3	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	n=11	KTF21-20	
Euphorbia australis var. *glabra*	P3	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=15	KTF70-31	
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316234	117.673294	GDA94	n=15		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.303096	117.678318	GDA94	n=15		
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316085	117.672167	GDA94	n=20		
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316341	117.673508	GDA94	n=25		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.30277	117.678511	GDA94	n=25		
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.321269	117.672406	GDA94	n=50	PL07=	
Euphorbia australis var. *glabra*	P3	20-Apr-20	No site	-22.316703	117.673384	GDA94	n=100	PL07=	
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.320591	117.672587	GDA94	n=100	PL07	
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.321061	117.672492	GDA94	n=150	PL07=	
Euphorbia australis var. *glabra*	P3	21-Apr-20	No site	-22.302528	117.677995	GDA94	n=150		
Euphorbia inappendiculata var. *inappendiculata*	P2	20-Apr-20	KTF73	-21.669606	117.396232	GDA94	n=1	KTF73-02	
Euphorbia inappendiculata var. *inappendiculata*	P2	27-Apr-20	No site	-21.66901	117.395963	GDA94	n=5	KTF73-02=	
Euphorbia inappendiculata var. *inappendiculata*	P2	27-Apr-20	No site	-21.673978	117.411181	GDA94	n=10	KTF73-02=	
Euphorbia inappendiculata var. *inappendiculata*	P2	27-Apr-20	No site	-21.669137	117.395837	GDA94	n=10	KTF73-02=	
Euphorbia inappendiculata var. *inappendiculata*	P2	27-Apr-20	No site	-21.667808	117.396133	GDA94	n=150	KTF73-02=	
Euphorbia inappendiculata var. *queenslandica*	P2	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=1	KTF17-26	
Euphorbia inappendiculata var. *queenslandica*	P2	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	n=1	KTF72-13	
Euphorbia inappendiculata var. *queenslandica*	P2	21-Apr-20	KTF13	-22.312554	117.67283	GDA94	n=1	KTF13-8,12	
Euphorbia inappendiculata var. *queenslandica*	P2	21-Apr-20	KTF23	-21.678503	117.42866	GDA94	n=1	KTF23-1,14	
Euphorbia inappendiculata var. *queenslandica*	P2	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=1	KTF70-22	
Euphorbia inappendiculata var. *queenslandica*	P2	22-Apr-20	KTF34	-21.684518	117.440875	GDA94	n=1	KTF34-02	
Euphorbia inappendiculata var. *queenslandica*	P2	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	n=5	KTF21-9,18	
Euphorbia inappendiculata var. *queenslandica*	P2	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=15	KTF70-12	
Glycine falcata	P3	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	0.50%	KTF21-03	
Glycine falcata	P3	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=1	KTF59-08	
Glycine falcata	P3	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	n=1	KTF72-11	
Glycine falcata	P3	21-Apr-20	KTF60	-22.330808	117.667618	GDA94	n=1	KTF59-08=	
Glycine falcata	P3	22-Oct-20	KTF125	-22.289743	117.666646	GDA94	n=1	KTF125-02	
Glycine falcata	P3	22-Oct-20	KTFREL21	-22.288078	117.668393	GDA94	n=1	KTF125-02=	
Glycine falcata	P3	30-Mar-21	No site	-22.330035	117.667224	GDA94	n=1	KTF4RM01	
Glycine falcata	P3	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=15	REL11-09	
Goodenia berringbinensis	P4	22-Apr-20	No site	-21.677481	117.443591	GDA94	n=3	AL02=	

Species	Status	Date	Location	Latitude	Longitude	Datum	Abundance (No. / %)	Specimen No.	Comments
Goodenia berringbinensis	P4	22-Apr-20	No site	-21.677527	117.443456	GDA94	n=50	AL02	
Goodenia nuda	P4	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1	KTF56-20	
Goodenia nuda	P4	19-Apr-20	KTF58	-21.955017	117.628888	GDA94	n=1	KTF58-02	
Goodenia nuda	P4	23-Apr-20	KTF32	-21.692507	117.475202	GDA94	n=1	KTF19-09=	
Goodenia nuda	P4	24-Apr-20	KTF42	-21.757142	117.538145	GDA94	n=1	KTF42-04	
Goodenia nuda	P4	25-Apr-20	KTF45	-21.911272	117.619745	GDA94	n=1	KTF45-17	
Goodenia nuda	P4	25-Apr-20	KTF55	-21.922066	117.623178	GDA94	n=1	KTF45-17=	
Goodenia nuda	P4	21-Oct-20	KTF122	-22.294572	117.679959	GDA94	n=1	KTF122-01	
Goodenia nuda	P4	27-Mar-21	KTF138	-22.493489	117.728207	GDA94	n=1	KTF138-02	
Goodenia nuda	P4	27-Mar-21	KTF138	-22.493489	117.728207	GDA94	n=1	KTF138-02=	
Goodenia nuda	P4	19-Apr-20	KTF10	-22.472651	117.714466	GDA94	n=1	KTF10-11	
Goodenia nuda	P4	19-Apr-20	KTF65	-21.990424	117.63427	GDA94	n=1		
Goodenia nuda	P4	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=1		
Goodenia nuda	P4	25-Apr-20	KTF61	-21.797498	117.581253	GDA94	n=1		
Goodenia nuda	P4	25-Apr-20	KTFREL13	-21.853074	117.613975	GDA94	n=1		
Goodenia nuda	P4	25-May-20	KTF98	-22.043399	117.654054	GDA94	n=1		
Goodenia nuda	P4	19-Apr-20	No site	-22.456452	117.70782	GDA94	n=1		
Goodenia nuda	P4	24-Apr-20	No site	-22.262302	117.653276	GDA94	n=1		
Goodenia nuda	P4	28-Apr-20	No site	-21.989908	117.63506	GDA94	n=1		
Goodenia nuda	P4	28-Apr-20	No site	-21.667175	117.396199	GDA94	n=1		
Goodenia nuda	P4	21-Apr-20	KTF24	-21.676542	117.42885	GDA94	n=2		
Goodenia nuda	P4	26-Apr-20	No site	-22.456961	117.706968	GDA94	n=2		
Goodenia nuda	P4	26-Apr-20	No site	-22.0733	117.689264	GDA94	n=2		
Goodenia nuda	P4	26-May-20	KTF101	-22.14341	117.719661	GDA94	n=3	KTF101-09	
Goodenia nuda	P4	22-Oct-20	KTF126	-22.287308	117.672605	GDA94	n=3		
Goodenia nuda	P4	19-Apr-20	KTFREL07	-22.485022	117.718687	GDA94	n=5	KTF01-02=	
Goodenia nuda	P4	20-Apr-20	No site	-22.26279	117.653433	GDA94	n=5		
Goodenia nuda	P4	27-Apr-20	No site	-22.008591	117.635017	GDA94	n=5		
Goodenia nuda	P4	19-Apr-20	KTF67	-22.019194	117.640047	GDA94	n=6		
Goodenia nuda	P4	20-Apr-20	KTFREL05	-22.429911	117.691067	GDA94	n=6	REL05-16	
Goodenia nuda	P4	22-Apr-20	KTF25	-21.674959	117.450951	GDA94	n=6	KTF25-09	
Goodenia nuda	P4	20-Apr-20	KTF54	-21.929986	117.621182	GDA94	n=7	KTF54-08	
Goodenia nuda	P4	19-Apr-20	KTF09	-22.488844	117.720549	GDA94	n=10		
Goodenia nuda	P4	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=10		
Goodenia nuda	P4	19-Apr-20	No site	-22.373261	117.676016	GDA94	n=10		
Goodenia nuda	P4	24-May-20	KTF81	-22.111527	117.704195	GDA94	n=13	KTF81-02	
Goodenia nuda	P4	22-Apr-20	KTF36	-21.687211	117.458065	GDA94	n=15		
Goodenia nuda	P4	24-Apr-20	KTF29	-21.745382	117.518234	GDA94	n=19	KTF29-20	
Goodenia nuda	P4	24-May-20	KTF84	-22.073134	117.690991	GDA94	n=20		

Species	Status	Date	Location	Latitude	Longitude	Datum	Abundance (No. / %)	Specimen No.	Comments
Goodenia nuda	P4	29-Mar-21	No site	-22.368807	117.673955	GDA94	n=25		
Goodenia nuda	P4	25-May-20	KTF100	-22.042757	117.658102	GDA94	n=35		
Goodenia nuda	P4	23-Apr-20	KTF33	-21.6953	117.479342	GDA94	n=40	KTF33-04	
Goodenia nuda	P4	21-Apr-20	KTF19	-21.675465	117.41654	GDA94	n=50	KTF19-09	
Goodenia nuda	P4	19-Apr-20	KTF01	-22.457321	117.7067	GDA94	n=120	KTF01-03	
Goodenia nuda	P4	19-Apr-20	KTF06	-22.415116	117.683097	GDA94	n=300	KTF06-06	
Gymnanthera cunninghamii	P3	24-Apr-20	No site	-21.687582	117.460345	GDA94	n=1		
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	23-Apr-20	No site	-22.276389	117.650361	GDA94	n=1	PL38=	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	28-Apr-20	No site	-22.16839	117.704352	GDA94	n=1	PL33=	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	28-Apr-20	No site	-22.276237	117.649856	GDA94	n=2	PL38=	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	28-Apr-20	No site	-22.16849	117.704168	GDA94	n=3	PL33=	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	28-Apr-20	No site	-22.168446	117.704003	GDA94	n=4	PL33	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	23-Apr-20	No site	-22.276603	117.651003	GDA94	n=6	PL38	
Hibiscus sp. Mt Brockman (E. Thoma ET 1354)	P1	23-Apr-20	No site	-22.276335	117.650235	GDA94	n=10	PL38=	
Josephinia sp. Woodstock (A.A. Mitchell PRP 989)	P1	25-Apr-20	KTF52	-21.892605	117.620809	GDA94	n=1	KTF52-16	
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	20-Oct-20	KTF119	-22.50306	117.724536	GDA94	n=1		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	KTF02	-22.440676	117.700202	GDA94	n=1		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	No site	-22.412328	117.687767	GDA94	n=1	BS01=	
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	No site	-22.490245	117.720318	GDA94	n=1		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	27-Apr-20	No site	-22.404975	117.683465	GDA94	n=1	BS01	
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	26-Mar-21	No site	-22.144678	117.722552	GDA94	n=1		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	KTF09	-22.488844	117.720549	GDA94	n=2		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	KTF10	-22.472651	117.714466	GDA94	n=3		
Rhagodia sp. Hamersley (M. Trudgen 17794)	P3	19-Apr-20	KTF06	-22.415116	117.683097	GDA94	n=10	KTF06-19	
Seringia exastia	T	29-Mar-21	KTF145	-22.249097	117.684529	GDA94	n=1	KTF145-09	Recently merged with widespread *S. elliptica*; no longer considered of concern.
Seringia exastia	T	28-Mar-21	KTF142	-22.226015	117.686666	GDA94	4%	KTF142-10	Recently merged with widespread *S. elliptica*; no longer considered of concern.
Seringia exastia	T	21-Oct-20	KTF124	-22.279918	117.651239	GDA94	n=1	KTF124-01	Recently merged with widespread *S. elliptica*; no longer considered of concern.
Seringia exastia	T	27-Mar-21	KTF137	-22.242364	117.680085	GDA94	n=1	KTF137-03	Recently merged with widespread *S. elliptica*; no longer considered of concern.
Sida sp. Hamersley Range (K. Newbey 10692)	P3	19-Apr-20	KTF09	-22.488844	117.720549	GDA94	n=1		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.274526	117.646227	GDA94	n=1	BB04=	
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.274499	117.646266	GDA94	n=1	BB04=	

Species	Status	Date	Location	Latitude	Longitude	Datum	Abundance (No. / %)	Specimen No.	Comments
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.274426	117.646499	GDA94	n=1	BB04=	
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276505	117.650624	GDA94	n=1		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276067	117.649603	GDA94	n=2		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.275635	117.649241	GDA94	n=2		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276488	117.650536	GDA94	n=5		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276354	117.65007	GDA94	n=5		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276237	117.649817	GDA94	n=5		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.275724	117.649358	GDA94	n=5		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.274326	117.646556	GDA94	n=6	BB04	
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.274726	117.645995	GDA94	n=7	BB04=	
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276631	117.650857	GDA94	n=10		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.275959	117.649486	GDA94	n=10		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.275517	117.649144	GDA94	n=10		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276576	117.650944	GDA94	n=20	PL37	
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.27638	117.650351	GDA94	n=25		
Sida sp. Hamersley Range (K. Newbey 10692)	P3	28-Apr-20	No site	-22.276344	117.650235	GDA94	n=30		
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	21-Apr-20	KTF22	-22.316351	117.670516	GDA94	0.25%	KTF22-02	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	20-Apr-20	KTF07	-22.351813	117.669495	GDA94	n=1	KTF07-27	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=1	KTF59-09A	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	n=1	KTF72-18	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=1	KTF70-38	
Streptoglossa sp. Cracking clays (S. van Leeuwen et al. PBS 7353)	P3	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=1	REL11-08	
Swainsona thompsoniana	P3	20-Apr-20	KTF73	-21.669606	117.396232	GDA94	n=1	KTF73-08	
Swainsona thompsoniana	P3	21-Apr-20	KTF14	-21.668232	117.393518	GDA94	n=1	KTF14-13	
Swainsona thompsoniana	P3	27-Mar-21	KTF139	-22.51394	117.728518	GDA94	n=1	KTF139-13	
Swainsona thompsoniana	P3	22-Apr-20	KTF34	-21.684518	117.440875	GDA94	n=20	KTF34-04	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Oct-20	KTF126	-22.287308	117.672605	GDA94	0.50%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	21-Oct-20	KTF122	-22.294572	117.679959	GDA94	1.50%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	20-Apr-20	KTF08	-22.326451	117.668855	GDA94	2%	KTF08-02	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	23-Oct-20	KTF127	-22.288778	117.674912	GDA94	4%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Oct-20	KTFREL21	-22.288078	117.668393	GDA94	28%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Oct-20	KTF125	-22.289743	117.666646	GDA94	29%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	20-Apr-20	KTF72	-22.309396	117.674684	GDA94	45%		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	60%	KTF70-01	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	19-Apr-20	KTFREL07	-22.485022	117.718687	GDA94	n=1	REL07-05b	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	21-Apr-20	KTF60	-22.330808	117.667618	GDA94	n=1	KTF08-02=	

Species	Status	Date	Location	Latitude	Longitude	Datum	Abundance (No. / %)	Specimen No.	Comments
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Apr-20	KTFREL06	-21.685919	117.452186	GDA94	n=1	REL06-21	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=1	KTF11-26	
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=2		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=20		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Apr-20	KTF16	-21.672592	117.402603	GDA94	n=30		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=50		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	22-Apr-20	No site	-21.673321	117.402702	GDA94	n=100		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	21-Apr-20	KTF13	-22.312554	117.67283	GDA94	n=500		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	21-Apr-20	KTF22	-22.316351	117.670516	GDA94	n=1800		
Themeda sp. Hamersley Station (M.E. Trudgen 11431)	P3	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	n=6000		
Triodia basitricha	P3	27-May-20	KTF111	-22.10765	117.698115	GDA94	25%	KTF111-01	
Vittadinia sp. Coondewanna Flats (S. van Leeuwen 4684)	P1	19-Apr-20	KTF10	-22.472651	117.714466	GDA94	n=1	KTF10-02	

Appendix 12

Locations of Weeds

Taxon Name	Ranking	Date	Location	Latitude	Longitude	Datum	Abundance	Specimen no.
**Aerva javanica*	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1	
**Aerva javanica*	*	27-May-20	KTF112	-22.117591	117.722836	GDA94	n=1	
**Aerva javanica*	*	26-Apr-20	OPP	-21.94904	117.629687	GDA94	n=5	
**Bidens bipinnata*	*	25-Apr-20	KTF52	-21.892605	117.620809	GDA94	n=1	KTF50-01=
**Bidens bipinnata*	*	19-Apr-20	OPP	-21.75831	117.539499	GDA94	n=5	
**Bidens bipinnata*	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=5	
**Bidens bipinnata*	*	19-Apr-20	KTFREL01	-22.452772	117.700683	GDA94	n=10	KTF01-26=
**Bidens bipinnata*	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=10	
**Bidens bipinnata*	*	25-Apr-20	KTFREL10	-21.831584	117.597173	GDA94	n=10	
**Bidens bipinnata*	*	26-Mar-21	KTF136	-22.495063	117.714553	GDA94	n=10	
**Bidens bipinnata*	*	19-Apr-20	KTF01	-22.457321	117.7067	GDA94	n=15	KTF01-27
**Bidens bipinnata*	*	19-Apr-20	KTF02	-22.440676	117.700202	GDA94	n=20	KTF01-26=
**Bidens bipinnata*	*	27-Mar-21	KTF138	-22.493489	117.728207	GDA94	n=20	
**Bidens bipinnata*	*	19-Apr-20	KTFREL04	-22.419402	117.690218	GDA94	n=30	
**Bidens bipinnata*	*	20-Apr-20	KTFREL05	-22.429911	117.691067	GDA94	n=30	
**Bidens bipinnata*	*	19-Apr-20	KTF09	-22.488844	117.720549	GDA94	n=35	
**Bidens bipinnata*	*	24-Apr-20	KTF28	-21.728801	117.502848	GDA94	n=50	
**Bidens bipinnata*	*	25-Apr-20	KTFREL09	-21.780116	117.567409	GDA94	n=100	
**Bidens bipinnata*	*	25-Apr-20	KTF61	-21.797498	117.581253	GDA94	n=150	
**Bidens bipinnata*	*	19-Apr-20	KTF06	-22.415116	117.683097	GDA94	n=300	
**Bidens bipinnata*	*	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=300	
**Bidens bipinnata*	*	20-Apr-20	OPP	-22.413648	117.685441	GDA94	n=500	
**Bidens bipinnata*	*	22-Apr-20	OPP	-22.45666	117.707607	GDA94	n=500	
**Bidens bipinnata*	*	19-Apr-20	KTFREL07	-22.485022	117.718687	GDA94	n=700	
**Bidens bipinnata*	*	19-Apr-20	KTF10	-22.472651	117.714466	GDA94	n=1000	
**Bidens bipinnata*	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1000	
**Bidens bipinnata*	*	19-Apr-20	OPP	-22.428394	117.693005	GDA94	n=1000	
**Bidens bipinnata*	*	24-Apr-20	OPP	-22.369668	117.673463	GDA94	n=1000	
**Bidens bipinnata*	*	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=2000	
**Bidens bipinnata*	*	25-Apr-20	KTF50	-21.866086	117.618229	GDA94	n=3000	KTF50-02
**Bidens bipinnata*	*	19-Apr-20	KTF64	-21.871994	117.618973	GDA94	n=5000	
**Cenchrus ciliaris*	*	24-Apr-20	KTFREL08	-21.688431	117.460329	GDA94	n=1	
**Cenchrus ciliaris*	*	23-May-20	KTFREL12	-22.251322	117.667772	GDA94	n=1	
**Cenchrus ciliaris*	*	24-May-20	KTF87	-22.063487	117.674628	GDA94	n=1	
**Cenchrus ciliaris*	*	25-May-20	KTF100	-22.042757	117.658102	GDA94	n=1	
**Cenchrus ciliaris*	*	25-May-20	KTF90	-22.203377	117.690401	GDA94	n=1	
**Cenchrus ciliaris*	*	25-May-20	KTF93	-22.060809	117.673389	GDA94	n=1	
**Cenchrus ciliaris*	*	25-May-20	KTF98	-22.043399	117.654054	GDA94	n=1	
**Cenchrus ciliaris*	*	25-May-20	KTF98	-22.043399	117.654054	GDA94	n=1	
**Cenchrus ciliaris*	*	26-May-20	KTF104	-22.084191	117.704937	GDA94	n=1	
**Cenchrus ciliaris*	*	26-May-20	KTFREL18	-22.193007	117.690719	GDA94	n=1	
**Cenchrus ciliaris*	*	27-May-20	KTF109	-22.121121	117.728453	GDA94	n=1	

*Cenchrus ciliaris	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=1	
*Cenchrus ciliaris	*	27-May-20	KTF112	-22.117591	117.722836	GDA94	n=1	KTF112-03
*Cenchrus ciliaris	*	27-May-20	KTFREL22	-22.091559	117.702759	GDA94	n=1	
*Cenchrus ciliaris	*	21-Oct-20	KTF122	-22.294572	117.679959	GDA94	n=1	
*Cenchrus ciliaris	*	28-Mar-21	KTF140	-22.03312	117.656693	GDA94	n=1	
*Cenchrus ciliaris	*	29-Mar-21	KTF143	-22.06223	117.689558	GDA94	n=1	
*Cenchrus ciliaris	*	29-Mar-21	KTF144	-22.055414	117.682607	GDA94	n=1	
*Cenchrus ciliaris	*	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=1	
*Cenchrus ciliaris	*	26-Apr-20	OPP	-21.758227	117.539866	GDA94	n=1	
*Cenchrus ciliaris	*	24-May-20	KTF88	-22.242688	117.672581	GDA94	n=1	
*Cenchrus ciliaris	*	26-Mar-21	KTF136	-22.495063	117.714553	GDA94	n=1	
*Cenchrus ciliaris	*	27-Mar-21	KTF139	-22.51394	117.728518	GDA94	n=1	
*Cenchrus ciliaris	*	28-Mar-21	KTF141	-22.038736	117.662921	GDA94	n=1	
*Cenchrus ciliaris	*	29-Mar-21	KTFREL23	-22.093651	117.705864	GDA94	n=1	
*Cenchrus ciliaris	*	25-Apr-20	KTFREL09	-21.780116	117.567409	GDA94	n=2	
*Cenchrus ciliaris	*	24-May-20	KTF81	-22.111527	117.704195	GDA94	n=3	
*Cenchrus ciliaris	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=4	
*Cenchrus ciliaris	*	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=5	
*Cenchrus ciliaris	*	26-May-20	KTF101	-22.14341	117.719661	GDA94	n=5	
*Cenchrus ciliaris	*	26-May-20	KTF102	-22.029272	117.641516	GDA94	n=5	
*Cenchrus ciliaris	*	19-Apr-20	KTF64	-21.871994	117.618973	GDA94	n=10	
*Cenchrus ciliaris	*	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=10	
*Cenchrus ciliaris	*	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=10	
*Cenchrus ciliaris	*	20-Apr-20	KTF57	-21.949206	117.629405	GDA94	n=10	
*Cenchrus ciliaris	*	24-Apr-20	KTF29	-21.745382	117.518234	GDA94	n=10	
*Cenchrus ciliaris	*	25-Apr-20	KTF50	-21.866086	117.618229	GDA94	n=10	
*Cenchrus ciliaris	*	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=10	
*Cenchrus ciliaris	*	25-Apr-20	KTF51	-21.877768	117.620484	GDA94	n=20	
*Cenchrus ciliaris	*	25-Apr-20	KTF52	-21.892605	117.620809	GDA94	n=20	
*Cenchrus ciliaris	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=30	
*Cenchrus ciliaris	*	25-Apr-20	KTF55	-21.922066	117.623178	GDA94	n=30	
*Cenchrus ciliaris	*	24-Apr-20	KTF42	-21.757142	117.538145	GDA94	n=50	
*Cenchrus ciliaris	*	25-Apr-20	KTF61	-21.797498	117.581253	GDA94	n=50	
*Cenchrus ciliaris	*	20-Apr-20	KTF69	-21.937652	117.627524	GDA94	n=60	
*Cenchrus ciliaris	*	19-Apr-20	KTF58	-21.955017	117.628888	GDA94	n=100	
*Cenchrus ciliaris	*	20-Apr-20	KTF54	-21.929986	117.621182	GDA94	n=100	
*Cenchrus ciliaris	*	25-Apr-20	KTF45	-21.911272	117.619745	GDA94	n=100	
*Cenchrus ciliaris	*	25-May-20	KTF91	-22.070938	117.684825	GDA94	n=100	
*Cenchrus ciliaris	*	20-Apr-20	KTF53	-21.908789	117.620056	GDA94	n=120	
*Cenchrus ciliaris	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=150	
*Cenchrus ciliaris	*	19-Apr-20	KTF67	-22.019194	117.640047	GDA94	n=200	
*Cenchrus ciliaris	*	20-Apr-20	KTF07	-22.351813	117.669495	GDA94	n=200	
*Cenchrus ciliaris	*	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=200	

*Cenchrus ciliaris	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=200	
*Cenchrus ciliaris	*	25-Apr-20	KTF63	-22.027932	117.649833	GDA94	n=200	
*Cenchrus ciliaris	*	25-Apr-20	OPP	-22.027161	117.650079	GDA94	n=200	
*Cenchrus ciliaris	*	22-Apr-20	KTF36	-21.687211	117.458065	GDA94	n=230	
*Cenchrus ciliaris	*	19-Apr-20	KTF65	-21.990424	117.63427	GDA94	n=300	
*Cenchrus ciliaris	*	21-Apr-20	OPP	-22.313064	117.67525	GDA94	n=300	
*Cenchrus ciliaris	*	26-Apr-20	OPP	-21.989899	117.635205	GDA94	n=300	
*Cenchrus ciliaris	*	24-May-20	KTF84	-22.073134	117.690991	GDA94	n=400	
*Cenchrus ciliaris	*	19-Apr-20	KTF66	-22.011048	117.632862	GDA94	n=800	
*Cenchrus ciliaris	*	20-Apr-20	OPP	-22.321377	117.672474	GDA94	n=1000	
*Cenchrus ciliaris	*	24-Apr-20	OPP	-22.081566	117.697775	GDA94	n=1000	
*Cenchrus ciliaris	*	26-Apr-20	OPP	-22.01097	117.631956	GDA94	n=1000	
*Cenchrus ciliaris	*	25-May-20	KTF95	-22.058804	117.67107	GDA94	n=1000	
*Cenchrus ciliaris	*	26-May-20	KTF97	-22.054882	117.667456	GDA94	n=1000	
*Cenchrus ciliaris	*	27-May-20	KTF105	-22.182554	117.69247	GDA94	n=1000	
*Cenchrus ciliaris	*	23-Apr-20	KTF38	-21.681603	117.461235	GDA94	n=1500	
*Cenchrus ciliaris	*	22-Apr-20	OPP	-22.149395	117.716166	GDA94	n=2000	
*Cenchrus ciliaris	*	28-Apr-20	OPP	-21.686788	117.459763	GDA94	n=2000	
*Cenchrus ciliaris	*	24-Apr-20	OPP	-22.08394	117.70245	GDA94	n=10000	
*Cenchrus setiger	*	24-Apr-20	KTFREL08	-21.688431	117.460329	GDA94	n=1	
*Cenchrus setiger	*	24-May-20	KTF87	-22.063487	117.674628	GDA94	n=1	
*Cenchrus setiger	*	25-May-20	KTF100	-22.042757	117.658102	GDA94	n=1	
*Cenchrus setiger	*	25-May-20	KTF90	-22.203377	117.690401	GDA94	n=1	
*Cenchrus setiger	*	25-May-20	KTF95	-22.058804	117.67107	GDA94	n=1	
*Cenchrus setiger	*	25-May-20	KTF98	-22.043399	117.654054	GDA94	n=1	
*Cenchrus setiger	*	26-May-20	KTF104	-22.084191	117.704937	GDA94	n=1	
*Cenchrus setiger	*	26-May-20	KTF97	-22.054882	117.667456	GDA94	n=1	
*Cenchrus setiger	*	26-May-20	KTFREL18	-22.193007	117.690719	GDA94	n=1	
*Cenchrus setiger	*	27-May-20	KTF108	-22.090254	117.704114	GDA94	n=1	
*Cenchrus setiger	*	27-May-20	KTF109	-22.121121	117.728453	GDA94	n=1	
*Cenchrus setiger	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=1	
*Cenchrus setiger	*	27-May-20	KTF112	-22.117591	117.722836	GDA94	n=1	
*Cenchrus setiger	*	27-May-20	KTFREL22	-22.091559	117.702759	GDA94	n=1	
*Cenchrus setiger	*	28-Mar-21	KTF140	-22.03312	117.656693	GDA94	n=1	
*Cenchrus setiger	*	29-Mar-21	KTF143	-22.06223	117.689558	GDA94	n=1	
*Cenchrus setiger	*	29-Mar-21	KTF144	-22.055414	117.682607	GDA94	n=1	
*Cenchrus setiger	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1	
*Cenchrus setiger	*	20-Apr-20	KTF07	-22.351813	117.669495	GDA94	n=1	
*Cenchrus setiger	*	28-Mar-21	KTF141	-22.038736	117.662921	GDA94	n=1	
*Cenchrus setiger	*	29-Mar-21	KTFREL23	-22.093651	117.705864	GDA94	n=1	
*Cenchrus setiger	*	24-May-20	KTF80	-22.095984	117.702676	GDA94	n=2	
*Cenchrus setiger	*	24-Apr-20	KTF29	-21.745382	117.518234	GDA94	n=5	
*Cenchrus setiger	*	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=5	

**Cenchrus setiger*	*	20-Apr-20	KTF69	-21.937652	117.627524	GDA94	n=10	
**Cenchrus setiger*	*	22-Apr-20	KTF30	-21.685733	117.465738	GDA94	n=10	
**Cenchrus setiger*	*	22-Apr-20	KTFREL06	-21.685919	117.452186	GDA94	n=15	
**Cenchrus setiger*	*	27-May-20	KTFREL20	-22.09508	117.701022	GDA94	n=15	
**Cenchrus setiger*	*	26-Apr-20	OPP	-21.684004	117.460228	GDA94	n=30	
**Cenchrus setiger*	*	19-Apr-20	KTF58	-21.955017	117.628888	GDA94	n=40	
**Cenchrus setiger*	*	20-Apr-20	KTF57	-21.949206	117.629405	GDA94	n=40	
**Cenchrus setiger*	*	22-Apr-20	KTF36	-21.687211	117.458065	GDA94	n=40	
**Cenchrus setiger*	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=50	
**Cenchrus setiger*	*	22-Apr-20	KTF25	-21.674959	117.450951	GDA94	n=50	
**Cenchrus setiger*	*	25-Apr-20	KTFREL09	-21.780116	117.567409	GDA94	n=50	
**Cenchrus setiger*	*	24-May-20	KTF81	-22.111527	117.704195	GDA94	n=50	
**Cenchrus setiger*	*	25-May-20	KTF93	-22.060809	117.673389	GDA94	n=150	
**Cenchrus setiger*	*	19-Apr-20	KTF65	-21.990424	117.63427	GDA94	n=200	
**Cenchrus setiger*	*	21-Apr-20	OPP	-22.313073	117.67526	GDA94	n=200	
**Cenchrus setiger*	*	24-Apr-20	OPP	-21.687149	117.460141	GDA94	n=200	
**Cenchrus setiger*	*	27-May-20	KTF105	-22.182554	117.69247	GDA94	n=200	
**Cenchrus setiger*	*	19-Apr-20	KTF66	-22.011048	117.632862	GDA94	n=300	
**Cenchrus setiger*	*	19-Apr-20	KTF67	-22.019194	117.640047	GDA94	n=300	
**Cenchrus setiger*	*	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=300	
**Cenchrus setiger*	*	28-Apr-20	OPP	-21.679458	117.461112	GDA94	n=300	
**Cenchrus setiger*	*	26-May-20	KTF101	-22.14341	117.719661	GDA94	n=300	
**Cenchrus setiger*	*	20-Apr-20	OPP	-22.321414	117.672445	GDA94	n=500	
**Cenchrus setiger*	*	22-Apr-20	OPP	-21.989899	117.635215	GDA94	n=500	
**Cenchrus setiger*	*	25-Apr-20	KTF63	-22.027932	117.649833	GDA94	n=500	
**Cenchrus setiger*	*	24-May-20	KTF84	-22.073134	117.690991	GDA94	n=600	
**Cenchrus setiger*	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=800	
**Cenchrus setiger*	*	25-May-20	KTF91	-22.070938	117.684825	GDA94	n=1000	
**Cenchrus setiger*	*	22-Apr-20	OPP	-22.149385	117.716176	GDA94	n=2000	
**Cenchrus setiger*	*	23-Apr-20	KTF38	-21.681603	117.461235	GDA94	n=3500	
**Cenchrus setiger*	*	22-Apr-20	OPP	-22.081575	117.697766	GDA94	n=5000	
**Cynodon dactylon*	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=1	
**Cynodon dactylon*	*	26-May-20	KTF104	-22.084191	117.704937	GDA94	n=1	
**Cynodon dactylon*	*	29-Mar-21	KTFREL23	-22.093651	117.705864	GDA94	n=1	
**Datura leichhardtii* subsp. *leichhardtii*	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=4	
**Datura leichhardtii* subsp. *leichhardtii*	*	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=10	KTF03-32
**Echinochloa colona*	*	19-Apr-20	KTFREL07	-22.485022	117.718687	GDA94	n=1	REL07-13
**Echinochloa colona*	*	24-Apr-20	KTFREL08	-21.688431	117.460329	GDA94	n=1	
**Echinochloa colona*	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=1	
**Echinochloa colona*	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=1	
**Echinochloa colona*	*	25-Apr-20	KTFREL09	-21.780116	117.567409	GDA94	n=1	
**Echinochloa colona*	*	29-Mar-21	KTFREL23	-22.093651	117.705864	GDA94	n=1	REL23-11

*Echinochloa colona	*	22-Apr-20	OPP	-21.683092	117.46008	GDA94	n=3	
*Echinochloa colona	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=10	
*Echinochloa colona	*	25-Apr-20	KTF61	-21.797498	117.581253	GDA94	n=10	
*Echinochloa colona	*	21-Apr-20	KTF13	-22.312554	117.67283	GDA94	n=20	
*Flaveria trinervia	*	19-Apr-20	KTF66	-22.011048	117.632862	GDA94	n=1	
*Flaveria trinervia	*	27-Mar-21	KTF139	-22.51394	117.728518	GDA94	n=1	KTF139-23
*Flaveria trinervia	*	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=2	KTF70-34
*Flaveria trinervia	*	25-Apr-20	KTF45	-21.911272	117.619745	GDA94	n=2	
*Flaveria trinervia	*	25-May-20	KTF93	-22.060809	117.673389	GDA94	n=2	
*Flaveria trinervia	*	27-May-20	KTF105	-22.182554	117.69247	GDA94	n=2	
*Flaveria trinervia	*	25-May-20	KTF95	-22.058804	117.67107	GDA94	n=5	KTF95-05
*Flaveria trinervia	*	22-Apr-20	KTF15	-21.671032	117.398607	GDA94	n=7	
*Flaveria trinervia	*	22-Apr-20	KTF25	-21.674959	117.450951	GDA94	n=10	
*Flaveria trinervia	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=25	
*Malvastrum americanum	*	19-Apr-20	KTFREL07	-22.485022	117.718687	GDA94	n=1	
*Malvastrum americanum	*	20-Apr-20	OPP	-22.351599	117.669288	GDA94	n=1	
*Malvastrum americanum	*	21-Apr-20	KTF13	-22.312554	117.67283	GDA94	n=1	
*Malvastrum americanum	*	24-Apr-20	KTFREL08	-21.688431	117.460329	GDA94	n=1	
*Malvastrum americanum	*	25-Apr-20	KTF61	-21.797498	117.581253	GDA94	n=1	
*Malvastrum americanum	*	27-May-20	KTF105	-22.182554	117.69247	GDA94	n=1	
*Malvastrum americanum	*	27-Mar-21	KTF138	-22.493489	117.728207	GDA94	n=1	
*Malvastrum americanum	*	25-Apr-20	KTF50	-21.866086	117.618229	GDA94	n=2	
*Malvastrum americanum	*	25-May-20	KTF90	-22.203377	117.690401	GDA94	n=2	
*Malvastrum americanum	*	30-Mar-21	OPP	-22.033009	117.656143	GDA94	n=2	
*Malvastrum americanum	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=3	
*Malvastrum americanum	*	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=5	
*Malvastrum americanum	*	20-Apr-20	KTF03	-22.384322	117.675336	GDA94	n=10	
*Malvastrum americanum	*	20-Apr-20	KTF07	-22.351813	117.669495	GDA94	n=10	
*Malvastrum americanum	*	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=10	
*Malvastrum americanum	*	21-Apr-20	KTF19	-21.675465	117.41654	GDA94	n=10	
*Malvastrum americanum	*	25-Apr-20	KTFREL13	-21.853074	117.613975	GDA94	n=10	
*Malvastrum americanum	*	26-May-20	KTFREL18	-22.193007	117.690719	GDA94	n=10	
*Malvastrum americanum	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=15	
*Malvastrum americanum	*	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=20	
*Malvastrum americanum	*	25-Apr-20	KTF52	-21.892605	117.620809	GDA94	n=20	
*Malvastrum americanum	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=30	
*Malvastrum americanum	*	25-May-20	KTF93	-22.060809	117.673389	GDA94	n=35	
*Malvastrum americanum	*	19-Apr-20	KTF64	-21.871994	117.618973	GDA94	n=40	
*Malvastrum americanum	*	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=50	
*Malvastrum americanum	*	30-Mar-21	OPP	-22.371002	117.671984	GDA94	n=50	
*Malvastrum americanum	*	25-May-20	KTF95	-22.058804	117.67107	GDA94	n=80	
*Malvastrum americanum	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=100	
*Malvastrum americanum	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1000	

**Malvastrum americanum*	*	25-Apr-20	OPP	-22.060188	117.672715	GDA94	n=1000	
**Portulaca pilosa*	*	19-Apr-20	KTF02	-22.440676	117.700202	GDA94		KTF02-22
**Portulaca pilosa*	*	19-Apr-20	KTF64	-21.871994	117.618973	GDA94		KTF64-03
**Portulaca pilosa*	*	20-Apr-20	KTF68	-21.676667	117.446658	GDA94		KTF68-13
**Portulaca pilosa*	*	21-Apr-20	KTF23	-21.678503	117.42866	GDA94		KTF23-18
**Portulaca pilosa*	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94		KTF37-32
**Rumex vesicarius*	*	23-Apr-20	OPP	-22.168363	117.704304	GDA94	n=1	
**Rumex vesicarius*	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=1	
**Rumex vesicarius*	*	28-Mar-21	OPP	-22.205837	117.691384	GDA94	n=1	
**Rumex vesicarius*	*	30-Mar-21	OPP	-22.370948	117.671974	GDA94	n=1	
**Rumex vesicarius*	*	23-Apr-20	OPP	-22.168536	117.703984	GDA94	n=4	
**Rumex vesicarius*	*	26-Apr-20	OPP	-22.165382	117.70649	GDA94	n=30	
**Rumex vesicarius*	*	26-Apr-20	OPP	-22.165148	117.706092	GDA94	n=50	
**Rumex vesicarius*	*	28-Mar-21	OPP	-22.11794	117.7261	GDA94	n=100	
**Rumex vesicarius*	*	26-Apr-20	OPP	-22.165725	117.706482	GDA94	n=200	
**Rumex vesicarius*	*	28-Mar-21	OPP	-22.130768	117.730171	GDA94	n=200	
**Rumex vesicarius*	*	26-Apr-20	OPP	-22.165986	117.706581	GDA94	n=1000	
**Setaria verticillata*	*	25-Apr-20	KTF50	-21.866086	117.618229	GDA94	n=1	KTF50-12
**Setaria verticillata*	*	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=1	
**Setaria verticillata*	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=1	
**Setaria verticillata*	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=1	
**Setaria verticillata*	*	20-Apr-20	OPP	-22.370246	117.673389	GDA94	n=3	
**Setaria verticillata*	*	30-Mar-21	OPP	-22.093563	117.706142	GDA94	n=3	
**Setaria verticillata*	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=10	
**Setaria verticillata*	*	19-Apr-20	KTF64	-21.871994	117.618973	GDA94	n=50	
**Sonchus oleraceus*	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=10	
**Sonchus oleraceus*	*	25-Apr-20	KTF45	-21.911272	117.619745	GDA94	n=10	
**Tribulus terrestris*	*	19-Apr-20	KTF11	-22.372728	117.67394	GDA94	n=1	KTF11-34
**Tribulus terrestris*	*	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=1	KTF04-25
**Tribulus terrestris*	*	20-Apr-20	KTF12	-22.367931	117.673016	GDA94	n=1	KTF11-33=
**Tribulus terrestris*	*	24-May-20	KTFREL16	-22.096954	117.701147	GDA94	n=1	
**Tribulus terrestris*	*	27-May-20	KTF108	-22.090254	117.704114	GDA94	n=1	
**Tribulus terrestris*	*	24-Apr-20	OPP	-21.686708	117.459357	GDA94	n=2	
**Tribulus terrestris*	*	22-Apr-20	OPP	-22.097276	117.701982	GDA94	n=10	
**Tribulus terrestris*	*	24-May-20	KTF80	-22.095984	117.702676	GDA94	n=20	
**Tridax procumbens*	*	30-Mar-21	OPP	-22.093563	117.706142	GDA94	n=3	ALRM06
**Vachellia farnesiana*	*	21-Oct-20	KTF122	-22.294572	117.679959	GDA94	n=1	
**Vachellia farnesiana*	*	22-Oct-20	KTF125	-22.289743	117.666646	GDA94	n=1	
**Vachellia farnesiana*	*	22-Oct-20	KTF126	-22.287308	117.672605	GDA94	n=1	
**Vachellia farnesiana*	*	22-Oct-20	KTFREL21	-22.288078	117.668393	GDA94	n=1	
**Vachellia farnesiana*	*	23-Oct-20	KTF127	-22.288778	117.674912	GDA94	n=1	
**Vachellia farnesiana*	*	20-Apr-20	OPP	-22.09446	117.701329	GDA94	n=1	
**Vachellia farnesiana*	*	20-Apr-20	OPP	-22.090701	117.703627	GDA94	n=1	

**Vachellia farnesiana*	*	21-Apr-20	KTF22	-22.316351	117.670516	GDA94	n=1	
**Vachellia farnesiana*	*	22-Apr-20	OPP	-22.081439	117.697891	GDA94	n=1	
**Vachellia farnesiana*	*	22-Apr-20	OPP	-21.687417	117.457774	GDA94	n=1	
**Vachellia farnesiana*	*	23-Apr-20	KTF32	-21.692507	117.475202	GDA94	n=1	
**Vachellia farnesiana*	*	27-Apr-20	OPP	-21.675273	117.448524	GDA94	n=1	
**Vachellia farnesiana*	*	27-May-20	KTFREL22	-22.091559	117.702759	GDA94	n=1	
**Vachellia farnesiana*	*	29-Mar-21	KTF144	-22.055414	117.682607	GDA94	n=1	
**Vachellia farnesiana*	*	30-Mar-21	OPP	-22.371328	117.673918	GDA94	n=1	
**Vachellia farnesiana*	*	22-Apr-20	OPP	-22.321368	117.672474	GDA94	n=2	
**Vachellia farnesiana*	*	25-May-20	KTF93	-22.060809	117.673389	GDA94	n=2	
**Vachellia farnesiana*	*	30-Mar-21	OPP	-22.327836	117.666067	GDA94	n=2	
**Vachellia farnesiana*	*	20-Apr-20	KTF21	-22.302022	117.676876	GDA94	n=3	
**Vachellia farnesiana*	*	27-Apr-20	OPP	-21.674595	117.448541	GDA94	n=4	
**Vachellia farnesiana*	*	22-Apr-20	KTF34	-21.684518	117.440875	GDA94	n=5	
**Vachellia farnesiana*	*	27-May-20	KTF110	-22.110949	117.708853	GDA94	n=5	
**Vachellia farnesiana*	*	21-Apr-20	KTF13	-22.312554	117.67283	GDA94	n=6	
**Vachellia farnesiana*	*	24-Apr-20	KTFREL08	-21.688431	117.460329	GDA94	n=6	
**Vachellia farnesiana*	*	27-Apr-20	OPP	-22.320872	117.672394	GDA94	n=8	
**Vachellia farnesiana*	*	19-Apr-20	KTF56	-21.855871	117.61669	GDA94	n=9	
**Vachellia farnesiana*	*	21-Apr-20	KTF70	-22.306141	117.676069	GDA94	n=10	
**Vachellia farnesiana*	*	24-Apr-20	OPP	-21.677011	117.444005	GDA94	n=10	
**Vachellia farnesiana*	*	29-Mar-21	KTFREL23	-22.093651	117.705864	GDA94	n=10	
**Vachellia farnesiana*	*	29-Mar-21	OPP	-22.062176	117.689927	GDA94	n=10	
**Vachellia farnesiana*	*	20-Apr-20	KTF04	-22.343062	117.666664	GDA94	n=15	
**Vachellia farnesiana*	*	23-Apr-20	KTF37	-21.682164	117.460157	GDA94	n=15	
**Vachellia farnesiana*	*	23-Apr-20	KTF38	-21.681603	117.461235	GDA94	n=15	
**Vachellia farnesiana*	*	20-Apr-20	KTF07	-22.351813	117.669495	GDA94	n=23	
**Vachellia farnesiana*	*	20-Apr-20	KTF59	-22.361624	117.672638	GDA94	n=23	
**Vachellia farnesiana*	*	20-Apr-20	KTF17	-22.342119	117.668065	GDA94	n=30	
**Vachellia farnesiana*	*	23-May-20	KTFREL11	-22.34552	117.669186	GDA94	n=30	
**Vachellia farnesiana*	*	29-Mar-21	OPP	-22.110847	117.712026	GDA94	n=50	

Appendix 13

Potential Fauna Species List and Species Recorded During Current Survey

Amphibians

				Conservation Status		Database Searches			Previous Surveys							
Family	Species	Common Name	Current Survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Pelodryadidae	*Cyclorana australis*	Giant Frog										•				
Hylidae	*Cyclorana maini*	Sheep Frog	•						•	•		•	•	•	•	•
Pelodryadidae	*Cyclorana occidentalis*	Western Water-holding Frog										•				
Hylidae	*Litoria rubella*	Little Red Tree Frog	•			•				•		•		•	•	•
Limnodynastidae	*Neobatrachus sutor*	Shoemaker Frog	•													
Limnodynastidae	*Notaden nichollsi*	Desert Spadefoot										•				
Limnodynastidae	*Platyplectrum spenceri*	Centralian Burrowing Frog										•				
Myobatrachidae	*Pseudophryne douglasi*	Gorge Toadlet	•			•						•				•
Myobatrachidae	*Uperoleia saxatilis* (1)	Pilbara Toadlet				•									•	•

(1) - formerly included within *U. russelli*, some previous records listed as such

Reptiles

				Conservation Status		Database Searches			Previous Surveys							
Family	Species	Common Name	Current survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Cheluidae	*Chelodina steindachneri*	Flat-shelled Turtle	•			•						•				
Carphodactylidae	*Nephrurus wheeleri*					•				•		•			•	•
Gekkonidae	*Underwoodisaurus seorsus* (1)	Pilbara Barking Gecko		P2		•		•							•	•
Diplodactylidae	*Crenadactylus pilbarensis* (2)	Pilbara Clawless Gecko				•						•				•
Diplodactylidae	*Diplodactylus bilybara* (3)	Western Fat-tailed Gecko				•			•	•		•			•	•
Diplodactylidae	*Diplodactylus galaxias*	Northern Pilbara Beak-faced Gecko				•									•	
Diplodactylidae	*Diplodactylus mitchelli*					•			•							
Diplodactylidae	*Diplodactylus pulcher*		•							•			•			
Diplodactylidae	*Diplodactylus savagei*	Southern Pilbara Beak-faced Gecko				•			•			•	•		•	•
Diplodactylidae	*Lucasium stenodactylum*		•			•			•	•		•	•		•	•
Diplodactylidae	*Lucasium wombeyi*					•			•	•		•			•	•
Diplodactylidae	*Oedura fimbria* (4)	Western Marbled Velvet Gecko	•			•			•			•			•	•
Diplodactylidae	*Rhynchoedura ornata*	Western Beaked Gecko	•			•			•	•		•	•		•	•
Diplodactylidae	*Strophurus elderi*					•				•		•	•		•	•
Diplodactylidae	*Strophurus jeanae*									•					•	
Diplodactylidae	*Strophurus strophurus*					•										•
Diplodactylidae	*Strophurus wellingtonae*					•			•	•		•			•	•
Gekkonidae	*Gehyra crypta* (5)		•													
Gekkonidae	*Gehyra media* (6)															
Gekkonidae	*Gehyra micra* (6)															
Gekkonidae	*Gehyra pilbara*					•						•				•
Gekkonidae	*Gehyra punctata*		•			•			•			•	•	•	•	•
Gekkonidae	*Gehyra variegata*					•			•	•		•	•		•	•
Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko				•			•	•		•	•	•	•	•

				Conservation Status		Database Searches			Previous Surveys							
Family	Species	Common Name	Current survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Gekkonidae	*Heteronotia spelea*	Desert Cave Gecko, Pilbara Cave Gecko				•						•				•
Pygopodidae	*Delma butleri*					•				•		•				•
Pygopodidae	*Delma elegans*					•						•			•	•
Pygopodidae	*Delma nasuta*					•			•	•		•	•	•	•	•
Pygopodidae	*Delma pax*					•				•		•			•	•
Pygopodidae	*Delma tincta*					•			•	•		•	•	•	•	•
Pygopodidae	*Lialis burtonis*					•				•		•	•	•	•	•
Pygopodidae	*Pygopus nigriceps*					•				•		•	•	•	•	•
Agamidae	*Ctenophorus caudicinctus*	Ring-tailed Dragon	•			•			•	•	•	•	•	•	•	•
Agamidae	*Ctenophorus isolepis*	Crested Dragon, Military Dragon	•			•			•	•		•	•	•	•	•
Agamidae	*Ctenophorus reticulatus*	Western Netted Dragon				•			•	•		•	•		•	
Agamidae	*Diporiphora amphiboluroides*	Mulga Dragon								•		•				•
Agamidae	*Diporiphora valens*	Southern Pilbara Tree Dragon				•			•			•	•	•	•	•
Agamidae	*Gowidon longirostris*	Long-nosed Dragon	•			•			•	•		•	•	•	•	•
Agamidae	*Pogona minor*	Dwarf Bearded Dragon				•			•	•		•	•	•	•	•
Agamidae	*Tympanocryptis diabolicus* (7)	Hamersley Pebble-mimic Dragon				•			•						•	•
Agamidae	*Tympanocryptis fortescuensis* (7)	Fortescue Pebble-mimic Dragon				•			•						•	•
Scincidae	*Carlia munda*	Shaded-litter Rainbow Skink				•			•	•		•	•	•	•	•
Scincidae	*Carlia triacantha*	Desert Rainbow Skink				•				•					•	•
Scincidae	*Cryptoblepharus buchananii* (8)					•						•			•	•
Scincidae	*Cryptoblepharus ustulatus* (8)		•			•						•				•
Scincidae	*Ctenotus atlas*											•				
Scincidae	*Ctenotus duricola*					•				•		•	•	•	•	•
Scincidae	*Ctenotus grandis*					•				•		•	•	•		•
Scincidae	*Ctenotus hanloni*					•				•			•		•	
Scincidae	*Ctenotus helenae*					•			•	•		•	•	•		•
Scincidae	*Ctenotus leonhardii*					•										•
Scincidae	*Ctenotus pantherinus*	Leopard Ctenotus	•			•			•	•		•	•	•	•	•
Scincidae	*Ctenotus robustus*					•			•			•		•	•	•
Scincidae	*Ctenotus rubicundus*					•				•		•	•			•
Scincidae	*Ctenotus rutilans*					•			•		•	•	•		•	•
Scincidae	*Ctenotus saxatilis*	Rock Ctenotus				•			•	•	•	•	•	•		•
Scincidae	*Ctenotus schomburgkii*					•			•			•	•	•		•
Scincidae	*Ctenotus serventyi*					•										•
Scincidae	*Ctenotus severus*					•										
Scincidae	*Ctenotus uber*							•		•					•	
Scincidae	*Cyclodomorphus melanops*	Slender Blue-tongue	•			•			•	•		•	•	•	•	•
Scincidae	*Egernia cygnitos* (9)	Western Pilbara Spiny-tailed Skink				•								•	•	
Scincidae	*Egernia formosa*					•				•	•	•				•
Scincidae	*Eremiascincus richardsonii*	Broad-banded Sand Swimmer				•				•		•				•
Scincidae	*Lerista flammicauda*								•			•			•	

				Conservation Status		Database Searches			Previous Surveys							
Family	Species	Common Name	Current survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Scincidae	*Lerista jacksoni*					•							•			•
Scincidae	*Lerista muelleri*					•				•		•				•
Scincidae	*Lerista timida*					•									•	
Scincidae	*Lerista zietzi*					•										•
Scincidae	*Menetia greyii*					•			•	•		•	•	•	•	•
Scincidae	*Menetia surda*					•			•	•		•				•
Scincidae	*Morethia ruficauda*		•			•			•	•		•		•	•	•
Scincidae	*Notoscincus butleri*					•		•								•
Scincidae	*Notoscincus ornatus*					•				•		•			•	
Scincidae	*Proablepharus reginae*					•				•		•	•		•	
Scincidae	*Tiliqua multifasciata*	Central Blue-tongue				•			•	•		•		•	•	•
Scincidae	*Tiliqua occipitalis*	Western Bluetongue				•										
Varanidae	*Varanus acanthurus*	Spiny-tailed Monitor				•			•	•	•	•	•	•	•	•
Varanidae	*Varanus brevicauda*	Short-tailed Pygmy Monitor				•			•	•		•			•	•
Varanidae	*Varanus bushi*	Pilbara Mulga Monitor				•			•	•			•		•	•
Varanidae	*Varanus caudolineatus*					•				•		•			•	
Varanidae	*Varanus eremius*	Pygmy Desert Monitor				•			•	•		•			•	•
Varanidae	*Varanus giganteus*	Perentie				•										
Varanidae	*Varanus gilleni*	Pygmy Mulga Monitor				•				•			•			
Varanidae	*Varanus gouldii*	Bungarra or Sand Monitor				•				•	•		•			
Varanidae	*Varanus hamersleyensis* (10)	Pilbara Rock Monitor, Northern Pilbara Rock Goanna				•										•
Varanidae	*Varanus panoptes*	Yellow-spotted Monitor				•				•			•		•	•
Varanidae	*Varanus tristis*	Racehorse Monitor				•				•	•	•	•		•	•
Typhlopidae	*Anilios ammodytes*								•	•		•				•
Typhlopidae	*Anilios ganei*			P1				•							•	•
Typhlopidae	*Anilios grypus*								•	•		•	•		•	•
Typhlopidae	*Anilios hamatus*								•	•		•				
Typhlopidae	*Anilios pilbarensis*									•						•
Typhlopidae	*Anilios waitii*											•				
Boidae	*Antaresia perthensis*	Pygmy Python				•						•				•
Boidae	*Antaresia stimsoni*	Stimson's Python	•			•						•			•	•
Boidae	*Aspidites melanocephalus*	Black-headed Python				•						•				•
Boidae	*Liasis olivaceus barroni*	Pilbara Olive Python		VU	VU	•	•	•				•				•
Elapidae	*Acanthophis pyrrhus*	Desert Death Adder				•										
Elapidae	*Acanthophis wellsi*	Pilbara Death Adder				•				•		•			•	•
Elapidae	*Brachyurophis approximans*	North-western Shovel-nosed Snake				•				•		•			•	•
Elapidae	*Demansia psammophis*	Yellow-faced Whipsnake				•				•		•	•	•	•	•
Elapidae	*Demansia rufescens*	Rufous Whipsnake				•				•		•			•	•
Elapidae	*Furina ornata*	Moon Snake				•						•	•		•	•
Elapidae	*Parasuta monachus*					•				•		•	•	•	•	•
Elapidae	*Pseudechis australis*	Mulga Snake				•				•		•		•	•	•
Elapidae	*Pseudonaja mengdeni* (11)	Western Brown Snake				•								•	•	•

				Conservation Status		Database Searches			Previous Surveys							
Family	Species	Common Name	Current survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Elapidae	*Pseudonaja modesta*	Ringed Brown Snake				•				•		•			•	•
Elapidae	*Suta fasciata*	Rosen's Snake				•						•		•	•	•
Elapidae	*Suta punctata*	Spotted Snake				•				•			•	•	•	
Elapidae	*Vermicella snelli*					•						•				•

(1) - previously included within *U. milii*, some previous records listed as such
(2) - previously included within *C. ocellatus*, previous records listed as such
(3) - previously included within *D. conspicillatus*, previous records listed as such
(4) - previously included within *O. marmorata*, some previous records listed as such
(5) - previously included within *G. variegata*, many previous records of G. variegata likely attributable to this taxon
(6) - previously included within *G. punctata*, many previous records of G. punctata likely attributable to these taxa
(7) - previously included within *T. cephalus*, previous records of T. cephalus attributable to one or both of these taxa
(8) - previously included within *C. plagiocephalus*, previous records of C. plagiocephalus attributable to one or both of these taxa
(9) - previously included within *E. depressa*, some previous records listed as such
(10) - previously included within *V. pilbarensis*, previous records listed as such
(11) - previously included within *P. nuchalis*, some previous records listed as such
Removed *Cyclodomorphus maximus* (Kimberley plateau endemic) and *Parasuta nigriceps* (south-west species)

Ground-dwelling Mammals

				Conservation Status		Database Searches			Previous Surveys							
Family	Species	Common Name	Current Survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Tachyglossidae	*Tachyglossus aculeatus*	Short-beaked Echidna				•				•						
Dasyuridae	*Dasykaluta rosamondae*	Little Red Kaluta				•			•	•		•	•	•	•	•
Dasyuridae	*Dasyurus hallucatus*	Northern Quoll		EN	EN	•	•	•		•						
Dasyuridae	*Ningaui timealeyi*	Pilbara Ningaui				•				•		•	•	•	•	•
Dasyuridae	*Planigale ingrami*	Long-tailed Planigale				•				•			•			
Dasyuridae	*Planigale maculata*	Common Planigale				•									•	
Dasyuridae	*Planigale spp. (1)*	undescribed planigale spp.				•			•	•			•			
Dasyuridae	*Pseudantechinus woolleyae*	Woolley's Pseudantechinus				•			•							•
Dasyuridae	*Sminthopsis longicaudata*	Long-tailed Dunnart		P4		•		•	•							
Dasyuridae	*Sminthopsis macroura*	Stripe-faced Dunnart				•			•	•		•	•	•	•	•
Dasyuridae	*Sminthopsis youngsoni*									•						
Thylacomyidae	*Macrotis lagotis*	Bilby		VU	VU	•	•	•								
Phalangeridae	*Trichosurus vulpecula*	Brushtail Possum				•										
Macropodidae	*Lagorchestes conspicillatus leichardti*	Spectacled Hare-wallaby		P4		•		•								
Macropodidae	*Osphranter robustus*	Euro, Biggada				•					•	•		•		•
Macropodidae	*Osphranter rufus*	Red Kangaroo, Marlu				•				•		•	•	•	•	•
Macropodidae	*Petrogale rothschildi*	Rothschild's Rock-wallaby	•			•										
Muridae	*Leggadina lakedownensis*	Northern Short-tailed Mouse		P4		•		•	•						•	
Muridae	*Mus musculus**	House Mouse				•	•			•			•	•	•	•

Muridae	*Pseudomys chapmani*	Western Pebble-mound Mouse	• M	P4		•		•		•	• Mound	•	•	•		•
Muridae	*Pseudomys delicatulus*	Delicate Mouse				•									•	
Muridae	*Pseudomys desertor*	Desert Mouse				•			•	•			•	•	•	•
Muridae	*Pseudomys hermannsburgensis*	Sandy Inland Mouse				•			•	•		•	•	•	•	•
Muridae	*Rattus rattus**	Black Rat					•									
Muridae	*Zyzomys argurus*	Common Rock-rat				•				•	•	•			•	•
Leporidae	*Oryctolagus cuniculus**	Rabbit					•									
Pteropodidae	*Pteropus alecto*	Black Flying-fox				•									•	
Canidae	*Canis familiaris dingo*	Dingo	•							•			•	•	•	
Canidae	*Vulpes Vulpes**	Red Fox					•									
Felidae	*Felis catus**	Cat	•			•	•							•	•	•
Equidae	*Equus asinus**	Donkey					•						•			
Equidae	*Equus caballus**	Horse					•									•
Camelidae	*Camelus dromedaries**	Camel					•									
Bovidae	*Bos taurus**	European Cattle	•			•								•	•	•

(1) - Planigales in Pilbara currently considered to comprise two undescribed species, previously listed as *P. ingrami* and *P. maculata*.
* - denotes introduced species.

Bats

				Conservation Status		Database Searches			Previous Surveys							
Family	Species	Common Name	Current Survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Hipposideridae	*Rhinonicteris aurantia*	Pilbara Leaf-nosed Bat	•	VU	VU	•	•	•			•E					•
Megadermatidae	*Macroderma gigas*	Ghost Bat	•	VU	VU	•	•	•	•							•
Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheath-tailed Bat				•			•					•	•	•
Emballonuridae	*Taphozous georgianus*	Common Sheath-tailed Bat	•			•			•				•	•	•	•
Emballonuridae	*Taphozous hilli*	Hill's Sheathtail-bat				•										•
Molossinae	*Austronomus australis*	White-striped Free-tailed Bat	•						•				•			
Molossidae	*Chaerephon jobensis*	Greater Northern Freetail-bat	•			•			•				•		•	•
Molossidae	*Ozimops lumsdenae*	Northern Free-tailed Bat	•						•							
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat	•			•			•			•	•	•	•	•
Vespertilionidae	*Nyctophilus daedalus*	Pallid Long-eared Bat	•													
Vespertilionidae	*Nyctophilus geoffroyi*	Lesser Long-eared Bat	•			•							•			•
Vespertilionidae	*Scotorepens greyii*	Little Broad-nosed Bat	•			•			•				•	•	•	•
Vespertilionidae	*Vespadelus finlaysoni*	Finlayson's Cave Bat	•			•			•			•	•	•	•	•

Birds

				Conservation Status		Database Searches			Previous Surveys							
Family	Species name	Common name	Current Survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Casuariidae	*Dromaius novaehollandiae*	Emu				•							•	•	•	•
Phasianidae	*Coturnix pectoralis*	Stubble Quail			M	•										•
Phasianidae	*Coturnix ypsilophora*	Brown Quail				•				•						•
Anatidae	*Dendrocygna eytoni*	Plumed Whistling Duck	•			•										•
Anatidae	*Chenonetta jubata*	Maned Duck	•			•										•
Anatidae	*Anas superciliosa*	Pacific Black Duck	•			•										•
Anatidae	*Anas gracilis*	Grey Teal	•			•										•
Podargidae	*Podargus strigoides*	Tawny Frogmouth				•										•
Caprimulgidae	*Eurostopodus argus*	Spotted Nightjar			M	•									•	•
Aegothelidae	*Aegotheles cristatus*	Australian Owlet-nightjar				•				•					•	•
Apodidae	*Apus pacificus*	Pacific Swift		MI	M/MI	•	•	•								•
Otididae	*Ardeotis australis*	Australian Bustard				•				•				•	•	•
Centropodidae	*Centropus phasianinus*	Pheasant Coucal				•										•
Cuculidae	*Chrysococcyx basalis*	Horsfield's Bronze Cuckoo				•				•		•	•	•		•
Cuculidae	*Chrysococcyx osculans*	Black-eared Cuckoo			M	•			•							
Cuculidae	*Cacomantis pallidus*	Pallid Cuckoo	•		M	•			•	•		•	•	•		•
Columbidae	*Columba livia*	Rock Dove					•									
Columbidae	*Phaps chalcoptera*	Common Bronzewing	•			•			•			•	•	•	•	•
Columbidae	*Ocyphaps lophotes*	Crested Pigeon	•			•				•		•	•	•	•	•
Columbidae	*Geophaps plumifera*	Spinifex Pigeon	•			•				•		•	•	•	•	•
Columbidae	*Geopelia cuneata*	Diamond Dove	•			•			•	•		•	•	•	•	•
Columbidae	*Geopelia placida*	Peaceful Dove	•			•						•	•	•	•	•
Rallidae	*Gallirallus philippensis*	Buff-banded Rail				•										
Rallidae	*Porzana fluminea*	Australian Crake				•										•
Rallidae	*Porzana tabuensis*	Spotless Crake			M	•										
Turnicidae	*Turnix velox*	Little Buttonquail	•			•			•	•			•		•	•
Burhinidae	*Burhinus grallarius*	Bush Stone-curlew				•									•	•
Recurvirostridae	*Himantopus leucocephalus*	Pied Stilt			M	•										
Charadriidae	*Vanellus tricolor*	Banded Lapwing				•									•	•
Charadriidae	*Elseyornis melanops*	Black-fronted Dotterel	•													•
Phalacrocoracidae	*Microcarbo melanoleucos*	Little Pied Cormorant				•										
Phalacrocoracidae	*Phalacrocorax varius*	Australian Pied Cormorant				•										
Threskiornithidae	*Threskiornis spinicollis*	Straw-necked Ibis	•		M	•						•				
Ardeidae	*Nycticorax caledonicus*	Nankeen Night Heron			M	•										
Ardeidae	*Bubulcus coromandus*	Eastern Cattle Egret			M		•									
Ardeidae	*Ardea pacifica*	White-necked Heron	•			•									•	•
Ardeidae	*Ardea alba*	Great Egret			M	•	•									
Ardeidae	*Egretta novaehollandiae*	White-faced Heron	•			•										•
Pelecanidae	*Pelecanus conspicillatus*	Australian Pelican			M	•										
Accipitridae	*Elanus axillaris*	Black-shouldered Kite				•				•		•		•	•	•

				Conservation Status		Database Searches			Previous Surveys							
Family	Species name	Common name	Current Survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Accipitridae	*Lophoictinia isura*	Square-tailed Kite				•										
Accipitridae	*Hamirostra melanosternon*	Black-breasted Buzzard	•			•				•						
Accipitridae	*Hieraaetus morphnoides*	Little Eagle	•										•		•	
Accipitridae	*Aquila audax*	Wedge-tailed Eagle	•			•				•		•	•	•	•	•
Accipitridae	*Accipiter fasciatus*	Brown Goshawk	•		M	•									•	•
Accipitridae	*Accipiter cirrocephalus*	Collared Sparrowhawk				•						•			•	•
Accipitridae	*Circus assimilis*	Spotted Harrier	•			•				•			•			•
Accipitridae	*Milvus migrans*	Black Kite	•									•			•	
Accipitridae	*Haliastur sphenurus*	Whistling Kite	•		M	•				•			•	•	•	•
Accipitridae	*Haliaeetus leucogaster*	White-bellied Sea Eagle			M		•									
Strigidae	*Ninox connivens*	Barking Owl	•										•			•
Strigidae	*Ninox boobook*	Australian Boobook			M								•			
Halcyonidae	*Dacelo leachii*	Blue-winged Kookaburra	•			•				•		•	•	•	•	•
Halcyonidae	*Todiramphus sanctus*	Sacred Kingfisher	•		M	•				•						•
Halcyonidae	*Todiramphus pyrrhopygius*	Red-backed Kingfisher	•			•				•			•	•	•	•
Meropidae	*Merops ornatus*	Rainbow Bee-eater	•		M	•	•			•	•		•	•	•	•
Falconidae	*Falco cenchroides*	Nankeen Kestrel	•		M	•				•			•	•	•	•
Falconidae	*Falco longipennis*	Australian Hobby	•			•			•	•					•	
Falconidae	*Falco berigora*	Brown Falcon	•			•			•	•		•		•	•	•
Falconidae	*Falco hypoleucos*	Grey Falcon	•	VU		•										
Falconidae	*Falco peregrinus*	Peregrine Falcon		OS		•		•		•				•		•
Psittacidae	*Nymphicus hollandicus*	Cockatiel	•			•			•	•			•	•	•	•
Psittacidae	*Eolophus roseicapilla*	Galah	•			•				•		•	•	•	•	•
Psittacidae	*Cacatua sanguinea*	Little Corella	•			•				•		•	•	•	•	•
Psittacidae	*Psephotellus varius*	Mulga Parrot								•		•				
Psittacidae	*Barnardius zonarius*	Australian Ringneck	•			•				•		•	•	•	•	•
Psittacidae	*Pezoporus occidentalis*	Night Parrot		CR	EN		•									
Psittacidae	*Neopsephotus bourkii*	Bourke's Parrot				•										•
Psittacidae	*Melopsittacus undulatus*	Budgerigar	•			•			•	•			•	•	•	•
Ptilonorhynchidae	*Chlamydera guttata*	Western Bowerbird				•						•		•	•	•
Climacteridae	*Climacteris melanurus*	Black-tailed Treecreeper														•
Maluridae	*Malurus assimilis*	Purple-backed Fairywren	•			•				•		•	•	•	•	•
Maluridae	*Malurus leucopterus*	White-winged Fairywren	•			•				•		•	•	•	•	•
Maluridae	*Stipiturus ruficeps*	Rufous-crowned Emu-wren				•				•				•		•
Maluridae	*Amytornis striatus*	Striated Grasswren				•		•		•		•			•	•
Meliphagidae	*Epthianura tricolor*	Crimson Chat	•			•				•			•		•	•
Meliphagidae	*Conopophila whitei*	Grey Honeyeater				•							•	•	•	
Meliphagidae	*Certhionyx variegatus*	Pied Honeyeater				•				•					•	•
Meliphagidae	*Sugomel niger*	Black Honeyeater	•							•			•		•	•
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater	•			•				•		•	•	•	•	•
Meliphagidae	*Melithreptus gularis*	Black-chinned Honeyeater				•				•		•		•	•	•
Meliphagidae	*Purnella albifrons*	White-fronted Honeyeater	•							•						

				Conservation Status		Database Searches			Previous Surveys							
Family	Species name	Common name	Current Survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Meliphagidae	*Gavicalis virescens*	Singing Honeyeater	•			•			•	•		•	•	•	•	•
Meliphagidae	*Ptilotula keartlandi*	Grey-headed Honeyeater	•			•				•		•	•	•	•	•
Meliphagidae	*Ptilotula penicillata*	White-plumed Honeyeater	•							•			•	•	•	•
Meliphagidae	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater	•			•			•	•		•	•	•	•	•
Meliphagidae	*Manorina flavigula*	Yellow-throated Miner	•			•				•		•	•	•	•	•
Pardalotidae	*Pardalotus rubricatus*	Red-browed Pardalote	•			•				•		•	•	•	•	•
Pardalotidae	*Pardalotus striatus*	Striated Pardalote	•			•				•				•	•	•
Acanthizidae	*Smicrornis brevirostris*	Weebill	•			•			•	•		•	•	•	•	•
Acanthizidae	*Gerygone fusca*	Western Gerygone	•			•			•			•	•	•	•	•
Acanthizidae	*Acanthiza apicalis*	Inland Thornbill	•			•						•	•	•	•	•
Acanthizidae	*Acanthiza uropygialis*	Chestnut-rumped Thornbill	•			•				•		•	•	•	•	•
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill				•										
Acanthizidae	*Acanthiza robustirostris*	Slaty-backed Thornbill				•							•			•
Pomatostomidae	*Pomatostomus temporalis*	Grey-crowned Babbler	•			•			•	•		•	•	•	•	•
Pomatostomidae	*Pomatostomus superciliosus*	White-browed Babbler								•						
Artamidae	*Artamus leucorynchus*	White-breasted Woodswallow								•						
Artamidae	*Artamus personatus*	Masked Woodswallow	•			•			•	•			•		•	•
Artamidae	*Artamus superciliosus*	White-browed Woodswallow				•										
Artamidae	*Artamus cinereus*	Black-faced Woodswallow	•			•			•	•		•	•	•	•	•
Artamidae	*Artamus minor*	Little Woodswallow				•				•		•		•	•	•
Cracticidae	*Gymnorhina tibicen*	Australian Magpie				•			•			•	•	•	•	•
Cracticidae	*Cracticus torquatus*	Grey Butcherbird	•			•			•	•		•	•	•	•	•
Cracticidae	*Cracticus nigrogularis*	Pied Butcherbird	•			•				•		•	•	•	•	•
Campephagidae	*Coracina maxima*	Ground Cuckooshrike				•								•	•	•
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckooshrike	•		M	•				•		•	•	•	•	•
Campephagidae	*Lalage tricolor*	White-winged Triller	•			•				•			•	•	•	•
Neosittidae	*Daphoenositta chrysoptera*	Varied Sittella				•								•		•
Pachycephalidae	*Oreoica gutturalis*	Crested Bellbird	•			•			•	•		•	•	•	•	•
Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler	•			•			•	•		•	•	•	•	•
Pachycephalidae	*Colluricincla harmonica*	Grey Shrikethrush	•			•			•	•		•	•	•	•	•
Dicruridae	*Rhipidura leucophrys*	Willie Wagtail	•			•			•	•		•	•	•	•	•
Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail											•	•		
Dicruridae	*Grallina cyanoleuca*	Magpie-lark	•		M	•			•	•		•	•	•	•	•
Corvidae	*Corvus orru*	Torresian Crow	•			•				•		•	•	•	•	•
Corvidae	*Corvus bennetti*	Little Crow				•				•			•		•	•
Petroicidae	*Melanodryas cucullata*	Hooded Robin				•			•			•	•	•	•	•
Petroicidae	*Microeca fascinans*	Jacky Winter											•			
Petroicidae	*Petroica goodenovii*	Red-capped Robin				•						•	•	•		•
Alaudidae	*Mirafra javanica*	Horsfield's Bush Lark	•			•								•	•	•
Hirundinidae	*Hirundo neoxena*	Welcome Swallow			M	•										•
Hirundinidae	*Petrochelidon ariel*	Fairy Martin	•			•							•	•		•
Hirundinidae	*Petrochelidon nigricans*	Tree Martin	•		M	•									•	•

				Conservation Status		Database Searches			Previous Surveys							
Family	Species name	Common name	Current Survey	State	Federal	NatureMap	EPBC PMST	DBCA	PBS	(Biota 2012)	(Biota 2015)	(Biota 2009)	(Biota 2011)	(Biota 2008)	(Ecologia 2014b)	(Ecologia 2012)
Sylviidae	*Acrocephalus australis*	Australian Reed Warbler				•										
Sylviidae	*Poodytes carteri*	Spinifexbird	•			•				•					•	•
Megaluridae	*Cincloramphus cruralis*	Brown Songlark	•							•			•	•		•
Megaluridae	*Cincloramphus mathewsi*	Rufous Songlark	•							•					•	•
Dicaeidae	*Dicaeum hirundinaceum*	Mistletoebird				•						•	•		•	•
Estrildidae	*Emblema pictum*	Painted Finch	•			•				•		•	•	•	•	•
Estrildidae	*Neochmia ruficauda*	Star Finch	•			•			•					•		
Estrildidae	*Taeniopygia guttata*	Zebra Finch	•			•			•	•		•	•	•	•	•
Motacillidae	*Anthus australis*	Australian Pipit			M	•							•	•	•	

Appendix 14

Likelihood of Occurrence of Fauna of Conservation Significance

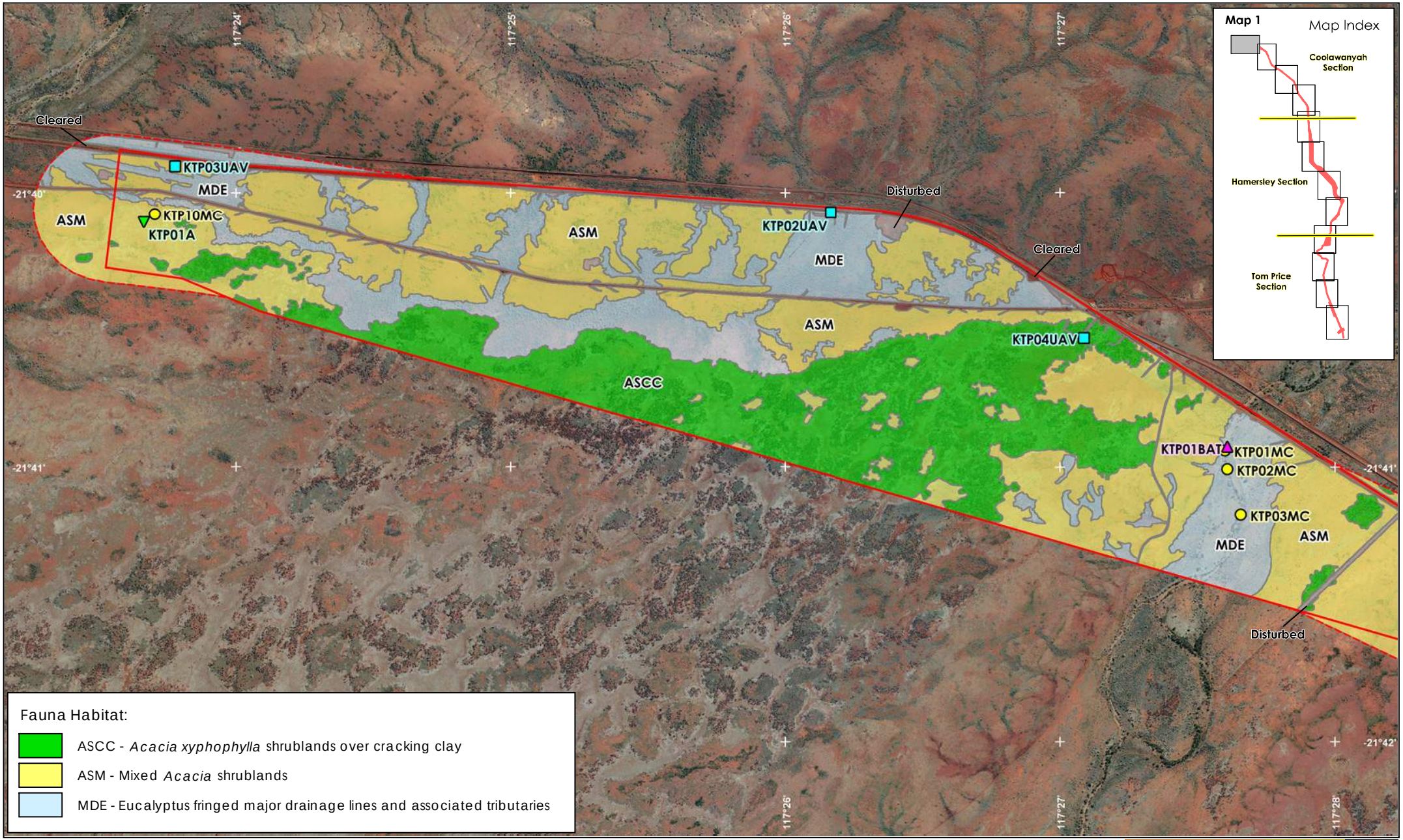
Species Name	Common Name	Consevation Status		Database searches		Previous surveys								Records within 18 km of survey area	Preferred Habitat	Habitat Available in survey area	Likelihood of Occurrence
		BC Act	EPBC Act	Naturemap	EPBC PMST	PBS	(Biota 2012b)	(Biota 2015)	(Biota 2009a)	(Biota 2011)	(Biota 2008c)	(Ecologia 2014b)	(Ecologia 2012)				
Dasyurus hallucatus	Northern Quoll	EN	EN	•	•		•							152 Naturemap records, the nearest being 4.8 km from the study area and the most recent record from 2018.	In the Pilbara region, primarily rocky areas and major drainage lines	Yes, habitat present in the Hamersley section of the study area in the form of rocky areas used for denning (habitat type HS) and foraging/dispersal habitat characterised by creek lines used for foraging transitioning through the landscape.	Likely to occur, suitable habitat present and reocrds of the species in close proximity to the survey area (within 10 km)
Sminthopsis longicaudata	Long-tailed Dunnart	P4		•		•								Two Naturemap records from 2011 that are 0.1 km from the survey area centre.	Arid and rugged, rocky scree areas, including scree slopes, boulder and stony plateaus and adjacent stony plains with shrubs over spinifex hummock grassland	Yes	May occur - suitable habitat present, infrequently recorded
Macrotis lagotis	Bilby	VU	VU	•	•									Two records from 1984 and 1970 respectively, both 13 km from the centre of the survey area. GPS locations from older records often inaccurate as they have been positioned generally in the inland Pilbara area. These GPS records only to 1 decimal place and therefore unreliable	Acacia shrubland, open tussock grassland on uplands and hills, mulga woodland/shrubland growing on ridges and rises, and hummock grassland in plains and alluvial areas	Yes, open patches ofAcacia shrubland, including A. trachycarpa known to have root dwelling larvae similar to A. monticola.	Unlikely to occur - some suitable habitat present but recorded in frequently and over 40 years ago
Lagorchestes conspicillatus leichardti	Spectacled Hare-wallaby	P4		•										One record from 1966, near to Mt Sheila, 2 km from the survey area centre.	Sandy habitats with spinifex or low shrubbery	Marginal - some areas of low spinifex but usually rocky rather than sandy.	Unlikely to occur - some suitable habitat present but recorded in frequently and over 40 years ago

Species Name	Common Name	Consevation Status		Database searches		Previous surveys								Records within 18 km of survey area	Preferred Habitat	Habitat Available in survey area	Likelihood of Occurrence
		BC Act	EPBC Act	Naturemap	EPBC PMST	PBS	(Biota 2012b)	(Biota 2015)	(Biota 2009a)	(Biota 2011)	(Biota 2008c)	(Ecologia 2014b)	(Ecologia 2012)				
Leggadina lakedownensis	Northern Short-tailed Mouse	P4		•		•						•		Nine records from 2005, 2006 and 2014. 7 of the records were within 2.1 km from the centre of the survey area.	Spinifex and tussock grasslands, primarily on cracking clays or sandy soils	Yes, Themeda grassland with cracking clay.	Likely to occur, suitable habitat present and records of the species in close proximity to the survey area (within 10 km)
Pseudomys chapmani	Western Pebble-mound Mouse	P4		•			•	•Mound	•	•	•		•	Four records from 1992, one from 1995 and one from 2014. records from 9 - 15 km from the survey area centre.	Stony hillsides with hummock grasslands.	Yes	May occur - suitable habitat present including the presence of older mounds. Infrequent records but within 20 km of the survey area.
Rhinonicteris aurantia	Pilbara Leaf-nosed Bat	P4		•	•			•E					•	Nineteen records with the most recent from 2019 and the nearest 0.27 km away.	Reliant on roost sites in caves or mine adits with stable, very hot (28-32ºC) and very humid (96-100%) microclimates. Forages over broad range of habitats.	Secondary - foraging	Likely to occur, suitable habitat present and records of the species in close proximity to the survey area (within 10 km)

Species Name	Common Name	Consevation Status		Database searches		Previous surveys								Records within 18 km of survey area	Preferred Habitat	Habitat Available in survey area	Likelihood of Occurrence
		BC Act	EPBC Act	Naturemap	EPBC PMST	PBS	(Biota 2012b)	(Biota 2015)	(Biota 2009a)	(Biota 2011)	(Biota 2008c)	(Ecologia 2014b)	(Ecologia 2012)				
Macroderma gigas	Ghost Bat	VU	VU	•	•	•							•	Thirteen records in Naturemap mostly recorded in the last 10 years with the most recent record from 2019. The nearest record was recorded 0.5 km from the centre of the survey area boundary.	Occurs in a broad range of habitats, with their distribution being influenced by the availability of suitable caves and mines for roost sites	Roost caves present and secondary foraging habitat	Likely to occur, suitable habitat present and records of the species in close proximity to the survey area (within 10 km)
Underwoodisaurus seorsus	Pilbara Barking Gecko	P2		•								•	•	One record from 2014	Occurs in rocky areas with spinifex and scattered trees.	Yes	May occur
Notoscincus butleri	Western Striped Snake-eyed Skink			•									•	One record from 2002 and five from 2011	Found in rocky areas near creek and river margins dominated by spinifex.	Yes	May occur
Apus pacificus	Pacific Swift	MI	M/ MI	•	•								•	Two records from 2011 and one from 2010, the nearest being 4 km away.	Thought to be exclusively aerial	Yes	May occur
Falco hypoleucos	Grey Falcon	VU		•										Two records from 2012.	Lightly treed inland areas, sandridges, gibber deserts, pastoral land, timbered watercourses	Yes	May occur
Falco peregrinus	Peregrine Falcon	OS		•			•				•		•	Seven naturemap records, the most recent from 2017 and the nearest 0.15 km away.	Cliffs, gorges, timbered watercourses, plains, wetlands, open woodlands, buildings	Yes	May occur
Pezoporus occidentalis	Night Parrot	CR	EN		•									No known records within 18 km of the survey area.	Old growth spinifex, often in association with samphire	Themeda grassland areas potentially suitable but the survey area was absent of old growth spinifex and samphire.	Unlikely to occur - habitat only marginal and no previous records.

Appendix 15

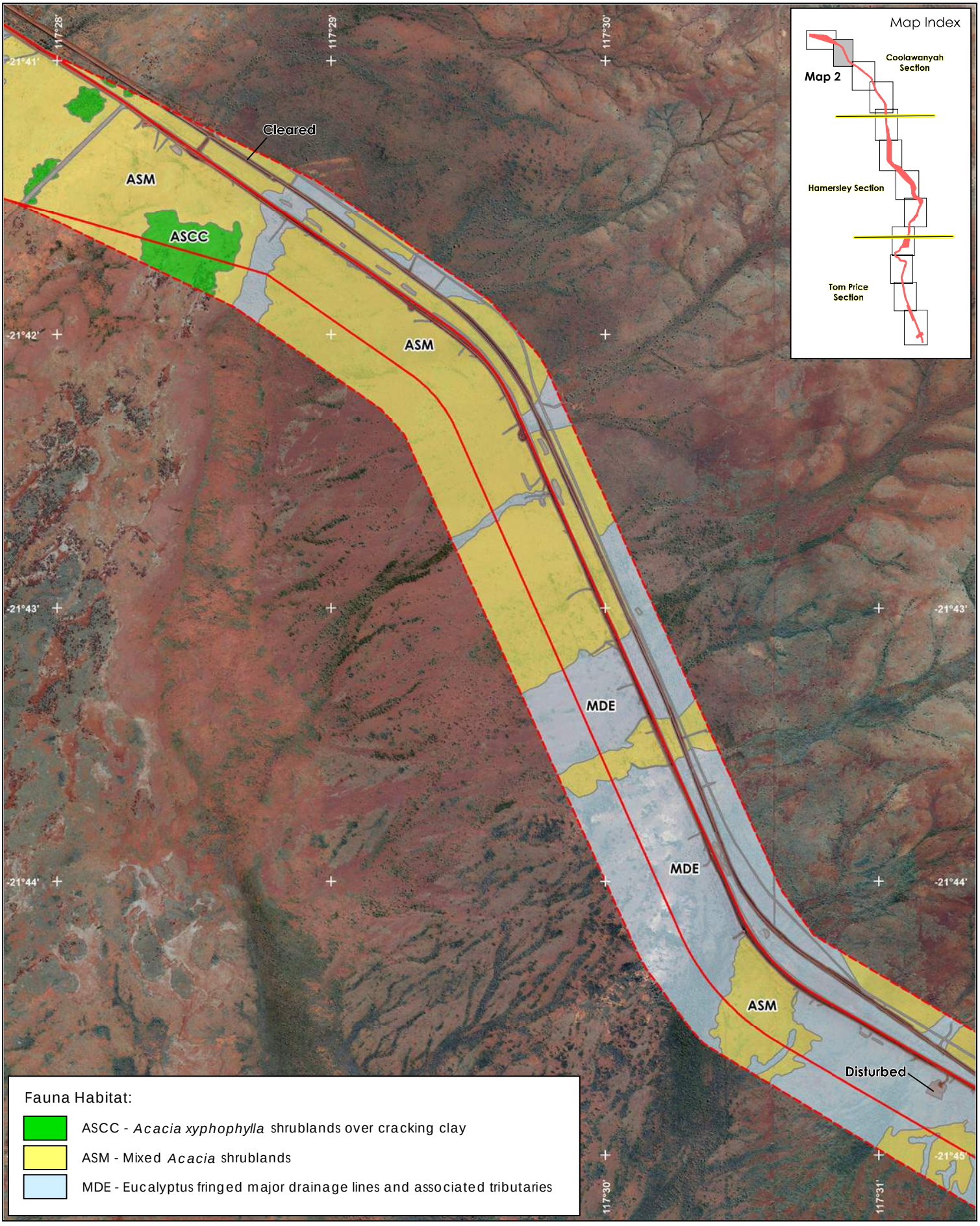
Mapping of Fauna Habitats and Conservation Significant Fauna Records



Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 1

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 07 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:30,000 @ A4



Location Map

Survey area

Contextual area

N

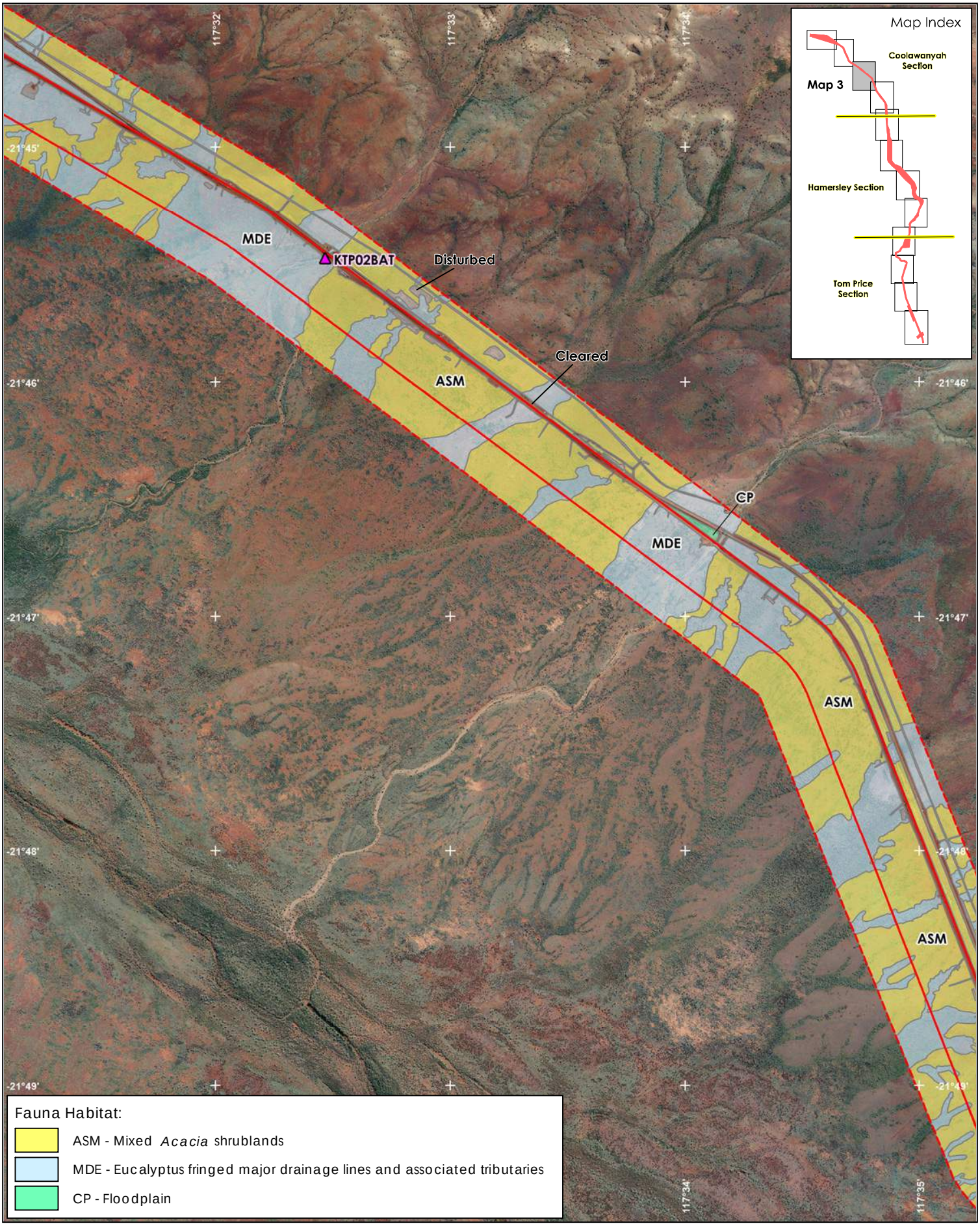
0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 2

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:30,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

Ultrasonic sound recorder

N

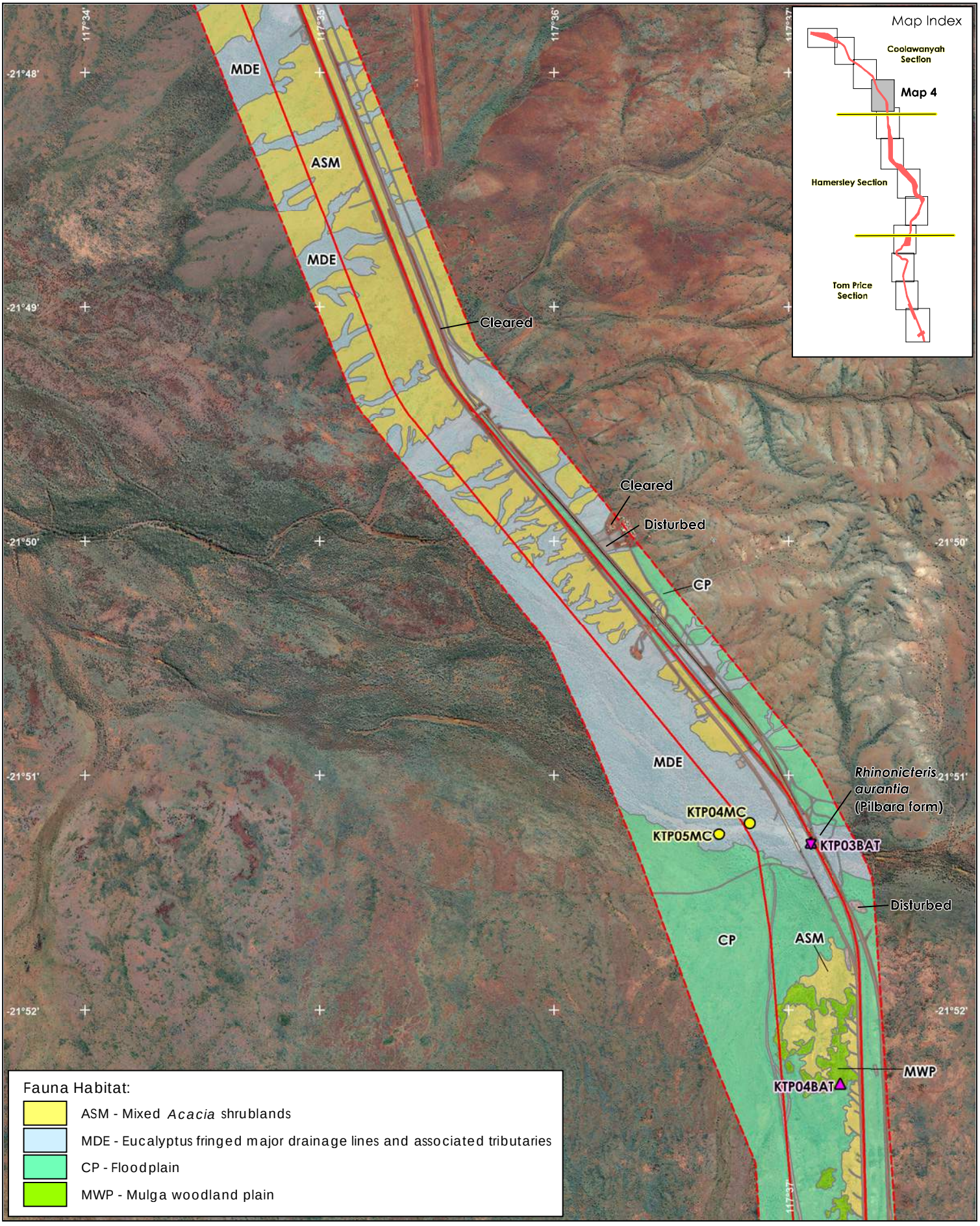
0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 3

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

Survey area

Contextual area

Ultrasonic sound recorder

Motion camera

Fauna Species of Conservation Significance

Rhinonicteris aurantia (Pilbara form)

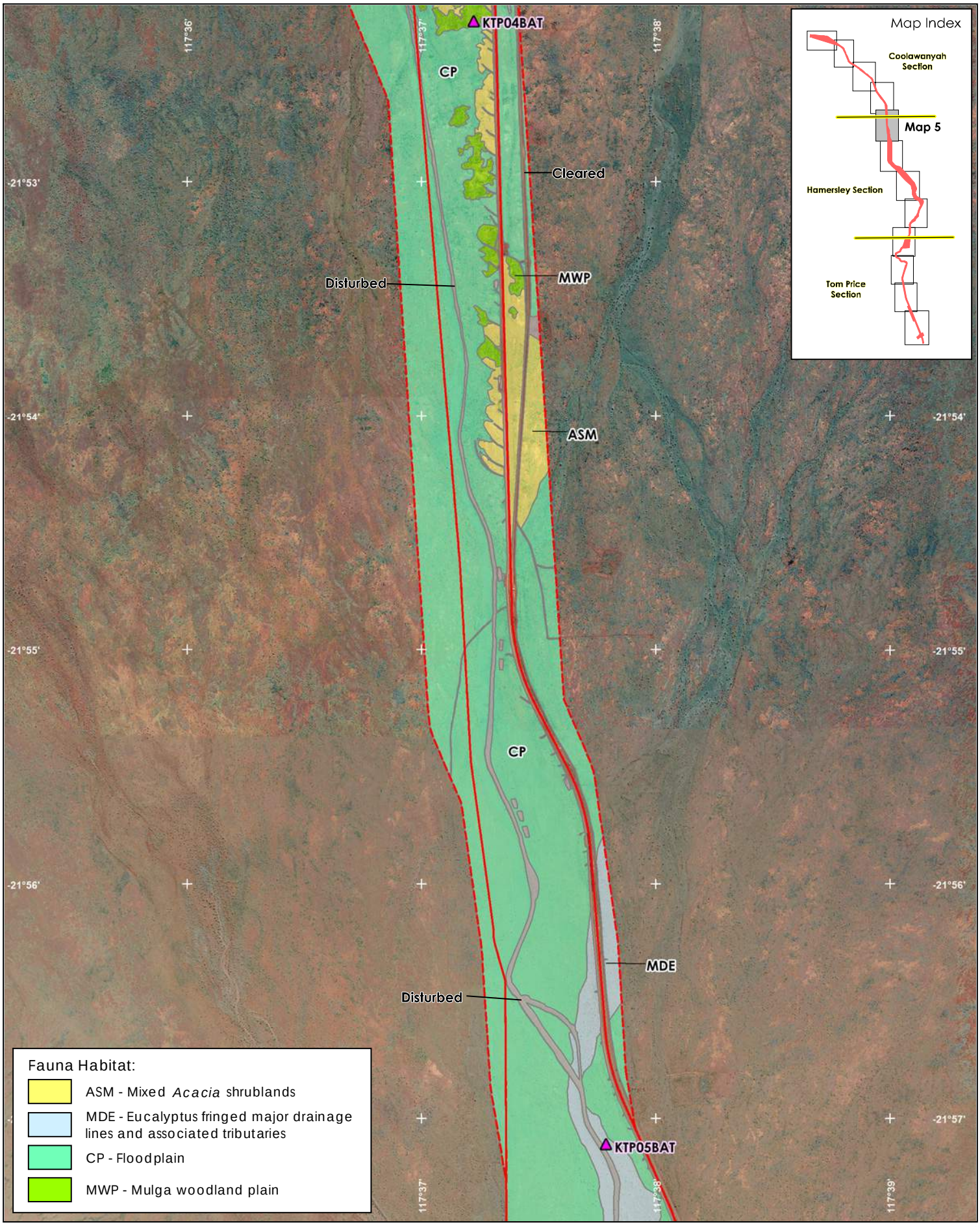
0 0.5 1
kilometres

N

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 4

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

KARRATHA

Map Area

KALGOORLIE

PERTH

Survey area

Contextual area

Ultrasonic sound recorder

N

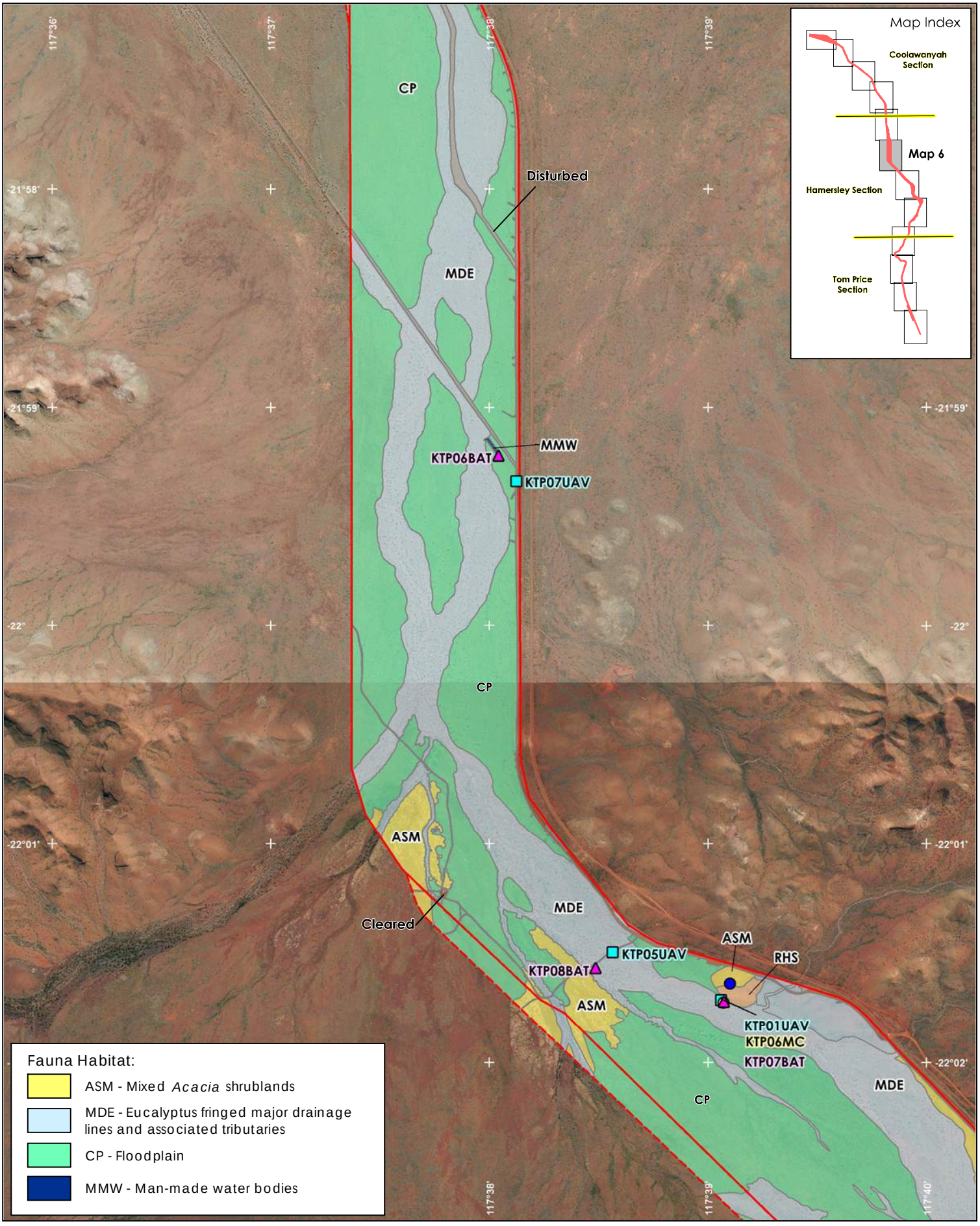
0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 5

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

Survey area

Contextual area

Ultrasonic sound recorder

Motion camera

UAV site

Fauna Species of Conservation Significance

● *Pseudomys chapmani*

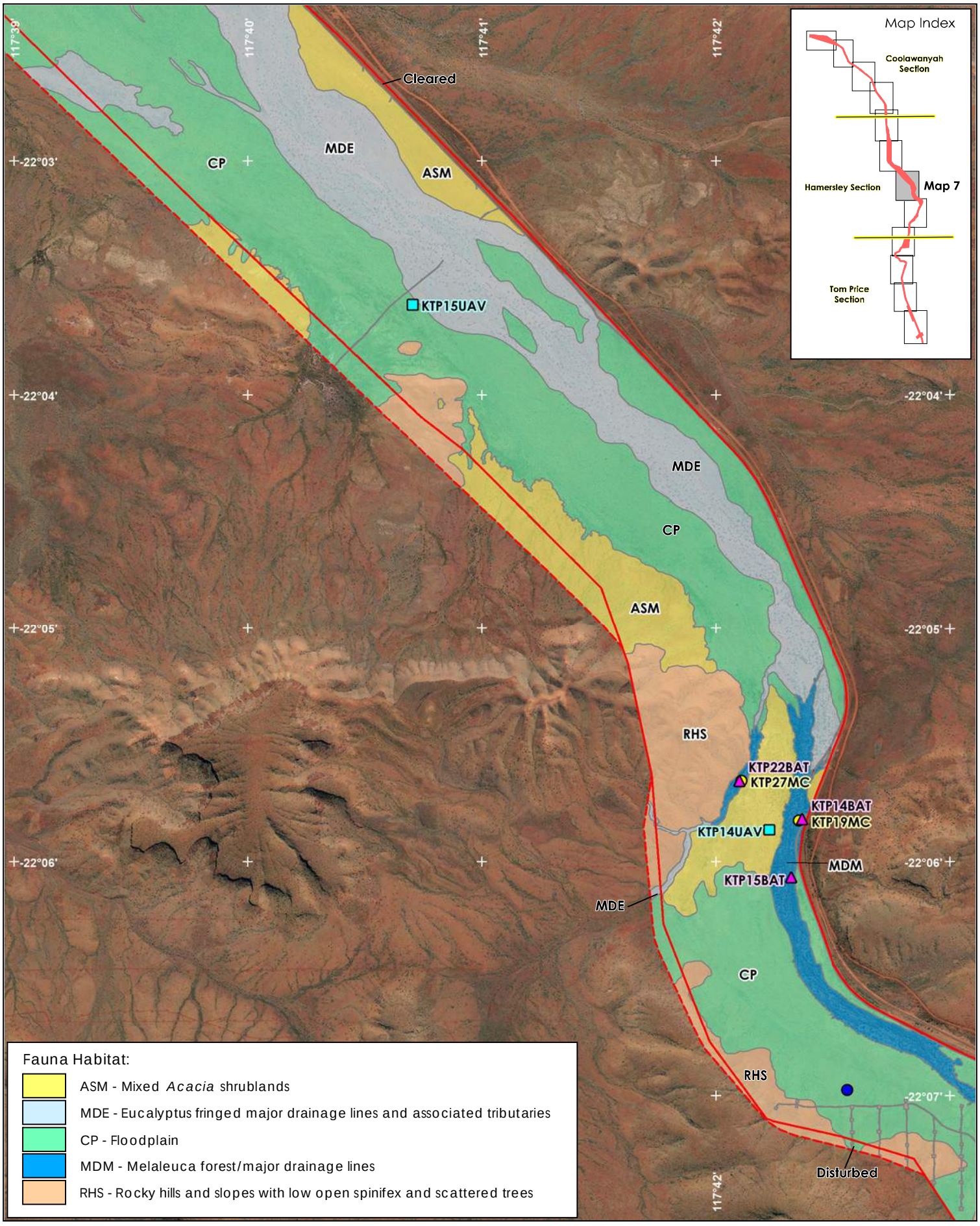
0 0.5 1
kilometres

N

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 6

Biota Environmental Sciences

Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:37,500 @ A4



Location Map

Survey area

Contextual area

Ultrasonic sound recorder

Motion camera

UAV site

Fauna Species of Conservation Significance

Pseudomys chapmani

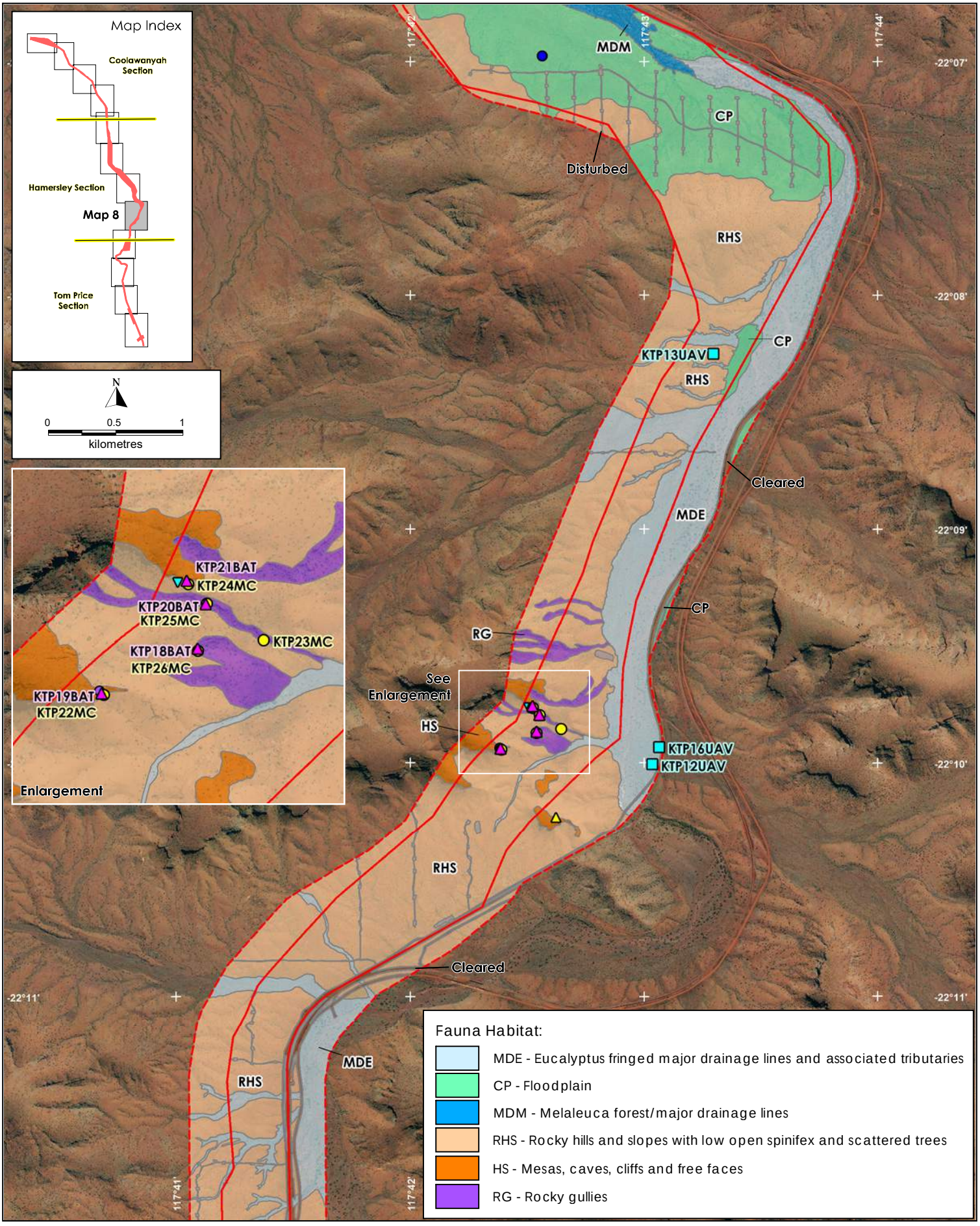
0 0.5 1
kilometres

N

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 7

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:35,000 @ A4



Fauna Habitat:

- MDE - Eucalyptus fringed major drainage lines and associated tributaries
- CP - Floodplain
- MDM - Melaleuca forest/major drainage lines
- RHS - Rocky hills and slopes with low open spinifex and scattered trees
- HS - Mesas, caves, cliffs and free faces
- RG - Rocky gullies

Location Map

- Survey area
- Contextual area
- Ultrasonic sound recorder
- Motion camera
- UAV site

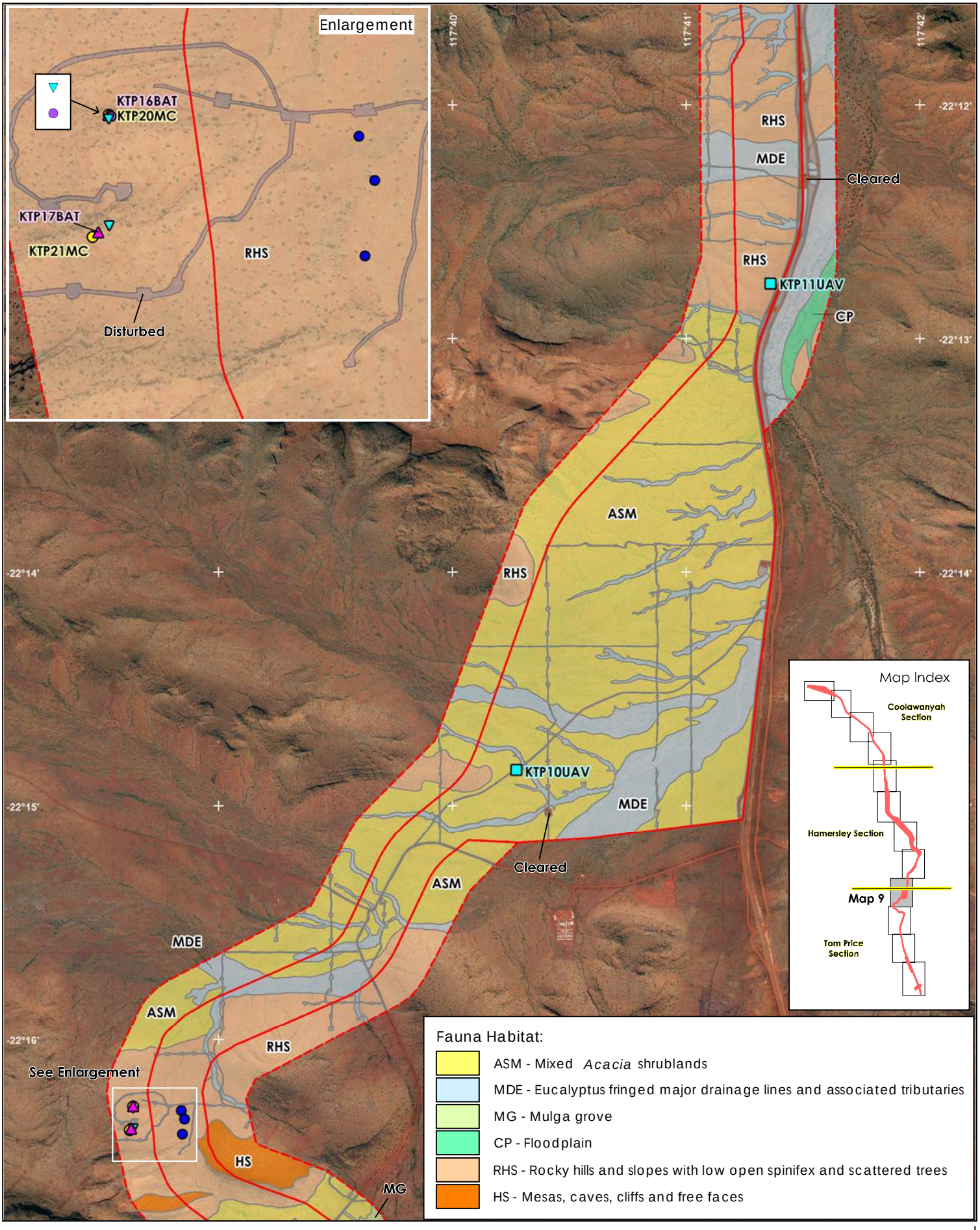
Fauna Species of Conservation Significance

- *Falco hypoleucos*
- *Leporillus conditor*
- *Pseudomys chapmani*
- *Macroderma gigas*

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 8

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:35,000 @ A4



Location Map

Survey area

Contextual area

Ultrasonic sound recorder

Motion camera

UAV site

Fauna Species of Conservation Significance

- *Leporillus conditor*
- *Pseudomys chapmani*
- *Macroderma gigas*

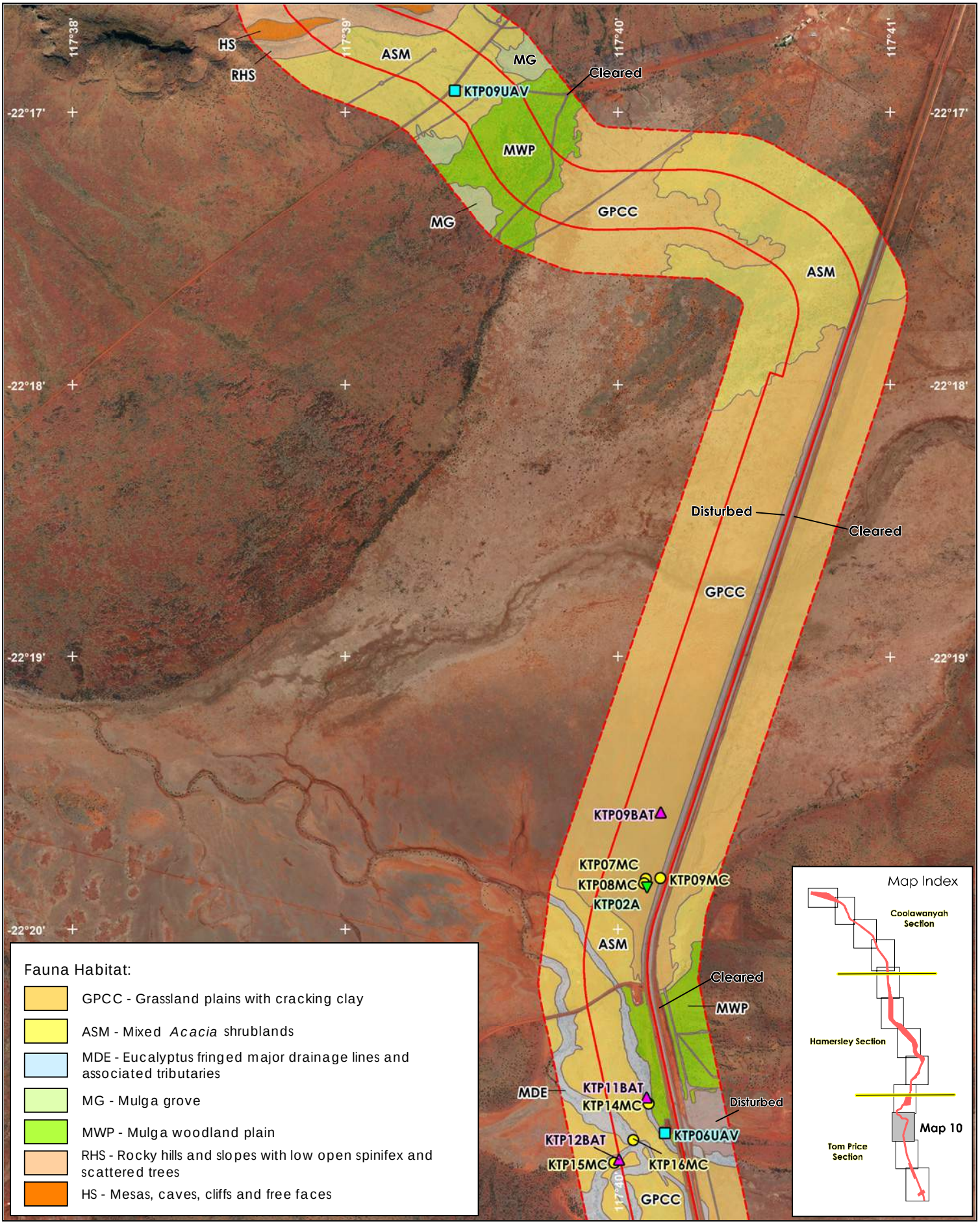
0 0.5 1
kilometres

N

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 9

Biota Environmental Sciences

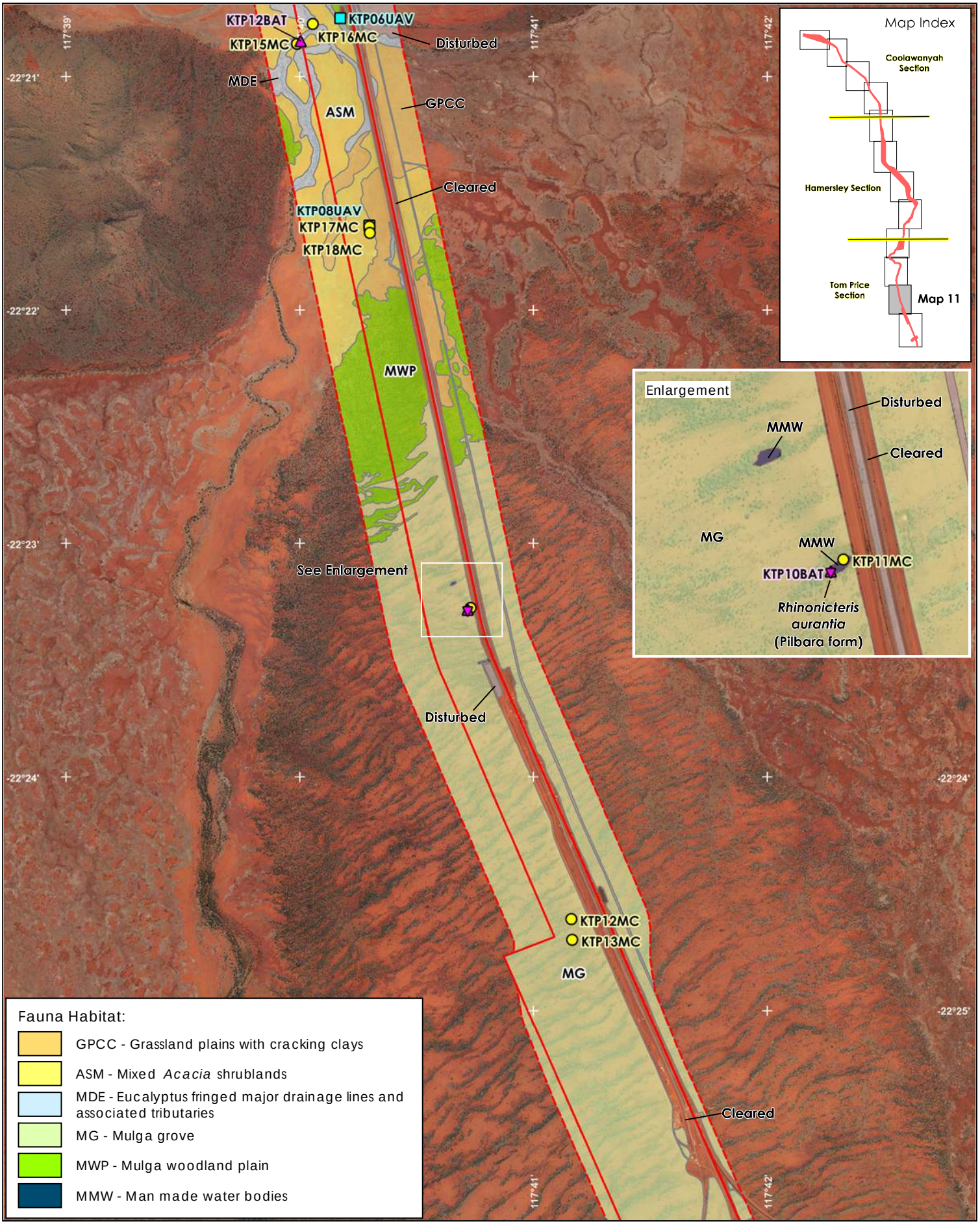
Author: J King	Drawn: B King	Job No.: 1511	Date: 7 Jan 2021	Revised: 12 Apr 2022	Datum: GDA94	Scale: 1:35,000 @ A4



Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 10

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:30,000 @ A4



Fauna Habitat:

- GPCC - Grassland plains with cracking clays
- ASM - Mixed *Acacia* shrublands
- MDE - Eucalyptus fringed major drainage lines and associated tributaries
- MG - Mulga grove
- MWP - Mulga woodland plain
- MMW - Man made water bodies

Location Map

- Survey area
- Contextual area
- Ultrasonic sound recorder
- Motion camera
- UAV site

Fauna Species of Conservation Significance

- *Rhinonicteris aurantia* (Pilbara form)

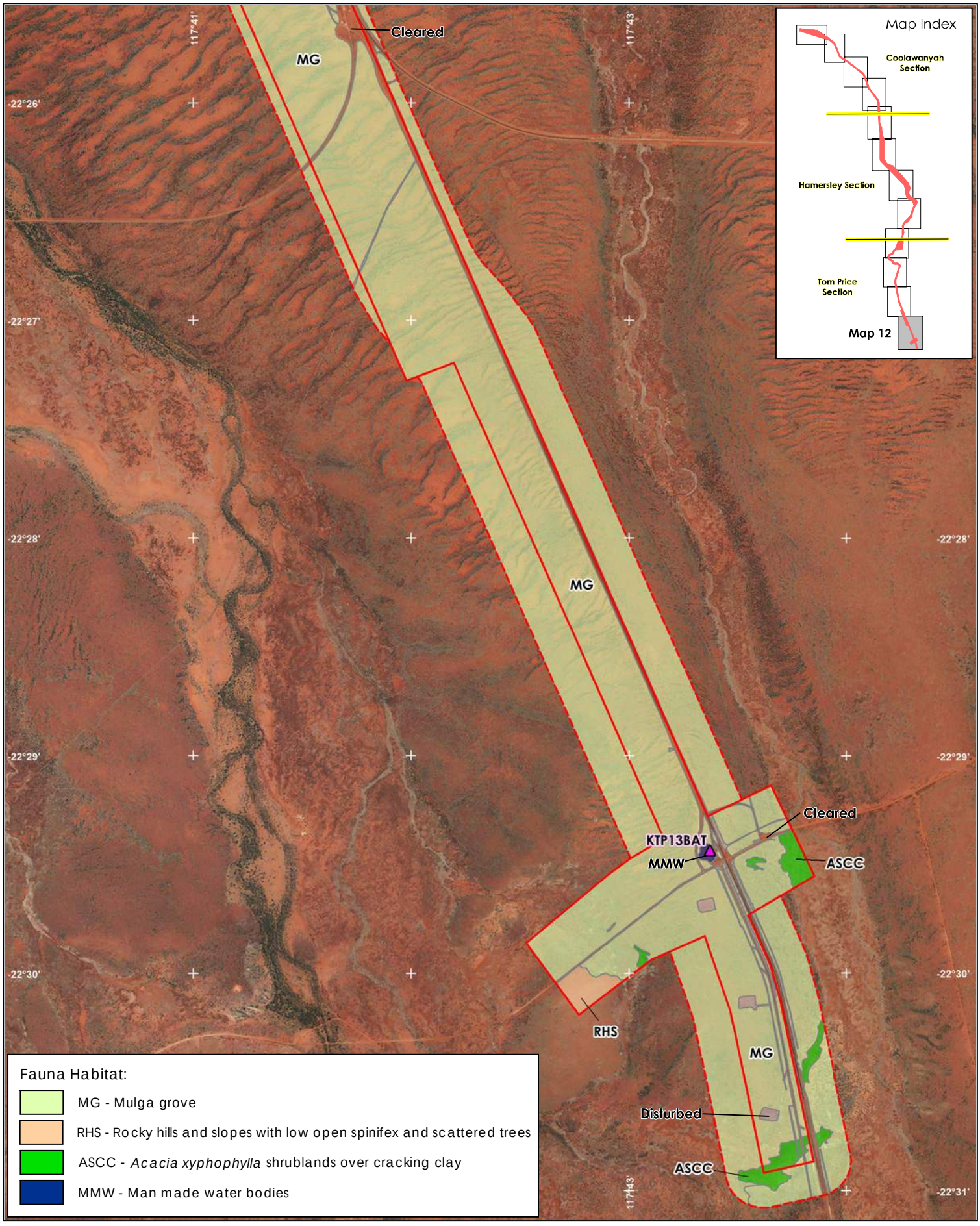
0 0.5 1 kilometres

N

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 11

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:35,000 @ A4



Fauna Habitat:

- MG - Mulga grove
- RHS - Rocky hills and slopes with low open spinifex and scattered trees
- ASCC - *Acacia xyphophylla* shrublands over cracking clay
- MMW - Man made water bodies

Location Map

Survey area

Contextual area

Ultrasonic sound recorder

N

0 0.5 1

kilometres

Manuwarra Red Dog Highway Stage 4 - Fauna Habitats & Con. Significant Fauna - Map 12

Biota Environmental Sciences

Author: J King | Drawn: B King | Job No.: 1511 | Date: 7 Jan 2021 | Revised: 12 Apr 2022 | Datum: GDA94 | Scale: 1:35,000 @ A4

Appendix 5 Hydrological Risk Assessment for Manuwarra Red Dog Highway (Stage 4)

TECHNICAL MEMORANDUM

DATE 21 June 2022

Reference No. PS131971-001-M-Rev0

TO John Morrell
Main Roads WA

CC

FROM Domi Diaz, Haylee Thomas

EMAIL domi.diaz@wsp.com; haylee.thomas@wsp.com

HYDROLOGICAL RISK ASSESSMENT FOR THE MANUWARRA RED DOG HIGHWAY (KARRATHA TO TOM PRICE ROAD)

1.0 INTRODUCTION

Main Roads Western Australia (MRWA) has engaged WSP Golder to undertake a hydrological risk assessment for the Stage 4 of the Manuwarra Red Dog Highway (MRDH) Project (formerly known as the Karratha – Tom Price Road). Stage 1 to 3 of the MRDH has already been completed and Stage 4 comprises the design and construction of approximately 112 km of new road from Wallyinya Pool to Nanutarra Munjina Road which will complete a sealed link between Karratha and Tom Price.

MRWA submitted EPBC Referral Preliminary Documentation (MRWA, 2021) and a Construction Water Strategy (Jacobs, 2020) to the Department of Agriculture, Water and Environment (DAWE) in October 2021. The Construction Water Strategy stated that the construction phase of Stage 4 of the MRDH requires water mainly for dust suppression and material conditioning (substrate engineering/compaction) and it is proposed that the water is sourced primarily from groundwater along the alignment. In response to the submissions, the DAWE has raised concerns regarding the abstraction of groundwater and the potential impact of the road on surface water (Attachment A).

This technical memorandum has been prepared to address DAWE's concerns and support the EPBC Referral Preliminary Documentation. The scope of this work is comprised of the following:

- Review and collation of existing data and information (geology, hydrogeology, environmentally sensitive areas, and groundwater level data).
- Assess publicly available hydrogeological data as well as data provided by Rio Tinto to MRWA.
- Develop a potential construction bore water supply system based on the geology and minimum required/desired distances between bores to predict potential extraction rate, volume, and duration.
- Estimate the groundwater level drawdown in wells based on the above potential construction bore water supply system using available information.
- Assess potential environmental impacts based on the estimated groundwater level drawdown.

- Prepare this document which includes:
  - Groundwater level drawdown impact assessment.
  - Commentary on water crossing considerations to minimise risks of detrimental environmental impacts from surface water flows.
  - Estimate hydrogeological assessment requirements based on Table 1 of State (DWER) Operations Policy 5.12.

2.0 SITE DESCRIPTION

The MRDH Stage 4 alignment has been separated into 3 sections – Coolawanyah (approximately 46 km), Hamersley (approximately 27 km), and Tom Price (approximately 39 km). Figure 1 presents the proposed MRDH alignment.

2.1 Geology

The proposed alignment is located within the Hamersley Basin of the Pilbara Craton which contains volcanic-sedimentary rocks of the Mount Bruce Supergroup that overlies a granite-greenstone terrane. The Mount Bruce Supergroup is divided into the Fortescue, Hamersley, and Turee Creek groups. Formations belonging to the Hamersley group are encountered along most of the alignment, and formations belonging to the Fortescue Group are generally encountered at the southern end of the alignment. Figure 2 presents the interpreted geological formations along the proposed alignment based on published information. The formations are also summarised in Table 1.

Table 1: 1:500,000 Interpreted Bedrock Geology for the MRDH Alignment

Group	Formation	Description
Hamersley Group	Brockman Iron Formation	Banded iron-formation, chert, mudstone, and siltstone.
	Marra Mamba Iron Formation	Chert, banded iron-formation, shale, siltstone, and mudstone.
	Mount McRae Shale and Mount Sylvia Formation	Mudstone, siltstone, chert, banded iron-formation, and dolomite.
	Wittenoom Formation	Dolomite and dolomitic shale, with minor chert, shale, banded iron-formation, and sandstone.
Fortescue Group	Bunjinah Formation	Pillowed and massive basaltic flows, basaltic breccia and volcanic sandstone, and minor chert.
	Jeerinah Formation	Shale, sandstone, siltstone, mudstone, dolomite, local micro-banded chert, and jaspilite.
	Pyradie Formation	Pyroxene spinifex-textured basaltic flows and pillow lava with mafic volcaniclastic rock, minor chert and local komatiite.

2.2 Hydrogeology

2.2.1 Groundwater Resources

The groundwater resources along the alignment are covered by the Pilbara Groundwater Allocation Plan and fall under the Ashburton groundwater sub-area. Four groundwater resources are encountered along the alignment which are presented in Figure 3 and summarised in Table 2. The Coolawanyah section of the MRDH Stage 4 alignment covers the Millstream, Fortescue, and Wittenoom groundwater resources, and the Hamersley and Tom Price sections cover the Wittenoom and Fractured Rock groundwater resources.

The Department of Water and Environmental Regulation's (DWER) online Water Register provides a summary of the water availability for each of the groundwater resources. Allocation limits for the groundwater resources covering the alignment are provided in the Pilbara Groundwater Allocation Plan (DoW, 2013). Although, it should be noted that allocation limits may have been updated since the publication of the plan.

Table 2: Water availability information from DWER's online Water Register

Groundwater Area	Groundwater Subarea	Aquifer	General Licensing Allocation Limit (kL/year) (DoW, 2013)	Water Availability
Pilbara	Ashburton	Hamersley – Fortescue	Not set (case-by-case)	Limited Information
		Hamersley – Fractured Rock	Not set (case-by-case)	Limited Information
		Hamersley – Millstream	682,500	Allocation Available
		Wittenoom – Wittenoom	19,980,000	Allocation Available

Notes: * Water Register online database was accessed on 30 May 2022.

2.2.2 Aquifers

A data review and gaps analysis (Jacobs, 2020) outlined four main aquifers present beneath the alignment based on Rojas et al. (2018). Aquifer types occurring along and surrounding the alignment include channel iron deposit (CID) aquifers, valley-fill aquifers, karstified dolomite aquifers, and fractured rock aquifers which are summarised as follows:

- Channel Iron Deposit (CID) – iron-rich, highly porous and permeable deposits underlying current valleys and paleo-valleys. These units can behave as unconfined aquifers when in hydraulic connection with overlying sediments, or as confined aquifers when overlain by poorly transmissive sediments.
- Valley-fill and inland alluvial – occur along the Fortescue River Valley channel. Valleys in the Hamersley Basin show a common sequence of CIDs at the bottom, overlain by calcrete, lacustrine clay and varying alluvium varying from gravel to clay, with an upper layer of calcrete commonly developed in the zone of water table fluctuation.
- Karstified/weathered dolomite – underlies the major valleys of the Hamersley Range. The dolomite is highly variable in nature ranging from massive to highly karstified.
- Fractured rock – occur within the upper weathered zone of granite basement rocks where secondary porosity has been developed due to weathering, fractures, joints, and quartz veining or in greenstone rocks where brittle deformation has occurred. Generally, do not contain regionally substantial groundwater resources. This type of aquifer is subdivided into granite–greenstone terrane and iron-rich deposits showing well-developed fractures due to ore mineralisation (mineralised BIFs).

Figure 3 shows the historical abstraction rates for the groundwater bores along the existing Rio Tinto rail. Typically, the Hamersley – Millstream groundwater resource produces the lowest yield compared to the Hamersley – Fortescue, Hamersley – Fractured Rock and Wittenoom – Wittenoom resources.

The properties of the aquifers across the alignment are summarised in Table 3.

Table 3: Properties for aquifer types (Jacobs, 2020)

Aquifer Type	Total Dissolved Solids (mg/L)	Hydraulic Conductivity (m/day)	Mean Transmissivity (m^2/day)	Storativity (-)
CID (Hamersley – Fortescue)	< 200	14.85	1450	1.05×10^{-2}
Valley-Fill (Hamersley – Fortescue)	200 – 1,500	7.44	930	4.17×10^{-3}
Karstified/weathered dolomite (Hamersley – Millstream and Wittenoom – Wittenoom)	150 – 1,500	1.56	1330	4.02×10^{-2}
Fractured Rock (Hamersley – Fractured Rock)	480 – 3,000	2.26	638	1.27×10^{-2}
Mineralised BIF (Hamersley – Fractured Rock)	200 – 1,400	3.42	950	3.31×10^{-2}

2.2.3 Groundwater Levels

Groundwater level information is available on the DWER online Water Information Reporting tool. The database noted 95 groundwater bores were identified within 5 km of the alignment although groundwater level data is limited. The available information is shown on Figure 3.

Groundwater level information for 19 bores owned by Rio Tinto has been provided to WSP/Golder by MRWA and indicates that groundwater levels range between 4.1 m and 27.3 m below ground level (bgl) along the MRDH Stage 4 development envelope (Figure 3).

2.2.4 Groundwater Users

Groundwater within and surrounding the MRDH development envelope has beneficial uses and supports ecosystem health. The beneficial uses, include public drinking water source areas (PDWSA) and water extraction by 5C Licence holders. Ecosystems such as GDEs may be supported. Groundwater abstraction bores for MRDH, have the potential to impact on beneficial uses and ecosystem values, if close to those beneficial users or ecosystems.

Public Drinking Water Source Areas (PDWSAs)

The Millstream Water Reserve is a Public Drinking Water Source Area (Millstream Water Reserve) containing Priority 1 and Priority 2 Groundwater Protection Areas and covers a large portion of the MRDH development envelope. The Millstream borefield for the PDWSA is located approximately 30 km north-west of the development envelope and the Pilbara Groundwater Allocation Plan (DoW, 2013) indicates that the borefield is used when water is not available from Harding Dam or for short periods when demand is high. The PDWSAs are presented in Figure 3.

5C Licences to Take Water

The DWER online Water Register indicates that 5C Licences to abstract groundwater are located along the entire alignment, although the licenced bores are for the Pilbara Iron Company Pty Ltd (Rio Tinto) for which MRWA is seeking permission from Rio Tinto to use some of these licenced bores for MRDH construction water supply.

Groundwater Dependent Ecosystems

The Bureau of Meteorology's online *Groundwater Dependent Ecosystems Atlas*[1] contains information about three types of groundwater dependent ecosystems:

- Aquatic ecosystems (rely on surface expression of groundwater and includes surface water ecosystems which may have a groundwater component, such as rivers, wetlands, and springs).
- Terrestrial ecosystems (rely on the subsurface presence of groundwater and includes all vegetation ecosystems).
- Subterranean ecosystems (includes cave and aquifer ecosystems).

The GDE Atlas indicates that the MRDH alignment and surrounding area includes known aquatic GDEs from regional studies, and moderate to high potential aquatic and terrestrial GDEs from national assessments. Information pertaining to the GDEs is summarised in Table 4.

Table 4: Information for aquatic and terrestrial ecosystems from BOM GDE Atlas

Ecosystem Class	Feature	Ecosystem Type	GDE Potential	Alignment Section
Terrestrial GDE	Fortescue River	Riparian vegetation	Known	Coolawanyah
Aquatic GDE	Fortescue River	River	High	Coolawanyah
Aquatic GDE	Weelumurra Creek	River	High	Coolawanyah, Hamersley, Tom Price

In addition to the GDE Atlas, the EPBC Preliminary Documentation detailed that the occurrence of Eucalyptus and Melaleuca species (*Melaleuca argentea*, *Eucalyptus camaldulensis,* and *Eucalyptus victrix*) along the alignment is generally associated with drainage lines. These species are also known to be largely restricted to mesic environments such as riparian zones and wetlands (DoW, 2010). Two types of habitats were identified as part of the EPBC Preliminary Documentation which contain these species – Eucalyptus fringed major drainage lines and associated tributaries (MDE) and Melaleuca Forest/major drainage lines (MDM). These habitats support the Pilbara Leaf-nosed Bat, Pilbara Olive Python, Grey Falcon, Northern Quoll, and Ghost Bat generally for foraging, dispersal, and drinking.

The groundwater dependent ecosystems are presented in Figure 4.

2.3 Hydrology

The proposed development envelope for Stage 4 of the MRDH crosses rivers and creeks throughout the development envelope and are summarised as follows:

- The MRDH crosses the Fortescue River alignment at the confluence with Weelamurra Creek between around Chainage 30,000 of the Coolawanyah section.
- The MRDH alignment follows the Weelamurra Creek between Chainage 30,000 of the Coolawanyah section and Chainage 5,000 of the Tom Price section.
- The MRDH crosses the confluence of Barnett Creek and an unnamed minor river around Chainage 20,000 of the Tom Price section.

The surface water features along the alignment are presented in Figure 5.

[1] Bureau of Meteorology's *Groundwater Dependent Ecosystem Atlas* – http://www.bom.gov.au/water/groundwater/gde/map.shtml

3.0 HYDROGEOLOGICAL RISK ASSESSMENT

In response to the DAWE's concerns a preliminary hydrogeological assessment in general accordance with DWER (previously DoW) Operational Policy 5.12 (DoW, 2009) has been undertaken to support MRWA's EPBC submission for Stage 4 of the MRDH. The assessment takes into consideration the following:

- Volume and pumping regime requested (construction water supply)
- Level of use in groundwater management area (groundwater area or subarea)
- Potential impacts upon other users and groundwater-dependent ecosystems, and
- Existing salinity of the groundwater resource.

The decision table for the hydrogeological assessment is presented in Table 5.

Table 5: DWER Operational Policy 5.12 Decision Table for Hydrogeological Assessments

Volume Requested (kL/year)	Level of Allocation*	Potential for Unacceptable Impacts		Existing Salinity (mg/L)
		Other Users	GDEs	
<10,000 (0 points)	0 to <30% (C1) (0 points)	Impacts unlikely (0 points)	Impacts unlikely (0 points)	Fresh TDS <500 mg/L (4 points)
10,001–50,000 (2 points)	30 to <70% (C2) (1 point)	Impacts possible (2 points)	Impacts possible (2 points)	Marginal TDS 501–1,500 mg/L (3 points)
50,001–250,000 (4 points)	70 to <100% (C3) (3 points)	Impacts likely (5 points)	Impacts likely (5 points)	Brackish TDS 1,501–5,000 mg/L (2 points)
250,001–500,000 (6 points)	100% and over (C4) (5 points)			Saline TDS 5,001–50,000 mg/L (1 point)
500,001–1,000,000 (8 points)				Hypersaline TDS >50,000 mg/L (0 points)
1,000,001–2,500,000 (15 points)				
>2,500,000 (20 points)				
Points assigned = a	Points assigned = b	Points assigned = c	Points assigned = d	Points assigned = e

Notes: * Points are not applied if drawing from a fractured rock aquifer

Points are assigned for each column in the table (i.e., volume, allocation, potential impacts – users, GDEs, and salinity), and add to arrive at a score (*a*+*b*+*c*+*d*+*e*):

- 0 – 7 points: Generally, no assessment required, unless other knowledge of risks indicates that H1 level assessment (desktop hydrogeological assessment) is warranted.
- 8 – 12 points: H1 level of assessment (desktop hydrogeological assessment). However, low volume applications with low risk of impacts may not warrant an assessment. These cases can be discussed with DWER's hydrogeologists.
- 12 – 18 points: H2 level of assessment (basic hydrogeological assessment, including installation and testing of investigation bores).
- > 19 points: H3 level of assessment (detailed hydrogeological assessment including installation and testing of investigation bores and a groundwater model).

3.1 Construction Water Supply

The Construction Water Strategy stated that the construction phase of Stage 4 of the MRDH requires water mainly for dust suppression and material conditioning (substrate engineering/compaction) and it is proposed that the water is sourced primarily from groundwater along the alignment. WSP Golder understands that currently the water demand for Stage 4 (112 km) of the MRDH will range between 148,000 and 412,000 kL over a period of 30 months (2.5 years), corresponding to between 59,200 and 164,800 kL/year. For the hydrogeological assessment the following has been assumed:

- A groundwater abstraction bore will be located every 5 to 10 km along the alignment, although the final number and location of the bores is currently unknown.
- Assuming 15 bores are installed, this corresponds to an average daily volume of between 160 and 460 kL/day (1.9 to 5.4 L/s).

3.2 Level of Allocation

The construction water supply, given the above assumptions, is not above 30% of the allocation limits for the Hamersley – Millstream and Wittenoom – Wittenoom aquifers (refer to Table 5).

Allocation limits are not set for fractured rock aquifers because of their complex and irregular characteristics and therefore water availability, recharge and storage are very localised. Licence applications for fractured rock aquifers are assessed on a case-by-case basis.

3.3 Potential for Unacceptable Impacts

The abstraction of groundwater will draw down the groundwater level around the draw point (bore) and the extent of the drawdown will vary depending on the characteristics of the aquifer and the volume and duration of pumping. There is the potential for existing groundwater users and GDEs (i.e., wetlands, streams, and springs) to be impacted due to the drawdown of the groundwater level.

The groundwater level drawdown likely to be observed for each aquifer at three distances from the point of abstraction (0 m, 500 m and 1000 m) has been calculated using the Cooper-Jacob (1946) solution and aquifer properties described in Section 2.2.2. Using proposed total project water demand volumes provided by Main Roads, an estimated volume of between 148,000 and 412,000 kL was used to calculate minimum and maximum pumping rates of 1.9 L/s and 5.4 L/s and is presented in Table 6.

The Cooper-Jacob equation used is as follows:

$$s = \frac{Q}{4\pi T} \ln\left(2.2459 \frac{Tt}{r^2 S}\right)$$

Where:

- s – drawdown
- Q – pumping rate (L/s)
- T – transmissivity (m^2/day)
- t – time (days)
- r – radial distance from pumping well (m)
- S – storage coefficient.

Table 6: Estimated Groundwater Level Drawdown (metres) During Pumping

Aquifer	Pumping Rate (L/s)	Drawdown (m) after 30 days			Drawdown (m) after 90 days		
		0 m	500 m	1,000 m	0 m	500 m	1,000 m
Channel Iron Deposits	1.9	0.23	0.03	0.02	0.25	0.04	0.03
	5.4	0.65	0.09	0.06	0.67	0.12	0.09
Valley-fill and Inland Alluvial	1.9	0.36	0.06	0.11	0.38	0.07	0.05
	5.4	1.03	0.16	0.11	1.07	0.21	0.15
Karstified/Weathered Dolomite	1.9	0.23	0.02	0.01	0.24	0.03	0.02
	5.4	0.67	0.06	0.02	0.70	0.09	0.05
Fractured Rock	1.9	0.49	0.05	0.02	0.52	0.08	0.05
	5.4	1.41	0.15	0.07	1.47	0.22	0.13
Mineralised BIF	1.9	0.33	0.03	0.01	0.34	0.04	0.02
	5.4	0.93	0.08	0.03	0.97	0.12	0.07

Notes: * Groundwater level drawdown is based on 24 hours of continuous pumping per day.

The estimated groundwater level drawdown for each aquifer is low and therefore the potential for impacts to groundwater dependent ecosystems is anticipated to be minimal. The groundwater level at WARP13, WARP15, and WARP24 within the Eucalyptus and Melaleuca vegetated drainage lines has also been recorded at greater than 15 m below ground level.

Where abstraction bores are not located in close proximity to groundwater dependent ecosystems it is considered that impacts to GDEs are unlikely. Where abstraction bores are located within or in close proximity to a GDE, impacts are possible, but not considered detrimental given the short duration of abstraction.

3.4 Existing Salinity

As detailed in Table 3 the anticipated TDS is <3000 mg/L which corresponds to salinity ranging between fresh and brackish along the alignment.

3.5 Risk Assessment

The hydrogeological impact assessment is based on the volume of groundwater requested, the level of allocation from the corresponding groundwater resource, the potential for unacceptable impacts on groundwater users, known GDEs and the groundwater salinity. In undertaking the impact assessment, the extent of the groundwater level drawdown from pumping has been estimated. Given that the number of and location of wells has not yet been determined, this assessment provides general estimates and discussion on impacts based on an annual demand of 164,800 kL/year. The groundwater level drawdown estimates show that the maximum drawdown over 90 days should not have a significant impact on other groundwater users or known GDEs.

The results of the assessment are presented in Table 7 and indicate that a H1 (desktop) level assessment may be required by DWER as part of the 5C licence application for the Coolawanyah section of the alignment, as the Hamersley-Fortescue aquifer may yield fresh water and there are known GDEs within the area. The Tom Price section of the alignment may not require any hydrogeological assessment, though DWER may request one if deemed necessary during the licence application process.

Table 7: Level of Hydrogeological Assessment Using DWER Operational Policy 5.12 Decision Table

Alignment Section	Maximum No. Points	Level of Assessment Required	Comments
Coolawanyah	8	H1	Assumed fresh water (TDS <500 mg/L) is located in areas along the alignment and there are possible impacts to GDEs depending on the final location of the abstraction bores.
Hamersley	7	No assessment	Assumed marginal to brackish water (TDS 501 – 5,000 mg/L) is located along the alignment
Tom Price	7	No assessment	Assumed marginal to brackish water (TDS 501 – 5,000 mg/L) is located along the alignment

3.6 Risk Management

The risk of environmental harm as a result of groundwater abstraction will be dependent on the groundwater level drawdown and abstraction duration. The risk of impacts resulting from groundwater level drawdown can be reduced further by implementing the following measures:

- Installing a greater number of bores along the alignment which will reduce the discharge rate and pumping duration from each bore.
- Performing pumping tests in proposed water supply bores and measuring drawdown and recovery in the pumping bore and surrounding observation bores to:
  - Determine sustainable pumping rates.
  - Confirm aquifer properties such as specific capacity, hydraulic conductivity, transmissivity, and storativity.
  - Confirm the extent of the groundwater level drawdown caused by abstraction.
  - Determine minimum separation distances between bores to reduce well-interference effects, and between bores and GDEs to minimise drawdown impacts.
- Reduce pumping rates to decrease the groundwater level drawdown if groundwater level monitoring indicates drawdown near GDEs is too high.
- Monitoring of groundwater levels and water quality between groundwater dependent ecosystems and groundwater abstraction bores before, during, and after pumping.

4.0 HYDROLOGICAL RISK ASSESSMENT

A hydrological risk assessment was undertaken by Cardno (2022) for the proposed MRDH alignment which provides an understanding of the surface water regime throughout the study area; identifies and describes the hydrological risk factors associated with the MRDH; and proposes a design criteria to be adopted in managing the major waterways. The assessment, utilising RORB Runoff Routing software and TUFLOW hydraulic modelling software, also discusses the interaction between the proposed MRDH with the existing railways and the changing rainfall patterns to be considered in the design of the crossings.

WSP Golder understands that the hydrological assessment addresses concerns raised by the DAWE relating to potential environment impacts from surface water flows potentially altered by the MRDH and this technical memorandum hereby presents a summary of their assessment.

4.1 Hydrological Risks

The assessment identified risks for both pre- and post-development of Stage 4 of the MRDH. The risks identified pre-development of the MRDH include:

- High flow depths at major crossings in the Coolawanyah section and at Fortescue River.
- Interaction with the existing Rio Tinto levees which direct Weelamurra Creek.
- Braided flows and narrow widths in Weelamurra Creek which may cause difficulty for road crossings.
- Water levels in the flood plain at the Eliwanna railway road under the rail arch.
- The confluence of flows of Barnett Creek and Caves Creek near the proposed MRDH alignment and the Rio Tinto railway.

The risks identified for post-development of the MRDH include:

- Backwater impacts from the MRDH on third party infrastructure (Rio Tinto and/or FMG rail and access track embankments) resulting in closure of the railway, and embankment and track reconstruction.
- Reduced serviceability of the MRDH during storm events resulting in road closures for long periods of time while upstream catchments are draining.
- Insufficient resilience of the MRDH to withstand high flows during storm events resulting in failure of the road pavement, embankment or other components due to high flow velocities or inundation, and/or the failure of levees, bridge abutments, and scour protection.
- Insufficient design appreciation for the complexity and variability of the channel flows resulting in changing the upstream main channel flows, embankment scour, and/or overtopping of the road.
- Insufficient design appreciation of design requirements for managing the risks of complex waterways resulting in embankment scour, overtopping of the road, under/over designing of the drainage controls, and/or longer periods of inundation adjacent to the MRDH in the flood plain areas.

4.2 Design Considerations

The assessment recommends the following design considerations for the waterways design based on an informed understanding of the key hydrological risk areas, the implications of climate change, and the requirements for a ‘Pilbara-Proof’ design. Changing rainfall patterns were included in the assessment by the modelling of several rainfall scenarios using current rainfall data with interim climate change factors (i.e., 2050 RCP4.5 and 2070 RCP8.5) and annual exceedance probabilities (AEP) ranging from 1% to 50%. These rainfall scenarios where then applied to scenarios which addressed design criteria for the elements:

- Serviceability/maximum road closure time due to flood water.
- Road closure in both directions for reconstruction following flooding.
- Floodway dry and wet serviceability.
- Culvert capacity.
- Culvert scour treatments extents and sizing.
- Resistance to scour scenarios.
- Pavement inundation duration without specialist treatment.

- Roadside/formation drains.
- Bridge dry serviceability.
- Levees – overtopping avoidance or scour protection.
- Third party adverse backwater impacts.

The assessment identified that the existing infrastructure developed by mining companies alters the natural surface water flows. In particular, the Rio Tinto main rail alignment and Brockman spur line, and associated culverts and bridge structures which control the east to west flow on the eastern side of the proposed MRDH. Furthermore, the proximity of the proposed MRDH alignment to the existing Rio Tinto railway requires that the road design considers how the change in the flow caused by the MRDH could impact on Rio Tinto assets and the surface water regime. The MRDH if not designed appropriately has the potential for increased water levels that could cause overtopping or scour to the embankments or other structures.

However, to minimise the potential impacts of the MRDH of surface water regimes the assessment by Cardno recommends incorporating the following in future design calculations:

1) Adopt design criteria reflective of a ‘worst-case’ up to (and including) the proposed design event.
2) Review of the embankment heights by a geotechnical consultant to accommodate capillary rise in areas prone to long duration inundations.
3) Adopt a rarer storm event using current IFD data which is equivalent to worst case RCP 8.5 modelling.
4) Avoid adverse impacts to third-party infrastructure through detailed investigations at likely locations with increased backwater.
5) Evaluate potential impacts on sensitive environmental and heritage receptors during high probability events.
6) Ensure the MRDH embankment is not impacted by downstream turbulence caused by clows controlled by adjacent railway infrastructure.
7) Implementation of:

a) Trapezoidal roadside drains with a 1% min grade away from the road embankment.
b) Concrete floodways for major floodway locations.

The assessment recommends further modelling to develop the detailed design for items such as culvert crossing sizes, bridge scour analysis and roadway embankment stability. Golder understands that this is currently in progress. The incorporation of these additional elements when assessing the design criteria during the detailed design and construction phases of the project should ultimately minimise the risks from changed surface water regimes, particularly with respect to environmental receptors within the surface water regimes.

5.0 SUMMARY

The key conclusions of the hydrogeological and hydrological risk assessment are:

- The groundwater level has been recorded for several of the proposed abstraction bores and ranges between 4.35 m and 27.27 m bgl, although it is unknown if these levels were recorded during the wet season or dry season.

- The estimated groundwater level drawdown for abstraction bores along the alignment is low (up to 1.41 m after 30 days of pumping and up to 1.47 m for 90 days of pumping at the bore site) for abstraction rates up to 5.4 L/s.
- The low groundwater level drawdown is not anticipated to cause any detrimental impacts to groundwater dependent ecosystems in the area; however, several of the proposed bores are located within Eucalyptus and Melaleuca vegetated areas along drainage lines.
- A H1 (desktop) level hydrogeological assessment may be required to support a 5C licence application along the Coolawanyah section of the proposed MRDH alignment; and a hydrogeological assessment to support a 5C licence application may not be required for the Hamersley and Tom Price sections of the alignment.
- It is recommended that pumping tests and groundwater monitoring be undertaken to confirm aquifer properties and groundwater salinity where final bore locations are near GDEs to have a better understanding of the impacts of groundwater abstraction.
- Potential impacts to surface water resulting from the MRDH and its alignment parallel to the Rio Tinto rail infrastructure includes altering the surface water flow regime and Cardno (2022) has recommended the consideration of numerous design elements to mitigate these impacts. Provided Main Roads implements recommended mitigation measures changes to surface water flows are unlikely to impact on ecosystems or environmental receptors.

6.0 REFERENCES

Main Roads Western Australia (2021), *EPBC Referral Preliminary Documentation: Manuwarra Red Dog Highway (MRDH) – Stage 4*.

Biota Environmental Services (2022), *Manuwarra Red Dog Highway Stage 4 Biological Survey*: Prepared for Main Roads Western Australia Rev.D, April 2022.

Cardno (WA) Pty Ltd (2022), *Fortescue River, Weelamurra Creek and Caves Creek Waterways Summary Report: Manuwarra Red Dog Highway Stage 4*, CW1128800: Prepared for Main Roads Western Australia, April 2022.

Jacobs Group (Australia) Pty Limited (2020), *Karratha Tom Price Road Stage 4: Data Review and Gap Analysis*, KTP4 WS0001 V1, August 2020.

Mainroads Western Australia (2021), *EPBC Referral Preliminary Documentation: Manuwarra Red Dog Highway (MRDH) - Stage 4*, EOS 1813, EPBC 2020/8725, Document No: D21 #299061, October 2021

Department of Water (2009), *Operational policy no. 5.12 = Hydrogeological reporting associated with a groundwater well licence*. Government of Western Australia.

Loomes, R (2010), *Determining water level ranges of Pilbara riparian species*, Environmental water report series, report no. 17, Department of Water, Government of Western Australia.

Braimbridge, M, Antao, M and Loomes, R (2010), *Groundwater dependent ecosystems for Millstream: ecological values and issues*, Environmental water report series, report no. 13, Department of Water, Government of Western Australia.

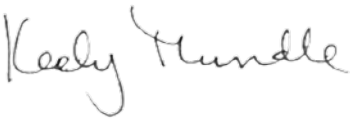
Rojas R, Commander P, McFarlane D, Ali R, Dawes W, Barron O, Hodgson G and Charles S (2018). Groundwater Resource Assessment and Conceptualization in the Pilbara Region, Western Australia. Earth Systems and Environment. Springer International Publishing 1-21.

7.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled - “Important Information Relating to this Report”, which is included in Attachment B of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

Golder Associates Pty Ltd

Haylee Thomas
Environmental Scientist/Hydrogeologist



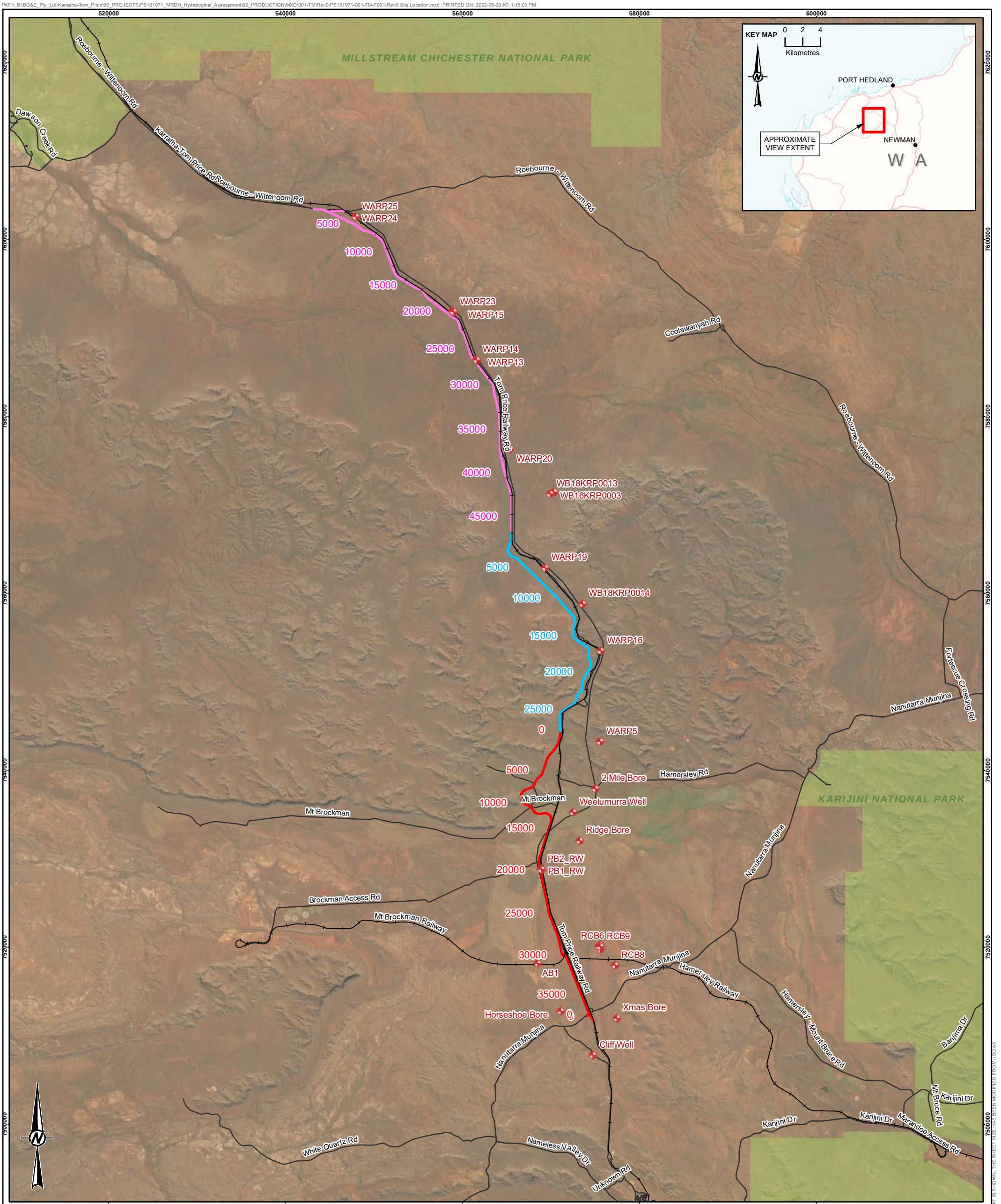
Keely Mundle
Principal Environmental Engineer

DD/KM/hsl

Attachments: Figure 1 – Site Location
Figure 2 – Geology
Figure 3 – Hydrogeology and Groundwater Users
Figure 4 – Groundwater Dependent Ecosystems
Figure 5 – Hydrology
A – DAWE Comments on MRDH Preliminary Documentation
B – Important Information

https://golderassociates.sharepoint.com/sites/163998/project files/6 deliverables/ps131971-001-m-rev0 mrdh hydrological assessment.docx

PATH: B:\BG&E_Pty_Ltd\Karratha-Tom_Price\99_PROJECTS\PS131971_MRDH_Hydrological_Assessment\02_PRODUCTION\MXD\001-TM\Rev0\PS131971-001-TM-F001-Rev0 Site Location.mxd PRINTED ON: 2022-06-20 AT: 1:15:03 PM



LEGEND

- Main Roads WA Road Network
- Railway Lines
- Existing and Proposed Groundwater Bores

Manuwarra Red Dog Highway Stage 4

- Coolawanyah Alignment Section Chainage (m)
- Hamersley Alignment Section Chainage (m)
- Tom Price Alignment Section Chainage (m)

0 10,000 20,000

1:400,000 METRES

NOTE:
1. COORDINATE SYSTEM: GDA 1994 MGA ZONE 50

REFERENCES:
BASED ON INFORMATION PROVIDED BY AND WITH THE PERMISSION OF THE WESTERN AUSTRALIAN LAND INFORMATION AUTHORITY TRADING AS LANDGATE (2018)

INSET BASE DATA SOURCED FROM STREET PRO DATA 2009.

AERIAL IMAGERY SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

CLIENT
MAIN ROADS WESTERN AUSTRALIA

PROJECT
MANUWARRA RED DOG HIGHWAY HYDROLOGICAL RISK ASSESSMENT

TITLE
SITE LOCATION

CONSULTANT
WSP GOLDER

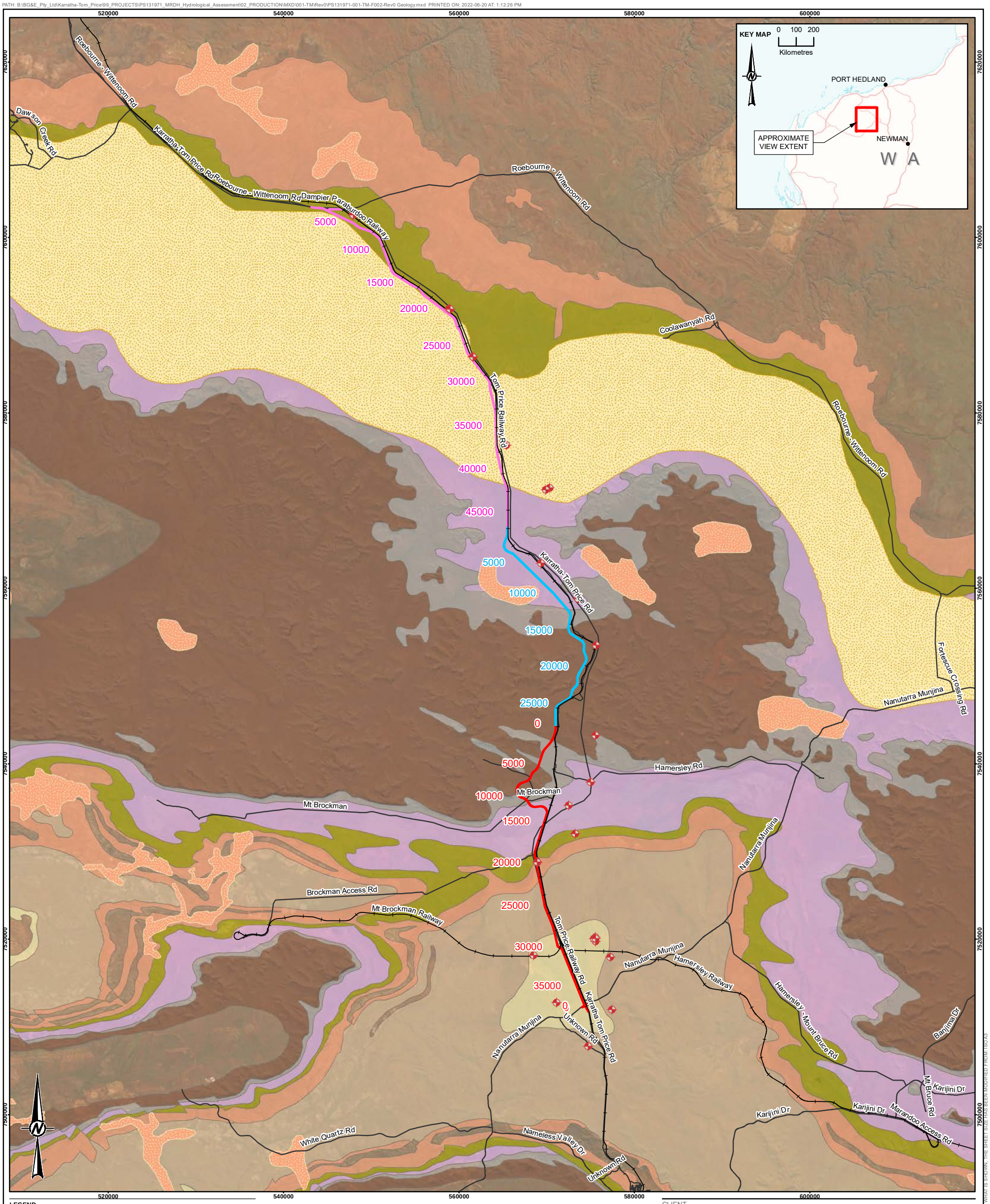
YYYY-MM-DD	2022-06-20
DESIGNED	HT
PREPARED	HT
REVIEWED	KM
APPROVED	KM

PROJECT NO.	CONTROL	REV.	FIGURE
PS131971	001	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3

0 25mm

PATH: B:\BG&E_Pty_Ltd\Karratha-Tom_Price\99_PROJECTS\PS131971_MRDH_Hydrological_Assessment\02_PRODUCTION\MXD\001-TM\Rev0\PS131971-001-TM-F002-Rev0 Geology.mxd PRINTED ON: 2022-06-20 AT: 1:12:26 PM



LEGEND

- Main Roads WA Road Network
- Railway Lines
- Existing and Proposed Groundwater Bores

Manuwarra Red Dog Highway Stage 4

- Coolawanyah Alignment Section
- Hamersley Alignment Section
- Tom Price Alignment Section

1:500K Cenozoic Geology

UNITNAME

- Miocene channel iron deposits
- Valley-fill deposits

1:500K Bedrock Geology

UNITNAME

- Brockman Iron Formation
- Bunjinah Formation
- Jeerinah Formation
- Marra Mamba Iron Formation
- Mount McRae Shale and Mount Sylvia Formation
- Pyradie Formation
- Wittenoom Formation

0 10,000 20,000

1:400,000 METRES

NOTE:
1. COORDINATE SYSTEM: GDA 1994 MGA ZONE 50

REFERENCES:
BASED ON INFORMATION PROVIDED BY AND WITH THE PERMISSION OF THE WESTERN AUSTRALIAN LAND INFORMATION AUTHORITY TRADING AS LANDGATE (2018)

INSET BASE DATA SOURCED FROM STREET PRO DATA 2009.

AERIAL IMAGERY SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

CLIENT
MAIN ROADS WESTERN AUSTRALIA

PROJECT
MANUWARRA RED DOG HIGHWAY HYDROLOGICAL RISK ASSESSMENT

TITLE
GEOLOGY

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-06-20
DESIGNED	HT
PREPARED	HT
REVIEWED	KM
APPROVED	KM

PROJECT NO.	CONTROL	REV.	FIGURE
PS131971	001	0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3

0 25mm

520000 540000 560000 580000 600000

7620000 7600000 7580000 7560000 7540000 7520000 7500000

9.8 m bgl
9.73 m bgl
21 m bgl
4.16 m bgl
18.25 m bgl
18.84 m bgl
5000
10000
15000
24.95 m bgl
27.27 m bgl
20000
25000
15.36 m bgl
30000
35000
22.34 m bgl
40000
45000
12.51 m bgl
5000
10000
15000
4.35 m bgl
20000
12.34 m bgl
25000
0
17.3 m bgl
5000
17.3 m bgl
10000
15000
9.39 m bgl
20000
9.02 m bgl
25000
30000
35000
0

KEY MAP
0 2 4
Kilometres
PORT HEDLAND
APPROXIMATE VIEW EXTENT
NEWMAN
W A

Service Layer Credits:

520000 540000 560000 580000 600000

LEGEND

- Main Roads WA Road Network
- Existing and Proposed Groundwater Bores
- Water Information Reporting Bores
- Railway Lines

Manuwarra Red Dog Highway Stage 4

- Coolawanyah Alignment Section
- Hamersley Alignment Section
- Tom Price Alignment Section

Groundwater Source/Aquifer

- Hamersley - Fortescue
- Hamersley - Fractured Rock
- Hamersley - Millstream
- Wittenoom - Wittenoom

Public Drinking Water Source Areas

- Priority 1
- Priority 2

Existing Bores with Historical Abstraction Rates (L/s)

1
2.5
5
7.5
10

9.39 m bgl
Static Water Level

0 10,000 20,000
1:400,000 METRES

NOTE:
1. COORDINATE SYSTEM: GDA 1994 MGA ZONE 50

REFERENCES:
BASED ON INFORMATION PROVIDED BY AND WITH THE PERMISSION OF THE WESTERN AUSTRALIAN LAND INFORMATION AUTHORITY TRADING AS LANDGATE (2018)

INSET BASE DATA SOURCED FROM STREET PRO DATA 2009.

AERIAL IMAGERY SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

CLIENT
MAIN ROADS WESTERN AUSTRALIA

PROJECT
MANUWARRA RED DOG HIGHWAY HYDROLOGICAL RISK ASSESSMENT

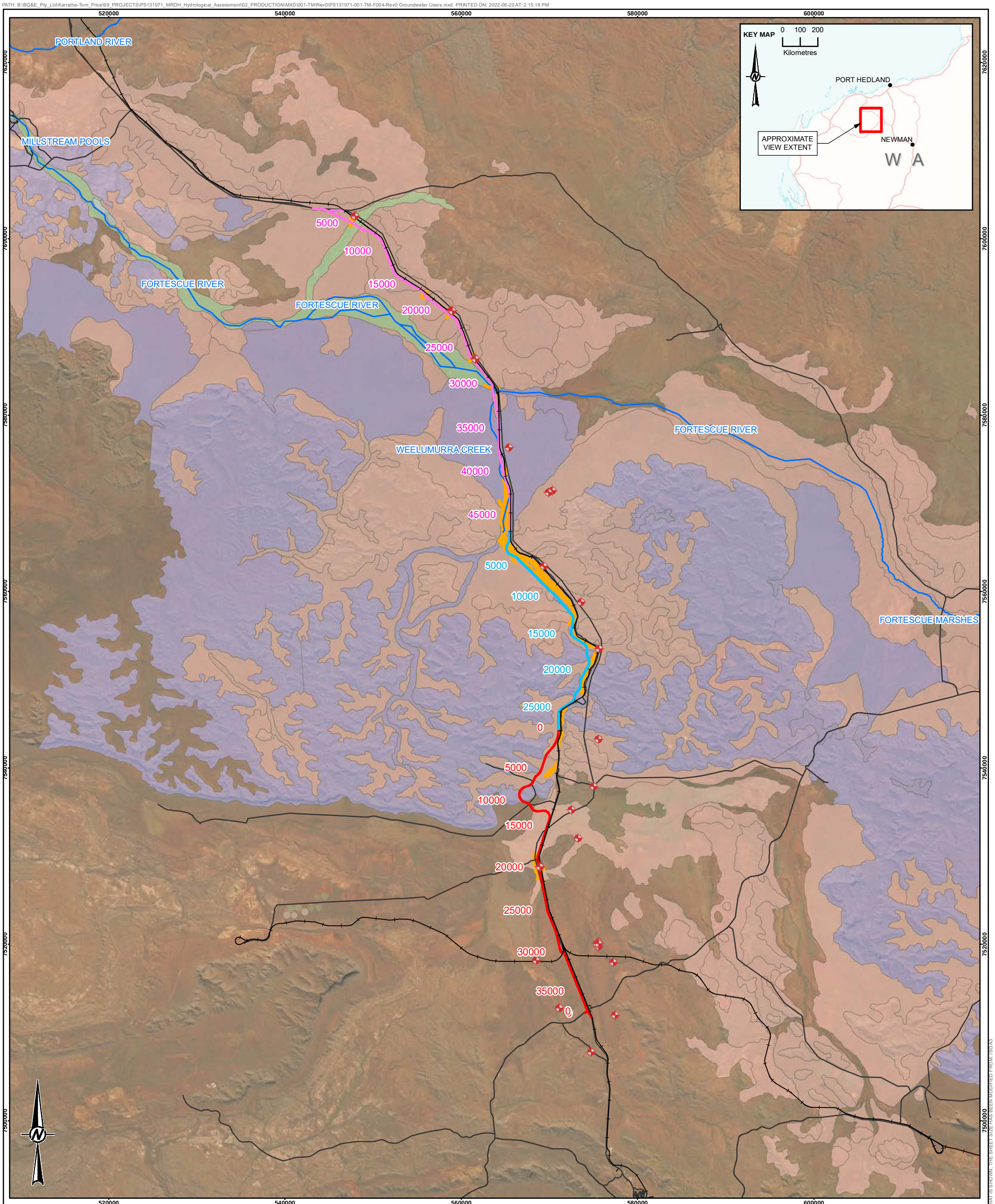
TITLE
HYDROGEOLOGY AND GROUNDWATER USERS

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-06-20
DESIGNED	HT
PREPARED	HT
REVIEWED	KM
APPROVED	KM

PROJECT NO.	CONTROL	REV.	FIGURE
PS131971	001	0	3

PATH: B:\BG&E_Pty_Ltd\Karratha-Tom_Price\99_PROJECTS\PS131971_MRDH_Hydrological_Assessment\02_PRODUCTION\MXD\001-TM\Rev0\PS131971-001-TM-F004-Rev0 Groundwater Users.mxd PRINTED ON: 2022-06-20 AT: 2:15:18 PM



LEGEND

- Main Roads WA Road Network
- Railway Lines
- Existing and Proposed Groundwater Bores

Manuwarra Red Dog Highway Stage 4

- Coolawanyah Alignment Section
- Hamersley Alignment Section
- Tom Price Alignment Section

MRWA EPBC Referral Preliminary Documentation Provided Information

- Eucalyptus and Melaleuca Vegetation along Drainage Lines

Bureau of Meteorology (BOM) Groundwater Dependent Ecosystem Atlas

Aquatic

- High potential GDE - from national assessment

Terrestrial

- Known GDE - from regional studies
- High potential GDE - from national assessment
- Moderate potential GDE - from national assessment
- Low potential GDE - from national assessment

0 10,000 20,000

1:400,000 METRES

NOTE:
1. COORDINATE SYSTEM: GDA 1994 MGA ZONE 50

REFERENCES:
BASED ON INFORMATION PROVIDED BY AND WITH THE PERMISSION OF THE WESTERN AUSTRALIAN LAND INFORMATION AUTHORITY TRADING AS LANDGATE (2018)

INSET BASE DATA SOURCED FROM STREET PRO DATA 2009.

AERIAL IMAGERY SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

CLIENT
MAIN ROADS WESTERN AUSTRALIA

PROJECT
MANUWARRA RED DOG HIGHWAY HYDROLOGICAL RISK ASSESSMENT

TITLE
GROUNDWATER DEPENDENT ECOSYSTEMS

CONSULTANT
WSP GOLDER

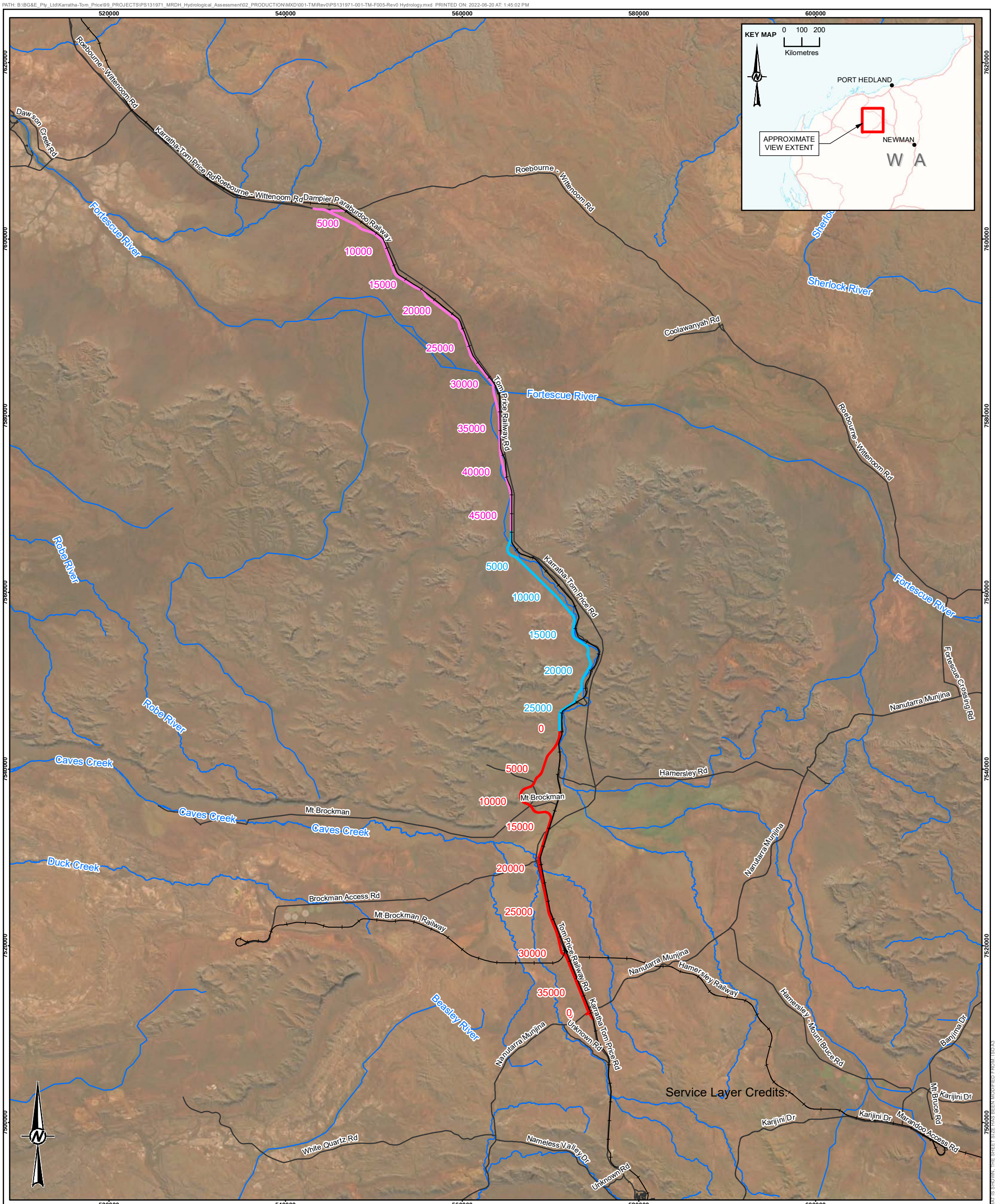
YYYY-MM-DD	2022-06-20
DESIGNED	HT
PREPARED	HT
REVIEWED	KM
APPROVED	KM

PROJECT NO.	CONTROL	REV.	FIGURE
PS131971	001	0	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3

0 25mm

PATH: B:\BG&E_Pty_Ltd\Karratha-Tom_Price\99_PROJECTS\PS131971_MRDH_Hydrological_Assessment\02_PRODUCTION\MXD\001-TM\Rev0\PS131971-001-TM-F005-Rev0 Hydrology.mxd PRINTED ON: 2022-06-20 AT: 1:45:02 PM



LEGEND

- Main Roads WA Road Network
- Railway Lines

Manuwarra Red Dog Highway Stage 4

- Coolawanyah Alignment Section
- Hamersley Alignment Section
- Tom Price Alignment Section
- Surface Water

0 10,000 20,000

1:400,000 METRES

NOTE:
1. COORDINATE SYSTEM: GDA 1994 MGA ZONE 50

REFERENCES:
BASED ON INFORMATION PROVIDED BY AND WITH THE PERMISSION OF THE WESTERN AUSTRALIAN LAND INFORMATION AUTHORITY TRADING AS LANDGATE (2018)

INSET BASE DATA SOURCED FROM STREET PRO DATA 2009.

AERIAL IMAGERY SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

CLIENT
MAIN ROADS WESTERN AUSTRALIA

PROJECT
MANUWARRA RED DOG HIGHWAY HYDROLOGICAL RISK ASSESSMENT

TITLE
HYDROLOGY

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-06-20
DESIGNED	HT
PREPARED	HT
REVIEWED	KM
APPROVED	KM

PROJECT NO.	CONTROL	REV.	FIGURE
PS131971	001	0	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3

0 25mm

ATTACHMENT A

DAWE Comments on MRDH Preliminary Documentation

Section 2.3.3 Groundwater

A. The Department notes that as a part of construction activities, 0.148 – 0.412 ML of water is proposed to be extracted from new or existing bores over a period of up to three years in a manner which minimises drawdown and potential impacts on water-dependent ecosystems. Please provide the following additional information:

i. the location of existing and proposed bores, as well as predicted extraction volumes and rates at each bore per annum;

ii. an assessment of the impacts of extracting water from new bores that the Department notes Main Roads WA are seeking additional licences for, and

iii. site-specific information to justify how drawdown will be minimised.

B. The draft Preliminary Documentation states that significant groundwater is associated with the alluvium and colluvium of low-lying areas of the coastal plain, Fortescue River valley and the upper reaches of Weelumurra Creek to the south of Hamersley Station. Depending on the location of abstraction, drawdown has the potential to impact groundwater-dependent terrestrial vegetation and river pools (indicating groundwater discharge areas) known to occur in the area. Please provide the following additional information:

i. the Department considers that the depth to the water table should be confirmed at the site, as the water table has been recorded approximately 5-15 metres (m) below ground level within the Millstream Water Reserve1. The groundwater dependence of Eucalyptus and Melaleuca species identified along tributaries should be verified, as this may be habitat for the Pilbara Leaf Nosed Bat (Rhinonicteris aurantia), Ghost Bat (Macroderma gigas) and Grey Falcon (Falco hypoleucos). (The IESC's Information Guidelines Explanatory Note on assessing groundwater-dependent ecosystems (GDEs)2 provides information on techniques for identifying and characterising GDEs.)

Section 2.3.4 Surface water

A. A number of waterway crossings will be required for the construction of the road, including crossings for Fortescue River, Weelumurra Creek and a number of smaller creeks; however, the location, type and number of crossings has not been provided. The Department notes from satellite imagery that the existing railway line adjacent to the proposed action includes at least 10 waterway crossings. The proponent stated that the design and construction method for any bridges that may be required cannot be confirmed at this stage. Without this information, it is difficult to provide specific advice regarding surface water impacts due to the construction of the crossings. The following assessment should be undertaken based on available information:

i. the interaction between the proposed road crossings with the existing railway crossings as this could have a cumulative impact on surface water (e.g., for general flow behaviour and flood events);

ii. the changing rainfall patterns (i.e., duration, frequency, and intensity) when finalising the design of the crossings to ensure that the crossings are not only sufficient to withstand extreme events, but also do not impact flow behaviour and water-dependent ecosystems in the area under these conditions.

iii. mitigation strategies to avoid and minimise surface water impacts including erosion and contamination during the construction of the proposal. A monitoring regime for water quality should also be developed, which includes baseline monitoring prior to construction, and regular monitoring during and at completion of construction. Monitoring points should be considered in the following locations:

   a) upstream and downstream of the crossing at the Fortescue River;

   b) immediately upstream of the confluence of Weelumurra Creek with Fortescue River and upstream of the proposal in Weelumurra Creek (or as far upstream as is possible given the ephemeral nature of the creek); and Caves Creek and/or its tributaries (it is unclear if the project crosses Caves Creek, but it may cross tributaries).

ATTACHMENT B

Important Information

The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

This Report is provided for use solely by Golder's Client and persons acting on the Client's behalf, such as its professional advisers. Golder is responsible only to its Client for this Report. Golder has no responsibility to any other person who relies or makes decisions based upon this Report or who makes any other use of this Report. Golder accepts no responsibility for any loss or damage suffered by any person other than its Client as a result of any reliance upon any part of this Report, decisions made based upon this Report or any other use of it.

This Report has been prepared in the context of the circumstances and purposes referred to in, or derived from, the Contract and Golder accepts no responsibility for use of the Report, in whole or in part, in any other context or circumstance or for any other purpose.

The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

By date, or revision, the Report supersedes any prior report or other document issued by Golder dealing with any matter that is addressed in the Report.

Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Golder for clarification

Appendix 6 Habitat Quality Assessment (Biota, 2021b)

Biota Environmental Sciences

Biota (n): The living creatures of an area; the flora and fauna together

29 July 2021

Laura Zimmerman
Senior Environment Officer
Office of Major Transport Infrastructure Delivery
Main Roads WA
(via email)

Dear Laura

Manuwarra – Red Dog Highway Stage 4 MNES Fauna Habitat Quality Assessment

Further to our recent discussions, please find following our assessment of fauna habitat quality for species listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and thereby Matters of National Environmental Significance (MNES), as relevant to the above Main Roads WA project.

The six species are all either confirmed from the project development envelope or have some potential to occur, based on the habitats present and previous records from the locality[1].

Criteria Used

The assessment considered the three components that contribute to habitat quality in the framework identified under EPBC Act guidance[2]. These comprise:

1. Site Condition
   What is the structure and condition of the vegetation on the site?
   What is the diversity of relevant habitat species present?
   What relevant habitat features are on the site?
2. Site Context
   What is the connectivity with other suitable/known habitat or remnants?
   What is the importance of the site in relation to the overall species population?
   What threats occur on or near site?
3. Species Stocking Rate
   What is the presence of the species on the site?
   What is the density of species known to utilise the site?
   What is the role of the site population in regards to the overall species population?

Approach to Scoring

As the relevant EPBC Act guidance[2] indicates habitat quality should be scored out of 10, we have assigned maximum values of 3 to each of the first two components above, and 4 to the actual presence of the species in the development envelope (as the most important consideration). Our scoring also considered the relative weighting of each of the three components as relevant to the ecological requirements and distributions of the species[2].

For example, species with high specificity to habitats that are rare in the landscape, such as Ghost Bat (*Macroderma gigas*) roost sites, the presence of suitable habitat was scored at the maximum for that component. For species associated with habitats that are more broadly distributed, such as the Grey Falcon (*Falco hypoleucos*), lower scores were assigned to site condition and context. The following table presents the scoring for the six MNES species relevant to the development envelope.

Species	Site condition (scored out of 3)	Site context (scored out of 3)	Stocking rate (scored out of 4)	Overall habitat quality score (totalled out of 10[2])
Northern Quoll	Denning habitat present: HS (8.4 ha Excellent condition habitat)[1]. Foraging habitat present: HS, RHS, RG, MDE and MDM (1,977.6 ha Excellent condition habitat in total)[1].	Recorded at 2 other locations within 4.1 km of the survey area[1]. Widely distributed across the Hamersley Range in similar rocky habitats[3–6]. Foraging habitat for the species well-connected to similar units extending outside of the survey area[1].	Likely to Occur – While not recorded, the habitats present would be core habitat for the species[3–6]. Density cannot be estimated, but likely to be typical for the species in the bioregion.	8 (Denning) 7 (Foraging) (Excellent condition denning and foraging habitat present, species not confirmed but likely part of population in the locality)
	Score: 3 (denning & foraging)	Score: 3 (denning)/2 (foraging)	Score: 2 (denning & foraging)	
Ghost Bat	Roost sites present: HS (8.4 ha Excellent condition habitat)[1]. Foraging habitat present: HS, RHS, RG, MDE and MDM (1,977.6 ha Excellent condition habitat in total)[1].	Recorded at 3 other locations within 2.1 km of the survey area[1]. Widely distributed across the Hamersley Range, but maternity roost sites limited in the landscape to suitable caves with particular microclimates[7–10].	*Confirmed* – Three caves within RHS habitat in the Hamersley Range section; one a potential maternity roost. Foraging habitat nearby to roost sites includes HS, RHS and MDE (maximum likelihood within ~2 km radius of roosts[7–10]). Density cannot be estimated but likely to be typical for the species in the bioregion.	10 (roosting) 9 (foraging) (Confirmed roost sites and possible maternity roost, with Excellent condition foraging habitat in proximity to known roosts)
	Score: 3 (roosting & foraging)	Score: 3 (roosting)/2 (foraging)	Score: 4 (roosting & foraging)	
Pilbara Leaf-nosed Bat	Potential roost sites: HS (8.4 ha Excellent condition habitat)[1]. Foraging habitat present: HS, RHS, RG, MDE and MDM (1,977.6 ha Excellent condition habitat in total)[1].	Widely distributed across the Hamersley Range, but roost sites limited in the landscape to suitable caves with particular microclimates[11–15]. Foraging habitat for the species well-connected to similar units extending outside of the survey area[1].	*Confirmed* – Two call records from MDE habitat, where the species would forage[1]. No known roosts within the survey area, but the species can forage >20 km from roost sites on a nightly basis[16,17]. Density cannot be estimated, but relatively few calls recorded compared to other studies[18–20].	7 (roosting) 8 (foraging) (No known roost sites, and Excellent condition foraging habitat present, but likely the individuals recorded are from a roost elsewhere and extensive suitable foraging habitat in ~20 km radius)
	Score: 3 (roosting & foraging)	Score: 2 (roosting & foraging)	Score: 2 (roosting)/3 (foraging)	
Pilbara Olive Python	Foraging habitat present: HS, RHS, RG, MDE and MDM (1,977.6 ha Excellent condition habitat in total)[1].	Recorded within 2.1 km of the survey area[1]. Widely but patchily distributed across the Hamersley Range and in other parts of the Pilbara bioregion[21–24].	Likely to Occur – While not recorded, the habitats present would be core habitat for the species[21–24]. Density cannot be estimated, but likely to be typical for the species in the bioregion.	7 (Excellent condition foraging habitat present, species not confirmed but likely part of population in the locality)
	Score: 3	Score: 2	Score: 2	
Night Parrot	May occur in GPCC (203.4 ha in Poor-Good condition)[1].	May occur, but nearest confirmed recent records are from the far eastern Pilbara or outside the bioregion[25–28].	Not recorded, habitat marginal and density cannot be estimated. If present, likely to be at very low density.	3 (No evidence the species occurs in the survey area or in close proximity and habitat in Poor-Good condition)
	Score: 1	Score: 1	Score: 1	
Grey Falcon	Foraging habitat present: CP, MDE and MDM (3,031.7 ha Excellent condition habitat in total)[1].	Widely but sparsely distributed across the bioregion, in a wide range of habitat types[29,30].	*Confirmed* – Recorded from CP habitat within the survey area[1]. Density cannot be estimated but likely to be typical for the species in the bioregion, with relatively few individuals.	6 (Confirmed record and Excellent condition foraging habitat present, but species occurs widely in similar habitats which are extensive in the locality)
	Score: 2	Score: 2	Score: 2	

Habitats codes: HS - Mesas, caves, cliffs and free faces; RHS - Rocky hills and slopes; MDE - Mulga and Drainage; MDM – Melaleuca forest/major drainage lines; RG – Rocky gullies; GPCC - Grassland plains with cracking clay and CP – Floodplain[1].