

Appendix A

Conservation Categories

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Appendix A – Conservation Categories

1.1 Western Australia

Plants and animals that are considered threatened and need to be specially protected because they are under identifiable threat of extinction are listed under the *Wildlife Conservation Act* (WC Act). These categories are defined in Table 1. Any species identified as Threatened under the WC Act is assigned a threat category using the International Union for Conservation of Nature (IUCN) Red List categories and criteria.

Species that have not yet been adequately surveyed to warrant being listed under Schedule 1 or 2 are added to the Priority Flora or Fauna Lists under Priority 1, 2 or 3. Species that are adequately known, are rare but not threatened, or meet criteria for Near Threatened, or that have been recently removed from the threatened list for other than taxonomic reasons, are placed in Priority 4 and require regular monitoring. Conservation Dependent species and ecological communities are placed in Priority 5. Categories and definitions of Priority Flora and Fauna species are provided in Table 2.

Table 1 Conservation codes for WA flora and fauna listed under the *Wildlife Conservation Act 1950*

Conservation Code	Category
T	<p>Threatened species – specially protected under the WC Act, listed under Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).</p> <p>Species* which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such. Threatened Fauna and Flora are further recognised by the Department according to their level of threat using IUCN Red List criteria.</p> <p>Critically Endangered: considered to be facing an extremely high risk of extinction in the wild. Endangered: considered to be facing a very high risk of extinction in the wild. Vulnerable: considered to be facing a high risk of extinction in the wild.</p>
X	<p>Presumed extinct species – specially protected under the WC Act, listed under Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora (which may also be referred to as Declared Rare Flora).</p> <p>Species which have been adequately searched for and there is no reasonable doubt that the last individual has died, and have been gazetted as such.</p>
IA	<p>Migratory birds protected under international agreement – specially protected under the WC Act, listed under Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice. Birds that are subject to an agreement between governments of Australia and Japan, China and The Republic of Korea relating to the protection of migratory birds and birds in danger of extinction.</p>
S	<p>Other specially protected fauna – specially protected under the WC Act, listed under Schedule 4 of the Wildlife Conservation Policy (Specially Protected Fauna) Notice.</p>

Table 2 Conservation codes for WA flora and fauna

P1	<p>Priority One – Poorly Known Species</p> <p>Species that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, Westrail and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.</p>
P2	<p>Priority Two – Poorly Known Species</p> <p>Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.</p>
P3	<p>Priority Three – Poorly Known Species</p> <p>Species that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.</p>
P4	<p>Priority Four – Rare, Near Threatened and other species in need of monitoring</p> <p>(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.</p> <p>(b) Near Threatened. Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.</p> <p>(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>
P5	<p>Priority Five: Conservation Dependent species</p> <p>Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.</p>

1.2 Commonwealth

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is Australia's central piece of environmental legislation which provides for the listing of nationally Threatened native species and ecological communities, native migratory species and marine species.

Threatened fauna and flora may be listed in any one of seven categories as defined in Section 179 of the EPBC Act. These categories are defined in Table 3.

Ecological communities that become threatened and are at risk of extinction are protected under the EPBC Act and are categorised as Critically Endangered, Endangered, or Vulnerable. These are described in Table 4.

Table 3 Categories of Species Listed under Schedule 179 of the *Environment, Protection and Biodiversity Conservation Act 1999* [Commonwealth]

Conservation	Code Category
Ex	Extinct Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
ExW	Extinct in the Wild Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	Critically Endangered Taxa which at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	Endangered Taxa which is not critically endangered and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	Vulnerable Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	Conservation Dependent Taxa which at a particular time if, at that time: <ul style="list-style-type: none"> a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered b) the following subparagraphs are satisfied: <ul style="list-style-type: none"> i. the species is a species of fish ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory iv. cessation of the plan of management would adversely affect the conservation status of the species.

Table 4 Categories of Threatened Ecological Communities listed under the *Environment Protection and Biodiversity Conservation Act 1999*

Conservation Code	Category
CE	Critically Endangered If, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).
E	Endangered If, at that time, it is not critically endangered and is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).
V	Vulnerable If, at that time, it is not critically endangered or endangered, and is facing a high risk of extinction in the wild in the medium-term future (indicative timeframe being the next 50 years).

Appendix B

Summary of Flora Recorded in the SKA1- Survey and SKA1-Low project areas

Appendix B Summary of Flora Recorded in the SKA1-Survey and SKA1-Low project areas

APPENDIX B: Summary of Flora Recorded in the SKA1-Survey and SKA1-Low project area, 2014

Family	Taxon * denotes weed species	SKA1-Low	SKA1-Survey
Total Number of Families		29	36
Total Number of Genera		58	71
Total Number of Species		132	157
Aizoaceae			
	<i>Sauropus</i> sp. Woolgorong (M. Officer s.n. 10/8/94)	x	
	<i>Trianthema oxycalyptrum</i> var. <i>oxycalyptrum</i>		x
	<i>Trianthema pilosa</i>	x	x
Amaranthaceae			
	<i>Ptilotus aervoides</i>	x	
	<i>Ptilotus beardii</i> (P3)	x	
	<i>Ptilotus drummondii</i>	x	x
	<i>Ptilotus gaudichaudii</i>		x
	<i>Ptilotus obovatus</i>	x	x
	<i>Ptilotus roei</i>		x
	<i>Ptilotus schwartzii</i>	x	
	<i>Ptilotus schwartzii</i> var. <i>schwartzii</i>		x
	<i>Ptilotus stirlingii</i>	x	x
	<i>Ptilotus</i> sp.	x	x
Apocynaceae			
	<i>Marsdenia australis</i>	x	x
Asteraceae			
	<i>Brachyscome pusilla</i>		x
	<i>Calocephalus knappii</i>	x	x
	<i>Calotis multicaulis</i>		x
	<i>Centipeda minima</i>		x
	<i>Cephalipterum drummondii</i>	x	x
	<i>Erymophyllum ramosum</i> subsp. <i>involucratum</i>		x
	<i>Gnephosis eriocephala</i>	x	x
	<i>Gnephosis tenuissima</i>	x	x
	<i>Helipterum craspedioides</i>	x	
	<i>Myriocephalus rudallii</i>	x	
	<i>Pluchea dunlopii</i>		x
	<i>Podolepis</i> sp.		x
	<i>Pogonolepis stricta</i>	x	x
	<i>Rhodanthe chlorocephala</i> subsp. <i>splendida</i>	x	x
	<i>Rhodanthe maryonii</i>		x
	<i>Sonchus oleraceus</i> *	x	x
Boraginaceae			
	<i>Heliotropium curassavicum</i>		x
	<i>Trichodesma zeylanicum</i>		x
Brassicaceae			
	<i>Brassica tournefortii</i> *		x
	<i>Menkea villosula</i>		x
Campanulaceae			
	<i>Lobelia rhombifolia</i>		x
	<i>Wahlenbergia tumidifructa</i>	x	x
Caryophyllaceae			
	<i>Spergula pentandra</i> *	x	
Casuarinaceae			
	<i>Allocasuarina campestris</i>	x	x

APPENDIX B: Summary of Flora Recorded in the SKA1-Survey and SKA1-Low project area, 2014

Family	Taxon * denotes weed species	SKA1-Low	SKA1-Survey
Chenopodiaceae			
	<i>Atriplex amnicola</i>		X
	<i>Atriplex ?amnicola</i>	X	X
	<i>Atriplex holocarpa</i>		X
	<i>Atriplex</i> sp.		X
	<i>Dissocarpus paradoxus</i>	X	
	<i>Dysphania glomulifera</i> subsp. <i>eremaea</i>		X
	<i>Enchylaena tomentosa</i>	X	X
	<i>?Enchylaena tomentosa</i>	X	
	<i>Maireana brevifolia</i>	X	
	<i>Maireana convexa</i>	X	
	<i>Maireana planifolia</i>	X	X
	<i>Maireana</i> sp.		X
	<i>Rhagodia eremaea</i>	X	X
	<i>Sclerolaena cuneata</i>	X	X
	<i>Sclerolaena densiflora</i>	X	X
	<i>Sclerolaena gardneri</i>	X	X
	<i>Sclerolaena recurvicaupsis</i>	X	X
	<i>Tecticornia doleiformis</i>		X
	<i>Tecticornia halocnemoides</i>	X	
	<i>Tecticornia indica</i>	X	
	<i>Tecticornia ?indica</i>	X	X
Convolvulaceae			
	<i>Cressa australis</i>		X
	<i>Cuscuta planiflora</i> *	X	
Cyperaceae			
	<i>Cyperus gymnocaulos</i>		X
Euphorbiaceae			
	<i>Euphorbia boophthona</i>	X	X
	<i>Euphorbia drummondii</i>	X	
Fabaceae			
	<i>Acacia aneura</i>	X	X
	<i>Acacia aptaneura</i>		X
	<i>Acacia assimilis</i> subsp. <i>assimilis</i>	X	
	<i>Acacia burkittii</i>	X	X
	<i>Acacia caesaneura</i>	X	
	<i>Acacia caesaneura</i> (narrow phyllode variant)	X	X
	<i>Acacia craspedocarpa</i>	X	X
	<i>Acacia craspedocarpa</i> (hybrid)	X	X
	<i>Acacia cuthbertsonii</i> subsp. <i>cuthbertsonii</i>	X	X
	<i>Acacia ?cuthbertsonii</i>	X	X
	<i>Acacia eremaea</i>		X
	<i>Acacia fuscaneura</i>	X	X
	<i>Acacia grasbyi</i>	X	X
	<i>Acacia incurvaneura</i>	X	X
	<i>Acacia kempeana</i>	X	X
	<i>Acacia aff. murrayana</i>	X	
	<i>Acacia oswaldii</i>	X	X
	<i>Acacia palustris</i>	X	X
	<i>Acacia pruinocarpa</i>	X	X
	<i>Acacia pteraneura</i>	X	X
	<i>Acacia ?pyrifolia</i>		X
	<i>Acacia quadrimarginea</i>	X	
	<i>Acacia ramulosa</i>		X
	<i>Acacia ramulosa</i> var. <i>linophylla</i>	X	X
	<i>Acacia rhodophloia</i>	X	
	<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i>	X	X
	<i>Acacia sibina</i>	X	X
	<i>Acacia synchronicia</i>	X	X

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Family	Taxon * denotes weed species	SKA1-Low	SKA1-Survey
Fabaceae cont'			
	<i>Acacia tetragonophylla</i>	x	x
	<i>Acacia tysonii</i>		x
	<i>Acacia victoriae</i> subsp. <i>victoriae</i>	x	x
	<i>Acacia</i> sp.		x
	<i>Indigofera</i> sp. <i>Occidentalis</i> (D.J. Edinger 1259)		x
	<i>Mirbelia rhagodioides</i>	x	
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	x	x
	<i>Senna artemisioides</i> subsp. <i>helmsii</i>	x	x
	<i>Senna artemisioides</i> subsp. <i>oligophylla</i>	x	x
	<i>Senna artemisioides</i> subsp. <i>petiolaris</i>	x	x
	<i>Senna artemisioides</i> subsp. <i>x sturtii</i>		x
	<i>Senna glaucifolia</i>		x
	<i>Senna glutinosa</i>		x
	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>		x
	<i>Senna</i> sp. <i>Meekatharra</i> (E. Bailey 1-26)	x	x
	<i>Swainsona affinis</i>		x
Frankeniaceae			
	<i>Frankenia confusa</i> (P3)		x
	<i>Frankenia pauciflora</i>		x
	<i>Frankenia pauciflora</i> var. <i>pauciflora</i>	x	x
	<i>Frankenia setosa</i>		x
Geraniaceae			
	<i>Erodium aureum</i> *	x	x
Goodeniaceae			
	<i>Goodenia berardiana</i>	x	
	<i>Goodenia corynocarpa</i>		x
	? <i>Goodenia macroplecta</i>	x	
	<i>Goodenia mimuloides</i>	x	
	<i>Goodenia tenuiloba</i>		x
	<i>Scaevola spinescens</i>	x	x
Haloragaceae			
	<i>Haloragis trigonocarpa</i>		x
	<i>Hemerocallidaceae</i>		x
	<i>Dianella revoluta</i>		x
Lamiaceae			
	<i>Prostranthera wilkieana</i>		x
	<i>Hemigenia tysonii</i> (P3)	x	
	<i>Spartothamnella teucriflora</i>	x	
Malvaceae			
	<i>Alyogyne pinoniana</i>	x	
	? <i>Androcalva luteiflora</i>	x	x
	<i>Corchorus crozophorifolius</i>	x	x
	<i>Hibiscus sturtii</i>		x
	<i>Sida</i> ? <i>calyxhymenia</i>	x	
	Malvaceae sp.		x
Myoporaceae			
	<i>Eremophila compacta</i>	x	
	<i>Eremophila compacta</i> subsp. <i>compacta</i>	x	
	<i>Eremophila eriocalyx</i>	x	
	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>	x	x
	<i>Eremophila fraseri</i> subsp. <i>parva</i>	x	x
	<i>Eremophila latrobei</i>	x	x
	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>	x	
	<i>Eremophila longifolia</i>		x
	<i>Eremophila mackinlayi</i> subsp. <i>spathulata</i>	x	
	<i>Eremophila macmillaniana</i>		x
	<i>Eremophila maculata</i> subsp. <i>brevifolia</i>		x
	<i>Eremophila</i> ? <i>oldfieldii</i> subsp. <i>oldfieldii</i>		x

APPENDIX B: Summary of Flora Recorded in the SKA1-Survey and SKA1-Low project area, 2014

Family	Taxon * denotes weed species	SKA1-Low	SKA1-Survey
Myoporaceae cont'			
	<i>Eremophila pantonii</i>	x	
	<i>Eremophila pendulina</i>	x	
	<i>Eremophila phyllopoda</i>	x	x
	<i>Eremophila phyllopoda</i> subsp. <i>phyllopoda</i>	x	x
	<i>Eremophila platycalyx</i>	x	x
	<i>Eremophila platycalyx</i> subsp. <i>platycalyx</i>	x	x
	<i>Eremophila pterocarpa</i> subsp. <i>pterocarpa</i>	x	
	<i>Eremophila serrulata</i>	x	x
	<i>Eremophila shonae</i> subsp. <i>shonae</i>	x	
	<i>Eremophila simulans</i> (?P3)	x	x
	<i>Eremophila spathulata</i>		x
	<i>Eremophila spuria</i>	x	
	<i>Eremophila ?youngii</i> subsp. <i>youngii</i>		x
Myrtaceae			
	<i>Chamelaucium pauciflorum</i>	x	
	<i>Eucalyptus camaldulensis</i>		x
	<i>Eucalyptus ?mannensis</i>		x
	<i>Eucalyptus victrix</i>		x
	<i>Eucalyptus</i> sp.		x
	<i>Melaleuca glomerata</i>		x
	<i>Melaleuca stereophloia</i>	x	
	<i>Thryptomene decussata</i>	x	
	<i>Verticordia jamiesonii</i>	x	
Pittosporaceae			
	<i>Pittosporum angustifolium</i>		x
Plantaginaceae			
	<i>Plantago drummondii</i>		x
Poaceae			
	<i>Austrostipa holathera</i> var. <i>holathera</i>		x
	<i>Cymbopogon ambiguus</i>	x	x
	<i>Eragrostis dielsii</i>		x
	<i>Eragrostis eriopoda</i>	x	x
	<i>Eriachne pulchella</i>		x
	<i>Eriachne</i> sp.	x	
	<i>Tripogon loliiformis</i>	x	
Portulacaceae			
	<i>Calandrinia eremaea</i>	x	x
	<i>Calandrinia hortorum</i>		x
	<i>Calandrinia polyandra</i>		x
	<i>Calandrinia polymorpha</i>	x	x
	<i>Portulaca oleracea</i>	x	x
Primulaceae			
	<i>Lysimachia arvensis</i> *		x
	<i>Samolus repens</i> var. <i>floribundus</i>	x	x
Proteaceae			
	<i>Grevillea berryana</i>	x	x
	<i>Grevillea deflexa</i>	x	x
	<i>Grevillea hakeoides</i> subsp. <i>stenophylla</i>	x	
	<i>Grevillea nematophylla</i> subsp. <i>supraplana</i>	x	x
	<i>Grevillea</i> sp.		x
	<i>Hakea lorea</i> subsp. <i>lorea</i>		x
	<i>Hakea preissii</i>	x	x
	<i>Hakea recurva</i> subsp. <i>arida</i>	x	x
Pteridaceae			
	<i>Cheilanthes sieberi</i>		x
Rubiaceae			
	<i>Psyrdrax rigidula</i>	x	x

APPENDIX B: Summary of Flora Recorded in the SKA1-Survey and SKA1-Low project area, 2014

Family	Taxon * denotes weed species	SKA1-Low	SKA1-Survey
Santalaceae			
	<i>Exocarpos aphyllus</i>		x
	<i>Santalum acuminatum</i>		x
	<i>Santalum lanceolatum</i>	x	x
	<i>Santalum spicatum</i>	x	x
Sapindaceae			
	<i>Dodonaea viscosa</i> subsp. <i>spathulata</i>	x	x
	? <i>Dodonaea viscosa</i>	x	
Solanaceae			
	<i>Nicotiana occidentalis</i> subsp. <i>occidentalis</i>	x	x
	<i>Solanum lasiophyllum</i>	x	x
Stylidiaceae			
	<i>Stylidium longibracteatum</i>	x	
Surianaceae			
	<i>Stylobasium australe</i>		x
Thymelaeaceae			
	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>		x
Zygophyllaceae			
	<i>Zygophyllum aurantiacum</i>	x	
	<i>Zygophyllum simile</i>	x	x

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Appendix C

Flora Desktop Results

Appendix C Flora Desktop Results

Appendix C – Desktop Flora Results

Land System to target	Species	Cons	Habitat	TPFL	WA Herb	Vouchered	Likelihood of Occurrence
	<i>Acacia</i> sp. Jack Hills (R. Meissner & Y. Caruso 4)	P1	BIF ranges around Jack Hills Mine	1	1	17	Unlikely
Sherwood, Norie, Challenge, Narryer	<i>Anacampseros</i> sp. Eremaean (F. Hort, J. Hort & J. Shanks 3248)	P1	Erect, single-stemmed tuberous, perennial, herb (with succulent green leaves), to 0.1 m high. Fl. white, Sep. Sand patches inside rocks, brown sandy clay, granite. Depressions in rock outcrops, breakaways, flats.	1		6	May
Mileura, Roderick	<i>Angianthus microcephalus</i>	P2	Decumbent or ascending annual, herb, 0.06-0.1(-0.21) m high. Fl. yellow, Sep to Dec. Sandy or clayey soils. Salt swamps & pans. More records towards coast i.e. Shark Bay		1	12	Likely
Narryer, Challenge	<i>Baeckea</i> sp. Mount Barloweerie (J.Z. Weber 5079)	P1	Low rounded shrub, to 1 m high. Fl. pink, Aug. Brown loam. Breakaway. 400+ km west of Wiluna.	2	5	7	May
Kalli, Waguin	<i>Calytrix verruculosa</i>	P3	Shrub, 0.4-0.75 m high. Fl. pink/white, Aug or Oct. Sandy clay. Recorded in 2006.	2	3	13	Likely
Millrose, Koonmarra	<i>Eremophila muelleriana</i>	P3	Shrub or tree, (0.3-)0.5-2.8(-4) m high. Fl. purple/purple-red/purple-black, Aug to Oct. Granitic soils.		6	12	Likely
	<i>Eremophila simulans</i> subsp. <i>megacalyx</i>	P3	Shrub, 0.9-2 m high. Fl. violet, Aug to Sep.		8	11	Unlikely
Beringarra, Mileura, Roderick	<i>Frankenia confusa</i>	P2	Low, diffuse shrub, to 0.75 m high, to 0.75 wide. Fl. pink, Sep. Wet pale brown sand, brown clay, grey soil. Banks of rivers & waterholes, river floodplains.	1	3	21	Likely
Beringarra, Mileura, Roderick	<i>Goodenia berringbinensis</i>	P4	Ascending annual, herb, 0.1-0.3 m high. Fl. yellow, Oct. Red sandy loam. Along watercourses. Recorded in 2006.		1	24	Likely
Ero, Beringarra	<i>Goodenia neogoodenia</i>	P4	Prostrate annual, herb, flowers minute. Fl. brown/brown & yellow, Aug to Sep. Red loam or clay. Near water.		1	16	Likely
Koonmarra	<i>Gunniopsis divisa</i>	P3	Annual, herb, 0.05-0.1 m high. Fl. white, Aug. Loam, quartz. Roadsides.	2	3	15	Likely

Land System to target	Species	Cons	Habitat	TPFL	WA Herb	Vouchered	Likelihood of Occurrence
	<i>Hemigenia tysonii</i>	P3	Upright shrub, to 0.5 m high. Fl. purple-blue-pink/white, May or Jul to Dec. Red sand, sandy clay, lateritic sand. Flats, sand dunes, hills.		6	18	May
	<i>Hibiscus</i> sp. Nookawarra Station (S.J.J. Davies s.n. 1/3/1960)	P1	Recorded in 1965 and 1971.		2	3	May
Belele, Yandil, Yanganoo	<i>Maireana murrayana</i>	P3	Erect shrub, ca 0.3 m high. Red clayey sand, dissected sandstone. Collected 1971 and 1908.		2	5	Unlikely
Challenge, Koonmarra, Sherwood	<i>Maireana prothecochoaeta</i>	P3	Open, densely-leaved shrub, 0.3-0.6 m high. Laterite. Hills, salty places. Undated record.		1	18	May
Challenge, Koonmarra, Sherwood	<i>Micromyrtus placoides</i>	P3	Shrub, 0.5-2.3 m high, sometimes widely spreading with several stems or branches from the base. Red-orange sandy clay, orange-yellow sandy clay to clayey loam, coarse gravel, banded ironstone, laterite, quartz, basalt. Gently undulating plains, dry creek beds, hillcrests, ridges.	2	8	24	Likely
	<i>Neotysonia phyllostegia</i>	P1	Annual, herb. Fl. yellow, Sep or Nov. Record from 1908.		1	2	May
Challenge, Sherwood, Norie	<i>Philotheca citrina</i>	P1	Erect, much-branched shrub, 0.6-1.3 m high. Fl. green-yellow, May to Aug. Clay. Granite breakaways.	4	4	17	May
	<i>Prostanthera petrophila</i>	P3	Spreading shrub, 0.6-1.5 m high. Fl. white, Aug. Lateritic soils. Found only on Mount Barloweerie.	1	13		Unlikely
Kalli, Waguin	<i>Prostanthera tysoniana</i>	P3	Erect shrub, 0.2-0.5 m high. Fl. white-cream, Sep. Red sandy soils. Recorded in 1995 and 1898.		3	14	May
Mileura, Roderick	<i>Ptilotus beardii</i>	P3	Compact, perennial shrub, 0.15-0.5 m high, leaves linear, 2-10 mm long, 0.5-3 mm wide; spike pink, hemispherical, 15-30 mm long, 20-40 mm wide, 5-8 -flowered; tepals 14-17 mm long; 2 fertile stamens, staminodes 3; ovary glabrous; style slightly curved, 9.9-11.1 mm long, eccentrically fixed to ovary. Fl. pink-red, Aug to Oct. Clayey soils. Saline flats, low breakaways.		4	32	Likely
	<i>Ptilotus crosslandii</i>	P3	Prostrate herb. Fl. white, Sep to Oct. Sandy soils. Colluvial plains.		1	13	Unlikely

Land System to target	Species	Cons	Habitat	TPFL	WA Herb	Vouchered	Likelihood of Occurrence
			Recorded in 1884.				
	<i>Solanum pycnotrichum</i>	P2	Recorded on Mount Barloweerie in 2008.		1	4	Unlikely
	<i>Stackhousia clementii</i>	P3	Dense broom-like perennial, herb, to 0.45 m high. Fl. green/yellow/brown. Skeletal soils. Sandstone hills. Recorded in 1985.		1	8	May
Narryer	<i>Verticordia jamiesonii</i>	P3	Shrub, 0.2-0.6 m high. Fl. white/pink, Sep to Oct. Sandy clay soils. Lateritic breakaways.		5	32	Likely
	<i>Verticordia serrata</i> var. <i>linearis</i>	P3	Shrub, to 1 m high, differs from other varieties in the linear acuminate leaves 6-20 mm long; cilia to 1.2 mm long. Fl. other, Sep to Oct. White sand, gravel. Open woodland. More common north east of Perth. Only one record in Murchison region.		1	21	Unlikely

Appendix D

Erosion Observations

Appendix D Erosion Observations

Appendix F – Erosion Observations

There were nine erosion observations made during the field survey. Details of these including photographs are provided below.

Table 1 **Locations of erosion observations**

Site	Observation	Latitude	Longitude
LE E1	Drainage feature and erosion	-26.850138	116.88711
LE E2	Extreme terracette erosion	-26.8444	116.90317
LS E1	Low erosion	-27.072668	116.719547
LS E2	Low rill erosion	-27.064941	116.696676
LS E3	Moderate Rill Erosion	-27.073054	116.701007
LS E4	Rill and terracette erosion	-26.882784	116.643732
LS E5	Stream bank or terracette erosion	-27.068009	116.698421
SE E1	Moderate Terracette or streambank erosion	-26.703524	117.011487
SN E1	Erosion	-26.704709	116.547925



Plate 1 **SKA1-Low east E1**



Plate 2 SKA1-Low east E2



Plate 3 SKA1-Low south E1



Plate 4 SKA1-Low south E2



Plate 5 SKA1-Low south E3



Plate 6 SKA1-Low south E4



Plate 7 **SKA-Low south E5**



Plate 8 SKA1-Survey east E1



Plate 9 SKA1-Survey north E1

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Appendix E

Summary of Fauna Recorded in the SKA1- Survey and SKA1-Low Project Areas

Appendix E Summary of Fauna Recorded in the SKA1-Survey and SKA1-Low Project Areas

Appendix D: Summary of fauna species recorded in the SKA1-Survey and SKA1-Low project areas				Site																									
Genus	Species	Subspecies	Vernacular	Status	Incidentals	FSE01	FSS03	FLS04	FLS05	FLS06	FLS07	FSE05	FSE06	FSE01	FSS02	FSS02	FSS01	FLS03	FLS01	FLS02	SLE02	SLS05	SES06	SES01					
Charadrius	melanops		Black-fronted Dotterel		+																								
Vanellus	miles		Masked Lapwing							+																			
Vanellus	tricolor		Banded Lapwing																	+									
Ardea	pacifica		White-necked Heron		+																								
Threskiornis	spinicollis		Straw-necked Ibis							+																			
Phaps	chalcoptera		Common Bronzewing				+													+									
Ocyphaps	lophotes		Crested Pigeon				+											+											
Circus	assimilis		Spotted Harrier		+																								
Aquila	audax		Wedge-tailed Eagle													+													
Hamirostra	melanosternon		Black-breasted Buzzard		+																								
Haliastur	sphenurus		Whistling Kite		+																								
Falco	berigora		Brown Falcon							+					+														
Falco	cenchroides		Australian Kestrel												+														
Falco	longipennis		Australian Hobby		+																								
Acanthiza	apicalis		Broad-tailed Thornbill (Inland Thornbill)							+																			
Acanthiza	uropygialis		Chestnut-rumped Thornbill				+		+		+	+																	
Artamus	cinereus		Black-faced Woodswallow			+					+				+		+												
Artamus	minor		Little Woodswallow						+						+														
Artamus	personatus		Masked Woodswallow					+																					
Lalage	tricolor		White-winged Triller						+		+																		
Psophodes	occidentalis		Western Wedgebill (Chiming Wedgebill)																	+	+								
Corvus	bennetti		Little Crow							+																			
Corvus	orru		Torresian Crow						+		+						+	+	+										
Cracticus	nigrogularis		Pied Butcherbird		+																								
Cracticus	tibicen		Australian Magpie							+																			
Cracticus	torquatus		Grey Butcherbird		+																								
Grallina	cyanoleuca		Magpie-lark		+																								
Rhipidura	leucophrys		Willie Wagtail												+	+				+									
Hirundo	ariel		Fairy Martin													+													
Hirundo	neoxena		Welcome Swallow		+																								
Malurus	lamberti		Variegated Fairy-wren																+										
Malurus	splendens		Splendid Fairy-wren																		+								
Epthianura	albifrons		White-fronted Chat																		+								
Manorina	flavigula		Yellow-throated Miner							+						+													
Lichmera	indistincta		Brown Honeyeater																	+									
Lichenostomus	penicillatus		White-plumed Honeyeater									+				+													
Lichenostomus	plumulus		Grey-fronted Honeyeater																	+									
Acanthagenys	rufogularis		Spiny-cheeked Honeyeater														+			+									
Epthianura	tricolor		Crimson Chat					+																					
Lichenostomus	virescens		Singing Honeyeater					+			+							+											
Anthus	australis		Australian Pipit				+										+												
Daphoenositta	chrysoptera		Varied Sittella												+														
Oreoica	gutturalis		Crested Bellbird	Southern Subspecies P4			+		+		+						+	+	+	+									
Colluricincla	harmonica		Grey Shrike-thrush												+			+	+	+									
Pachycephala	rufiventris		Rufous Whistler												+		+		+	+									
Pardalotus	striatus		Striated Pardalote		+														+	+									
Microeca	fascinans		Jacky Winter																		+								
Petroica	goodenovii		Red-capped Robin																		+								
Pomatostomus	superciliosus		White-browed Babbler				+																						
Pomatostomus	temporalis		Grey-crowned Babbler				+	+							+				+	+									
Cacatua	roseicapilla		Galah														+		+										
Cacatua	sanguinea		Little Corella							+																			
Platycercus	varius		Mulga Parrot		+																								
Platycercus	zonarius		Australian Ringneck (Ring-necked Parrot)													+													
Dromaius	novaeollandiae		Emu																+										
Capra	hircus		Goat	Introduced											+			+	+					+					
Bos	taurus		European Cattle	Introduced				+									+		+	+									
Camelus	dromedarius		Dromedary, Camel	Introduced				+																					
Canis	lupus	familiaris	Dog	Introduced	+					+														+					
Felis	catus		Cat	Introduced	+																								
Sminthopsis	crassicaudata		Fat-tailed Dunnart		+										+							+		+					
Macropus	fuliginosus		Western Grey Kangaroo																		+			+					
Macropus	robustus	erubescens	Euro, Biggada			+		+									+	+	+	+				+					
Macropus	rufus		Red Kangaroo, Marlu					+												+				+					
Oryctolagus	cuniculus		Rabbit	Introduced						+																			
Tachyglossus	aculeatus		Echidna		+										+			+						+					
Equus	caballus		Horse	Introduced																+									
Ctenophorus	caudicinctus	mensarum	Ring-tailed Dragon						+		+							+											
Pogona	minor		Pogona minor																										
Ctenophorus	scutulatus		Ctenophorus scutulatus					+							+	+		+											
Gehyra	punctata		Gehyra punctata								+																		
Gehyra	variegata		Gehyra variegata								+																		
Morethia	butleri		Morethia butleri							+																			
Lerista	gascoynensis		Lerista gascoynensis		+																								
Menetia	greyii		Menetia greyii									+			+														
Cryptoblepharus	plagiocephalus		Cryptoblepharus plagiocephalus									+																	
Ctenotus	schomburgkii		Ctenotus schomburgkii			+					+																		
Ctenotus	severus		Ctenotus severus									+																	
Egernia	stokesii	badia	Western Spiny-tailed Skink	T																	+	+							
Varanus	gouldii		Bungarra or Sand Monitor			+		+			+						+	+											
Chelodina	steindachneri		Flat-shelled Turtle									+																	
Idiosoma	nigrum		Potential Shield-backed Trapdoor Sp						+																				

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Appendix F

Desktop Fauna Assessment Results

Appendix F Desktop Fauna Assessment Results

Appendix F - Desktop Fauna Assessment Results

Species	National EPBC Act	State Wildlife Conservation Act 1950	Habitat	Likelihood of Occurrence in Study Area
Birds				
<i>Actitis hypoleucos</i> Common Sandpiper	Migratory & Marine (Bonn, CAMBA, JAMBA, ROKAMBA)	Schedule 3	The Common Sandpiper is widespread throughout Australia, with few important sites on the continent. They visit Australia during the non-breeding season. Preferred habitat is coastal wetlands with muddy margins or rocky shores (DotE, 2014).	Seasonal Visitor Low
<i>Apus pacificus</i> Fork-tailed Swift	Migratory & Marine (CAMBA, JAMBA ROKAMBA)	Schedule 3	The Fork-tailed Swift is almost exclusively aerial, and a non-breeding visitor to Australia (DotE, 2014). They are rarely seen roosting on land.	Seasonal Visitor Low
<i>Ardea alba</i> Great Egret	Migratory & Marine (CAMBA, JAMBA)	Schedule 3	The Great Egret occupies a wide variety of wet habitats including freshwater wetlands, dams, flooded pastures, estuarine mudflats, mangroves and reefs (Morcombe, 2003). The species is also known to visit shallows of rivers, sewage ponds and irrigation areas (Pizzey & Knight, 2007).	Seasonal Visitor Low
<i>Ardea ibis</i> Cattle Egret	Migratory & Marine (CAMBA, JAMBA)	Schedule 3	The Cattle Egret is a small egret weighing only 390g and standing 70cm tall. The heaviest distribution of this species in WA is in the north east, and into the Northern Territory. In the non-breeding season, it can be found throughout most of Australia (DotE, 2014).	Seasonal Visitor Low
<i>Ardea modesta</i> Eastern Great Egret	Migratory & Marine (CAMBA, JAMBA)	Schedule 3	The Eastern Great Egret is a large bird (~100cm, 1kg) with white plumage and black or yellow bill. The species occurs individually or in small groups when foraging, but roosts in large flocks. Non-breeding individuals have been recorded throughout Australia. Almost all breeding colonies are located in the Top End of the Northern Territory (DotE, 2014). Non breeding individuals have been recorded across much of the Australian continent (DotE, 2014).	Seasonal Visitor High
<i>Ardeotis australis</i> Australian Bustard	-	Priority 4	Once a widespread species, the Australian Bustard is still common in northern Australia and is associated with grassland, spinifex, open scrubland, grassy woodland and burned habitats (Pizzey & Knight, 2007).	Likely

Species	National EPBC Act	State Wildlife Conservation Act 1950	Habitat	Likelihood of Occurrence in Study Area
<i>Burhinus grallarius</i> Bush Stone-Curlew	-	Priority 4	The Bush Stone-curlew is an unusual bird, with grey brown upper parts and buff white below and moves with strange watchful moves, typically with the head lowered to the ground (Pizzey & Knight, 2007). This species is uncommon to rare in south West Western Australia (Morcombe, 2003).	Likely
<i>Cacatua leadbeateri</i> Major Mitchell's Cockatoo	-	Schedule 4	Major Mitchell's Cockatoo ranges across much of western, central and eastern Australia, utilising timbered watercourses, casuarinas, mallee eucalypts, gibber plains, among other environs. Though widespread, this species is less abundant than other species of white cockatoo (Pizzey & Knight, 2007).	Likely
<i>Calidris acuminata</i> Sharp-tailed Sandpiper	Migratory & Marine (Bonn, CAMBA, JAMBA, ROKAMBA)	Schedule 3	The Sharp-tailed Sandpiper is a small to medium sized wader with a length of 17 to 22 cm and weight of 65g. They are widespread in Western Australia from the Pilbara region to the south-west.	Seasonal Visitor Low
<i>Calidris ferruginea</i> Curlew Sandpiper	Migratory & Marine (Bonn, CAMBA, JAMBA, ROKAMBA)	Schedule 3	The Curlew Sandpiper is a small, slim weighing 57 g. In Australia, Curlew Sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. In Western Australia, they are widespread around coastal and sub coastal plains from Cape Arid to the south-west Kimberley.	Unlikely
<i>Calidris ruficollis</i> Red-necked Stint	Migratory & Marine (Bonn, CAMBA, JAMBA, ROKAMBA)	Schedule 3	The Red-necked Stint is the smallest wader in Australia and is distributed along most of the Australian coastline, with the greatest densities in Victoria and Tasmania. The nearest internationally important site for the species is Lake Macleod (DotE, 2014).	Seasonal Visitor Low
<i>Calidris subminuta</i> Long-toed Stint	Migratory & Marine (Bonn, CAMBA, JAMBA, ROKAMBA)	Schedule 3	The Long-toed Stint breeds in the northern hemisphere, before migrating to northern and coastal Australia where it occupies weedy margins of shallow wetlands, sewage ponds and tidal mudflats (Pizzey & Knight, 2007). In Western Australia records of this species are generally found along the coast (DotE, 2014).	Seasonal Visitor Low
<i>Chlidonias leucopterus</i> White-winged Black Tern	Migratory & Marine (CAMBA, JAMBA, ROKAMBA)	Schedule 3	A non-breeding summer migrant to Australia, this species utilises large wetlands, both coastal and inland, saltfields, sewage ponds, estuaries and most coastal waters (Pizzey & Knight 2007)	Seasonal Visitor Low

Species	National EPBC Act	State Wildlife Conservation Act 1950	Habitat	Likelihood of Occurrence in Study Area
<i>Falco hypoleucos</i> Grey Falcon	-	T (Vulnerable)	The Grey Falcon is a rare, pale grey inland falcon that inhabits inland plains, gibber deserts, pastoral lands and timbered watercourses (Pizzey & Knight, 2007).	Unlikely
<i>Falco peregrinus</i> Peregrine Falcon	-	Schedule 4	A well-known falcon, the Peregrine inhabits a vast array of environs in Australia. Usually uncommon and migratory (Pizzey & Knight, 2007). This species lays its eggs in recesses of cliff faces, tree hollows or large abandoned nests.	Likely
<i>Leipoa ocellata</i> Malleefowl	Vulnerable	T (Vulnerable)	Malleefowl has strict habitat requirements. The species requires unburnt mallee and woodland with low scrub and abundant litter to use in nesting mounds (Morcombe, 2003).	Unlikely
<i>Merops ornatus</i> Rainbow Bee-eater	Migratory & Marine (JAMBA)	Schedule 3	The Rainbow Bee-eater is a common species which occupies numerous habitats including open woodlands with sandy loam soil, sand ridges, sandpits, riverbanks, road cuttings, beaches, dunes, cliffs, mangroves and rainforests. It is possible that this species will occupy open woodland areas within the survey area. The Rainbow Bee-eater avoids heavy forest that would hinder the pursuit of its insect prey (Morcombe, 2003).	Likely
<i>Ninox connivens</i> subsp. <i>connivens</i> Barking Owl	-	Southwest population is Priority 2	The Barking Owl occurs in almost all mainland states and persists in the south-west of Western Australia, though uncommon. This species has been observed in varied habitats including open forests, woodlands, dense scrub, foothills and paperbark woodlands (Pizzey & Knight, 2007).	Unlikely
<i>Plegadis falcinellus</i> Glossy Ibis	Migratory & Marine (Bonn, CAMBA)	Schedule 3	The Glossy Ibis occupies well vegetated wetlands, wet pastures, floodwaters, brackish wetlands and mudflats. This species is more common in northern Australia and patchily distributed elsewhere in the state (Pizzey & Knight, 2007).	Seasonal Visitor High
<i>Tringa glareola</i> Wood Sandpiper	Migratory & Marine (Bonn, CAMBA, JAMBA, ROKAMBA)	Schedule 3	The Wood Sandpiper is a summer migrant to Australia where it is more common in the north although a casual visitor to southern parts. It occupies wetland margins, saltmarshes and sewage ponds (Pizzey & Knight, 2007).	Seasonal Visitor Low
<i>Tringa nebularia</i> Common Greenshank	Migratory & Marine (Bonn, CAMBA, JAMBA, ROKAMBA)	Schedule 3	The Common Greenshank is a largely built wader, weighing up to 190 g for both sexes. The species is found in inland wetlands and sheltered coastal habitats (DotE, 2014).	Seasonal Visitor Low
Mammals				

Species	National EPBC Act	State Wildlife Conservation Act 1950	Habitat	Likelihood of Occurrence in Study Area
<i>Dasycercus blythi</i> Brush-tailed Mulgara, Ampurta	-	Priority 4	The Mulgara was recently divided into two species. The Brush-tailed Mulgara, thought to be the more common species of the two, typically occupies arid sandy regions that support spinifex grasslands. Mulgara dig complex burrows on the flats between low sand dunes (Van Dyck & Strahan, 2008).	Potentially
<i>Leporillus conditor</i> Greater Stick-nest Rat	Vulnerable	T (Vulnerable)	The Greater Stick-nest Rat was formerly distributed through southern, semi-arid Australia from the west coast of Western Australia to Western New South Wales. Today's natural distribution of this species is far more restricted. Current extant populations occur on the West and East Franklin Islands, off the South Australian Coast. A translocation was also undertaken to Heirisson Prong in Western Australia however this is believed to have failed (DEC, 2012).	Unlikely
<i>Macrotis lagotis</i> Bilby, Dalgyte	Vulnerable	T (Vulnerable)	The Greater Bilby is the sole surviving member of the sub-family Thylacomyinae (Family Peramelidae) (Pavey, 2006). It is a slight, rabbit-sized marsupial with soft grey fur covering most of the body, large ears and a long, pointed snout. The Bilby occupies arid to semi-arid woodlands and hummock grasslands in the north of Australia. The Bilby formerly occupied much of the Australian mainland however has experienced a vast contraction in its range (Van Dyck & Strahan, 2008).	Unlikely
<i>Petrogale lateralis subsp. lateralis</i> Black-flanked Rock Wallaby	Vulnerable	T (Vulnerable)	The Black-flanked Rock-wallaby is a widespread species however has suffered a vast contraction in its former range, thought to be due to fox predation (Van Dyck & Strahan, 2008). Extant populations occur in few locations in the wheatbelt region, Barrow Island, Salisbury Island, Cape Range and the Little Sandy Desert (DotE, 2014).	Unlikely
<i>Pseudomys chapmani</i> Western Pebble-mound Mouse, Ngadji	-	Priority 4	The Western Pebble-mound mouse is found in the Pilbara region in areas of rocky hummock grassland with little or no soil and an over-storey of <i>Acacia</i> spp. (Morris & Burbidge 2008).	Unlikely
Reptiles				

Species	National EPBC Act	State Wildlife Conservation Act 1950	Habitat	Likelihood of Occurrence in Study Area
<i>Egernia stokesii</i> subsp. <i>badia</i> Western Spiny-tailed Skink	Endangered	T (Vulnerable)	The Western Spiny-tailed Skink belongs to the <i>cunninghamii</i> group; a group of moderately large, rock-dwelling reptiles (Chapple, 2003). Two colour forms exist; the brown form and black form, the latter is delineated from the former by its black colouration, lack of patterning in adults and differing head and scale morphology (DotE, 2014). Western Spiny-tailed Skinks are saxicolous (rock dwelling), occupying rock crevices in large, isolated rocky outcrops, typically granite (Duffield & Bull, 2002).	Likely to occur
Invertebrates				
<i>Idiosoma nigrum</i> Shield-backed Trapdoor Spider	Vulnerable	T (Vulnerable)	This species can be found in burrows of heavy clay soils in areas of open York Gum (<i>Eucalyptus loxophleba</i>), Salmon Gum (<i>E. salmonophloia</i>) and Wandoo <i>E. wandoo</i>) woodland, where <i>Acacia acuminata</i> forms a sparse understorey (Avon Catchment Council, 2007). This species relies heavily on leaf litter and twigs to build its burrow.	Potentially

EPBC Act Commonwealth Environment Protection and Biodiversity Conservation Act, 1999: EX Extinct, E Endangered, VU Vulnerable M Migratory

WC Act Western Australia Wildlife Conservation Act, 1950: Schedule 1, S2, S3, S4

Priority Species Department of Environment and Conservation's Priority Species List: Priority 1, P2, P3, P4, P5