



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 7916/2
Permit Holder:	Commissioner of Main Roads Western Australia
Duration of Permit:	From 26 May 2018 to 26 May 2028

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purpose of road widening and material extraction.

2. Land on which clearing is to be done

Lot 8 on Deposited Plan 220398, Murchison
Lot 18 on Deposited Plan 220344, South Murchison
Lot 21 on Deposited Plan 28259, Murchison
Lot 23 on Deposited Plan 220763, South Murchison
Lot 128 on Deposited Plan 221137, Murchison
Lot 11810 on Deposited Plan 220399, Woolgorong
Lot 11804 on Deposited Plan 238483, Nunierra
Lot 11802 on Deposited Plan 26343, Nunierra
Lot 11808 on Deposited Plan 220345, Woolgorong and Nerramyne
Lot 7 on Deposited Plan 92275, South Murchison
Lot 12559 on Deposited Plan 221137, Nunierra, Nerramyne, Woolgorong and Murchison
Lot 318 on Deposited Plan 221137, Murchison
Lot 11800 on Deposited Plan 238586, Woolgorong and Nerramyne
Lot 230 on Deposited Plan 29294, Murchison
Lot 24 on Deposited Plan 29294, Murchison
Lot 11809 on Deposited Plan 29294, Murchison
Lot 301 on Deposited Plan 64845, Nunierra
Lot 209 on Deposited Plan 220398, Murchison
Lot 306 on Deposited Plan 49913, Nerramyne
Road Reserve (PIN 11663861), Nunierra
Road Reserve (PIN 11663862), Nunierra
Road Reserve (PIN 11665424), South Murchison
Road Reserve (PIN 11665425), South Murchison
Road Reserve (PIN 11667428), Woolgorong
Road Reserve (PIN 11668442), Woolgorong
Road Reserve (PIN 11668444), Woolgorong
Road Reserve (PIN 11668445), Woolgorong
Road Reserve (PIN 11668446), Woolgorong
Road Reserve (PIN 11668447), Woolgorong
Road Reserve (PIN 11668850), Murchison
Road Reserve (PIN 11668851), Murchison
Road Reserve (PIN 11668852), Woolgorong

Road Reserve (PIN 11668859), South Murchison
Road Reserve (PIN 11668861), South Murchison
Road Reserve (PIN 11670998), Murchison
Road Reserve (PIN 11706884), Woolgorong
Road Reserve (PIN 11706885), Nerramyne
Road Reserve (PIN 11708250), South Murchison
Road Reserve (PIN 11708251), South Murchison
Road Reserve (PIN 11708252), South Murchison
Road Reserve (PIN 11796002), Nunierra

3. Area of clearing

The Permit Holder must not clear more than 2000 hectares of native vegetation within the combined areas shaded yellow on attached Plan 7916/2 (a), Plan 7916/2 (b), Plan 7916/2 (c), Plan 7916/2 (d), Plan 7916/2 (e), Plan 7916/2 (f), Plan 7916/2 (g) and Plan 7916/2 (h).

4. Period in which clearing is authorised

The Permit Holder shall not clear any native vegetation after 26 May 2023.

5. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

6. Type of clearing authorised

This Permit authorises the Permit Holder to clear native vegetation for the activities described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out works involving clearing for those activities under the *Main Roads Act 1930* or any other written law.

PART II –MANAGEMENT CONDITIONS

7. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- (a) avoid the clearing of native vegetation;
- (b) minimise the amount of native vegetation to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

8. Direction of clearing

The Permit Holder shall conduct clearing in a progressive manner from one direction to the other (e.g. west to east) to allow fauna to move into adjacent native vegetation ahead of the clearing activity.

9. Weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

10. Retain vegetative material and topsoil, revegetation and rehabilitation

The Permit Holder shall:

- (a) retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
- (b) within 3 months following completion of the extractive activity, *revegetate* and *rehabilitate* the area(s) that are no longer required for the purpose for which they were cleared under this Permit by:
 - (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land; and
 - (ii) ripping the ground on the contour to remove soil compaction; and
 - (iii) laying the vegetative material and topsoil retained under condition 10(a) on the cleared area(s).
- (c) within 24 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 10(b) of this Permit:
 - (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
 - (ii) where, in the opinion of an *environmental specialist*, the composition, structure and density determined under condition 10(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.
- (d) Where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 10(c)(ii) of this permit, the Permit Holder shall repeat condition 10(c)(i) and 10(c)(ii) within 24 months of undertaking the additional *planting* or *direct seeding* of native vegetation.
- (e) Where a determination by an *environmental specialist* that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in condition 10(c)(i) and 10(c)(ii) of this permit, that determination shall be submitted for the CEO's consideration. If the CEO does not agree with the determination made under condition 10(c)(ii), the CEO may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 10(c)(ii).

11. Fauna management

- (a) Immediately prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna specialist* to undertake clearance surveys of any areas to be cleared within the areas cross-hatched yellow on attached Plan 7916/2 (a), Plan 7916/2 (b), Plan 7916/2 (c), Plan 7916/2 (d), Plan 7916/2 (e), Plan 7916/2 (f), Plan 7916/2 (g) and Plan 7916/2 (h), for the gilled slender blue tongue (*Cyclodomorphus branchialis*) and good-legged lerista (*Lerista eupoda*).
- (b) Immediately prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna specialist* to relocate any fauna found under condition 11(a) of this permit, in accordance with a fauna licence pursuant to Regulation 13 of the *Biodiversity Conservation Regulations 2018*.
- (c) Where fauna are identified and relocated under condition 11(a) and 11(b) of this Permit, the Permit Holder shall include the following in a report submitted to the CEO:
 - (i) the scientific name and gender of each fauna captured under condition 11(a) and 11(b);
 - (ii) the location of any fauna species, as listed in condition 11(a) and 11(b), captured using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (iii) the scientific name and gender of each fauna relocated under condition 11(b);
 - (iv) the location of any fauna species, as listed in condition 11(b), relocated using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees.

12. Malleefowl habitat management

- (a) Immediately prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna specialist* to conduct a *fauna survey* of any areas to be cleared within the areas cross-hatched yellow on attached Plan 7916/2 (a), Plan 7916/2 (b), Plan 7916/2 (c), Plan 7916/2 (d), Plan 7916/2 (e), Plan 7916/2 (f), Plan 7916/2 (g) and Plan 7916/2 (h), to identify *Leipoa ocellata* (malleefowl) mounds.
- (b) Where active malleefowl mounds are identified in relation to condition 12(a), the permit holder shall ensure that no clearing occurs within 50 metres of the identified active malleefowl mounds.
- (c) Where active malleefowl mounds are identified under condition 12(b), the Permit Holder shall document the location of any active malleefowl mounds identified and submit to the CEO.

13. Western spiny tailed skink habitat management

The Permit Holder shall ensure that no clearing occurs within the Granite Outcrop habitat type (Vegetation and Substrate Associations (VSA 7)) as identified within the documents titled, 'Square Kilometre Array (SKA) Main Roads Upgrade Fauna Assessment, 5 February 2016', and 'Square Kilometre Array Road Upgrade Project Fauna Assessment, 30 January 2017' (see Appendix A).

14. Northern shield-backed trapdoor spider habitat management

The Permit Holder shall avoid impacts to northern shield-backed trapdoor spider (*Idiosoma* sp. 'MYG018') burrows identified at the four coordinate locations shown in the below table:

Location Number	Easting	Northing
1	371692	6893113
2	371607	6893418
3	369220	6903148
4	376435	6941350

15. Flora management

Prior to undertaking any clearing, for any areas that were not subject to surveying under the documents titled, 'Murchison SKA Road Upgrade, Flora and Vegetation Assessment, April 2016', and 'Murchison SKA Road Upgrade, Flora and Vegetation Assessment, February 2017' (see Appendix A).

- (a) The Permit Holder shall engage a *botanist* to undertake a flora survey in accordance with the Environmental Protection Authorities 'Technical Guidance, Flora and Vegetation Surveys for Environmental Impact Assessment, 2016', to identify occurrences of the following priority flora and threatened flora:
 - (i) *Eremophila viscida* (threatened);
 - (ii) *Eucalyptus beardiana* (threatened);
 - (iii) *Calandrinia butcherensis* (Priority 1);
 - (iv) *Chamelaucium* sp. Yalgoo (Y. Chadwick 1816) (Priority 1);
 - (v) *Indigofera eriophylla* (Priority 1);
 - (vi) *Acacia ampliata* (Priority 1);
 - (vii) *Bergia auriculata* (Priority 2);
 - (viii) *Eremophila mirabilis* (Priority 2);
 - (ix) *Angianthus microcephalus* (Priority 2);
 - (x) *Hibiscus krichauffianus* (Priority 3);
 - (xi) *Lepidium scandens* (Priority 3);
 - (xii) *Lepidium xylodes* (Priority 3); and
 - (xiii) *Psammomoya ephedroides* (Priority 3).
- (b) Where priority flora or threatened flora are identified in relation to condition 15(a) of this Permit, or have previously been recorded within the surveys undertaken for the documents titled 'Murchison SKA Road Upgrade, Flora and Vegetation Assessment, April 2016', and 'Murchison SKA Road Upgrade, Flora and Vegetation Assessment, February 2017', the Permit Holder shall ensure that:
 - (i) no clearing occurs within 50 metres of threatened flora and Priority 1 and 2 flora listed under condition 15(a); and
 - (ii) no clearing occurs within 20 metres of the Priority 3 flora listed under condition 15(a).

- (c) Where Priority or threatened flora species are identified under condition 15(a), the Permit Holder shall document the location and species name of any Priority flora or threatened flora identified and submit these records to the *CEO*.

16. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

- (a) In relation to the clearing of native vegetation authorised under this Permit:
- (i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) the date that the area was cleared;
 - (iii) the size of the area cleared (in hectares);
 - (iv) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 7 of this Permit; and
 - (v) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 9 of this Permit.
- (b) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 10 of this Permit:
- (i) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) a description of the *revegetation* and *rehabilitation* activities undertaken;
 - (iii) the size of the area *revegetated* and *rehabilitated* (in hectares);
 - (iv) the species composition, structure and density of *revegetation* and *rehabilitation*, and
 - (v) a copy of the *environmental specialist's* report.

17. Reporting

- (a) The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:
- (i) of records required under condition 16 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit has been undertaken, a written report confirming that no clearing under this Permit has been undertaken, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 26 February 2028, the Permit Holder must provide to the *CEO* a written report of records required under condition 16 of this Permit where these records have not already been provided under condition 17(a) of this Permit.

Definitions

The following meanings are given to terms used in this Permit:

botanist: means a person who holds a tertiary qualification in environmental science or equivalent, and has a minimum of 2 years work experience in identification and surveys of flora native to the bioregion being inspected or surveyed, or who is approved by the *CEO* as a suitable botanist for the bioregion;

CEO: means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

direct seeding: means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

environmental specialist: means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the *CEO* as a suitable environmental specialist;

fauna specialist: means a person who holds a tertiary qualification specializing in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the CEO as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016*;

fauna survey: means a field-based investigation, including a review of established literature, of the biodiversity of fauna and/or fauna habitat of the Permit Area. Where conservation significant fauna are identified in the Permit Area, the survey should also include sufficient surrounding areas to place the Permit Area into local context;

fill: means material used to increase the ground level, or fill a hollow;

local provenance: means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.

mulch: means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

planting: means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

regenerate/ed/ion: means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing *mulch*;

rehabilitate/ed/ion: means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion: means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area; and

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*;
or
- (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

11 February 2019

Appendix A

Vegetation types recorded within the application area.

Project	Vegetation Association	Area(ha)
SKA Road	1 <i>Tecticornia doleiformis</i> open samphire shrubland	72.36
	10 <i>Eucalyptus victrix</i> open woodland over <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> over <i>Eremophila laanii</i> and <i>triplex</i> spp. open shrubland over <i>Eriochloa pseudoacrotricha</i> and <i>Eragrostis dielsii</i> open grassland	12.14
	11 <i>Eucalyptus victrix</i> open woodland <i>Acacia burkittii</i> , <i>Acacia fuscaneura</i> and <i>Acacia tetragonophylla</i> tall shrubland over <i>Cenchrus setiger</i> , <i>Setaria verticillata</i> and <i>Eulalia aurea</i> closed grassland over <i>Trichodesma zeylanicum</i> , <i>Glycine canescens</i> and <i>Solanum nigrum</i> open herbland.	1.96
	12 <i>Eucalyptus victrix</i> open woodland over <i>Melaleuca leiocarpa</i> scrub over <i>Atriplex</i> spp. and <i>Rhagodia drummondii</i> over scattered <i>Tecticornia peltata</i> samphire	13.68
	13 Mixed <i>Acacia</i> spp. tall shrubland over * <i>Cenchrus setiger</i> open grassland over * <i>Acetosa vesicaria</i> , * <i>Lysimachia arvensis</i> and <i>Myriocephalus oldfieldii</i> open herbland	1.22
	14 <i>Acacia tetragonophylla</i> and <i>A. cyperophylla</i> var. <i>cyperophylla</i> tall shrubland over <i>Cyperus concinnus</i> sparse sedges over <i>Goodenia berringbinensis</i> , <i>Marsilea ? costulifera</i> and <i>Glossostigma drummondii</i> closed herbland	0.74
	15 <i>Atriplex amnicola</i> , <i>A. bunburyana</i> and <i>A. codonocarpa</i> low open shrubland over <i>Eragrostis dielsii</i> sparse grasses	136.35
	16 <i>Acacia synchronicia</i> tall open shrubland over <i>Eremophila laanii</i> , <i>Eremophila longifolia</i> and <i>Scaevola spinescens</i> open shrubland over <i>Setaria dielsii</i> open grassland over <i>Ptilotus divaricatus</i> , <i>Ptilotus macrocephalus</i> and <i>Tetragonia cristata</i> open herbland	128.44
	17 <i>Acacia synchronicia</i> and <i>A. sclerosperma</i> subsp. <i>sclerosperma</i> tall open shrubland over scattered <i>Scaevola spinescens</i> sparse shrubs over <i>Eriochloa pseudoacrotricha</i> sparse grasses over <i>Rhodanthe floribunda</i> , <i>Sisymbrium erysimoides</i> and <i>Salsola australis</i> very open herbland	24.39
	18 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>A. acuminata</i> and <i>A. tetragonophylla</i> tall shrubland over <i>Aristida contorta</i> , <i>Austrostipa nitida</i> and <i>Monachather paradoxus</i> open grassland over mixed annual herbs	361.00
	19 <i>Acacia ramulosa</i> var. <i>linophylla</i> , <i>A. burkittii</i> and <i>A. tetragonophylla</i> tall shrubland over <i>Aristida contorta</i> and <i>Austrostipa nitida</i> open grassland over mixed annual herbs	227.39
	2 <i>Frankenia pauciflora</i> and <i>Ptilotus obovatus</i> low shrubland over <i>Maireana carnosae</i> , <i>Sclerolaena densiflora</i> and <i>Lawrenzia densiflora</i> open herbland over <i>Eragrostis dielsii</i> and <i>Aristida contorta</i> open grassland	10.45
	20 <i>Acacia burkittii</i> , <i>A. cuthbertsonii</i> subsp. <i>cuthbertsonii</i> and <i>A. tetragonophylla</i> tall shrubland <i>Maireana carnosae</i> , <i>Sclerolaena eriacantha</i> and <i>Calandrinia ptychosperma</i> herbland over <i>Eragrostis dielsii</i> and open <i>Aristida contorta</i> grassland	173.49
	21 <i>Acacia tysonii</i> tall shrubland over <i>Lawrenzia glomerata</i> sparse herbs	13.28
	22 <i>Acacia synchronicia</i> and <i>Eremophila pterocarpa</i> subsp. <i>pterocarpa</i> tall shrubland over mixed <i>Senna</i> spp. shrubland over <i>Sclerolaena</i> spp. open herbland over <i>Eragrostis dielsii</i> and <i>Aristida contorta</i> open grassland	255.65
	23 <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> and <i>A. synchronicia</i> tall open shrubland over mixed <i>Senna</i> spp. sparse shrubs over <i>Salsola australis</i> sparse herbs	268.21
	24 <i>Acacia pteraneura</i> , <i>A. grasbyi</i> and <i>A. ramulosa</i> var. <i>linophylla</i> tall shrubland over mixed <i>Senna</i> spp. sparse shrubs over <i>Ptilotus obovatus</i> sparse low shrubs over <i>Aristida contorta</i> open grassland	150.96
	25 <i>Acacia eremaea</i> and <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> tall open shrubland over mixed <i>Chenopodiaceae</i> spp. low shrubs and herbs	114.49
	26 <i>Acacia pteraneura</i> and <i>A. grasbyi</i> low open woodland over <i>Acacia ramulosa</i> var. <i>linophylla</i> tall shrubland over mixed <i>Senna</i> spp. and <i>Ptilotus obovatus</i> sparse shrubs over <i>Ptilotus macrocephalus</i> , <i>Ptilotus polystachyus</i> and <i>Calandrinia creethiae</i> open herbland over <i>Eragrostis pergracilis</i> and <i>Aristida contorta</i> open tussock grassland	193.85
	27 <i>Acacia fuscaneura</i> low woodland over <i>Acacia tetragonophylla</i> tall open shrubland over mixed <i>Eremophila</i> spp. and <i>Senna</i> spp. sparse shrubs	66.21
	28f <i>Acacia pteraneura</i> low woodland over <i>Acacia craspedocarpa</i> , <i>Acacia tetragonophylla</i> , <i>Eremophila platycalyx</i> subsp. <i>platycalyx</i> tall open shrubland to tall shrubland over <i>Abutilon cryptopetalum</i> scattered low shrubs and mixed open herbland	328.71
	28H <i>Acacia pteraneura</i> low open woodland to low woodland over <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> scattered tall shrubs over <i>Senna</i> spp., <i>Eremophila forrestii</i> subsp. <i>forrestii</i> scattered shrubs	937.49
	28W <i>Acacia pteraneura</i> low open woodland over <i>Acacia tetragonophylla</i> , (<i>Acacia ramulosa</i> var. <i>linophylla</i>) scattered tall shrubs over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> scattered shrubs over (<i>Eremophila spuria</i> low open shrubland) with <i>Monachather paradoxus</i> , <i>Eriachne helmsii</i> scattered grasses to very open grassland and <i>Ptilotus polystachyus</i> scattered herbs	106.86
	28WiH <i>Acacia pteraneura</i> low open woodland over <i>Acacia tetragonophylla</i> , (<i>Acacia ramulosa</i> var. <i>linophylla</i>) scattered tall shrubs over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> scattered shrubs over (<i>Eremophila spuria</i> low open shrubland) with <i>Monachather paradoxus</i> , <i>Eriachne helmsii</i> scattered grasses to very open grassland and <i>Ptilotus polystachyus</i> scattered herbs / <i>Acacia pteraneura</i> low open woodland to low woodland over <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> scattered tall shrubs over <i>Senna</i> spp., <i>Eremophila forrestii</i> subsp. <i>forrestii</i> scattered shrubs	15.51
	29 <i>Hakea preissii</i> and <i>Acacia victoriae</i> tall shrubland over <i>Senna</i> spp. over <i>Sclerolaena densiflora</i> , <i>Salsola australis</i> and <i>Ptilotus polystachyus</i> herbland over <i>Aristida contorta</i> open tussock grassland	12.73
	3 <i>Acacia eremaea</i> and <i>Eremophila pantonii</i> scattered tall shrubs over <i>Atriplex paludosa</i> subsp. <i>baudinii</i> shrubland and <i>Maireana villosa</i> shrubland over <i>Austrostipa elegantissima</i> sparse grasses over <i>Atriplex codonocarpa</i> , <i>Sclerolaena densiflora</i> and <i>Erymophyllum ramosum</i> subsp. <i>ramosum</i> open herbland	9.27
	30 <i>Acacia ramulosa</i> var. <i>linophylla</i> tall shrubland over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> open shrubland over <i>Monachather paradoxus</i> and <i>Aristida contorta</i> open grassland	58.49
	31 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>Thryptomene decussata</i> tall shrubland over mixed <i>Eremophila</i> spp. and <i>Grevillea</i> spp. open shrubland over <i>Ptilotus polystachyus</i> very open herbland over <i>Thyridolepis multiculmis</i> sparse grasses	77.94
	32 <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> tall open shrubland over <i>Quoya paniculata</i> and <i>Rhagodia eremaea</i> shrubland over <i>Ptilotus polystachyus</i> , <i>Salsola australis</i> and <i>Heliotropium ammophilum</i> open herbland over <i>Aristida holathera</i> var. <i>holathera</i> , <i>Eriachne aristidea</i> and <i>Paractaenium novae-hollandiae</i> subsp. <i>novae-hollandiae</i> open grassland	2.49
	33 <i>Acacia tetragonophylla</i> and <i>Hakea recurva</i> subsp. <i>arida</i> tall sparse shrubs over <i>Eremophila platycalyx</i> subsp. <i>platycalyx</i> shrubs over <i>Ptilotus obovatus</i> low open shrubland over <i>Aristida contorta</i> very open grassland over <i>Calandrinia hortiorum</i> , <i>Calandrinia primuliflora</i> and <i>Gunnipopsis rodwayi</i> open herbland	16.77
	34 <i>Acacia coolgardiensis</i> tall shrubland over <i>Aluta aspera</i> subsp. <i>hesperia</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and <i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i> open shrubland over <i>Monachather paradoxus</i> and <i>Thyridolepis multiculmis</i> sparse grasses over <i>Goodenia mimuloides</i> , <i>Goodenia occidentalis</i> and <i>Haloragis odontocarpa</i> open herbland	263.51
	35 <i>Acacia pteraneura</i> low open woodland over <i>A. burkittii</i> tall shrubland over <i>Eremophila platycalyx</i> subsp. <i>platycalyx</i> sparse shrubs over <i>Senna</i> sp. Austin low sparse shrubs over <i>Aristida contorta</i> sparse grasses	15.88

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	36 <i>Acacia pteraneura</i> low open woodland over <i>Thryptomene decussata</i> , <i>Acacia coolgardiensis</i> and <i>Grevillea stenobotrya</i> tall open shrubland over <i>Aristida contorta</i> very open grassland	1029.70
	37 <i>Acacia pteraneura</i> , <i>A. cuthbertsonii</i> subsp. <i>cuthbertsonii</i> and <i>A. tetragonophylla</i> tall shrubland over <i>Eremophila galeata</i> sparse shrubs over <i>Ptilotus obovatus</i> and mixed <i>Senna</i> spp. low sparse shrubs over <i>Aristida contorta</i> open tussock grassland	297.03
	38 <i>Acacia coolgardiensis</i> , <i>A. eremaea</i> and <i>A. burkittii</i> tall shrubland over <i>Ptilotus obovatus</i> low sparse shrubs over mixed annual herbs	51.10
	39 <i>Acacia umbraculiformis</i> , <i>A. coolgardiensis</i> and <i>A. burkittii</i> tall shrubland over <i>Senna</i> sp. Austin (A. Strid 20210), <i>Ptilotus obovatus</i> and <i>Sida ectogama</i> open shrubland over <i>Aristida contorta</i> open grassland over <i>Borya sphaerocephala</i> very open herbland	17.50
	4 <i>Atriplex cinerea</i> open shrubland over <i>Goodenia corynocarpa</i> isolated herbs	4.98
	40 <i>Acacia aulacophylla</i> and <i>Thryptomene decussata</i> open shrubland over <i>Micromyrtus sulphurea</i> low open shrubland	33.18
	41 <i>Acacia aulacophylla</i> , <i>A. coolgardiensis</i> and <i>A. umbraculiformis</i> open shrubland over <i>Micromyrtus procytes</i> and <i>Calytrix uncinata</i> sparse low shrubs over <i>Eriachne pulchella</i> subsp. <i>pulchella</i> sparse grasses	4.07
	42 Mixed shrubs and herbs of <i>Acetosa vesicaria</i> , <i>Corchorus crozophorifolius</i> , <i>Goodenia kingiana</i> and <i>Trichodesma zeylanicum</i>	11.13
	43 <i>Tecticornia indica</i> subsp. <i>leiostachya</i> , <i>Tecticornia indica</i> subsp. <i>bidens</i> , <i>Tecticornia</i> sp. low samphire shrubland	61.01
	44 (<i>Acacia kalgoorliensis</i> , <i>Eremophila pterocarpa</i> subsp. <i>pterocarpa</i> scattered shrubs) over <i>Atriplex vesicaria</i> low shrubland	22.58
	45 <i>Acacia kalgoorliensis</i> , <i>Acacia microcalyx</i> tall shrubland over <i>Eremophila pterocarpa</i> subsp. <i>pterocarpa</i> open shrubland over <i>Atriplex amnicola</i> , <i>Atriplex vesicaria</i> , <i>Maireana pyramidata</i> , <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> low shrubland	15.37
	46 <i>Eriachne flaccida</i> , (<i>Eragrostis leptocarpa</i> , <i>Eragrostis pergracilis</i> , <i>Eragrostis dielsii</i>) grassland with <i>Marsilea exarata</i> very open fernland	3.03
	47 <i>Acacia burkittii</i> , <i>Acacia tetragonophylla</i> , <i>Acacia grasbyi</i> tall open shrubland over <i>Aristida contorta</i> very open grassland	65.28
	48 <i>Eremophila fraseri</i> subsp. <i>fraseri</i> open shrubland over <i>Ptilotus obovatus</i> scattered low shrubs with sparsely scattered to scattered <i>Acacia pteraneura</i> and scattered <i>Acacia grasbyi</i>	32.9
	49 <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> high open shrubland over scattered low shrubs	214.90
	5 <i>Hakea recurva</i> subsp. <i>arida</i> and <i>Acacia tetragonophylla</i> tall open shrubland over <i>Calandrinia pumila</i> and <i>Myriocephalus oldfieldii</i> open herbland	0.73
	51 <i>Acacia ramulosa</i> var. <i>linophylla</i> , <i>Acacia longispinea</i> tall open shrubland to tall shrubland over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> , <i>Eremophila simulans</i> subsp. <i>megacalyx</i> open shrubland over <i>Thyridolepis multiculmis</i> , <i>Monachather paradoxus</i> , <i>Eragrostis lanipes</i> very open grassland	47.87
	53 <i>Eremophila fraseri</i> subsp. <i>fraseri</i> , <i>Senna artemisioides</i> subsp. <i>helmsii</i> open shrublands	118.88
	54 (<i>Acacia tetragonophylla</i> scattered tall shrubs) over <i>Eremophila exilifolia</i> shrubland	20.00
	56 <i>Acacia ramulosa</i> var. <i>linophylla</i> , <i>Thryptomene decussata</i> tall shrubland over <i>Eremophila latrobei</i> subsp. <i>latrobei</i> scattered shrubs over <i>Aluta aspera</i> subsp. <i>Hesperia</i> , <i>Phyllothea sericea</i> scattered low shrubs over <i>Monachather paradoxus</i> open grassland. (Associated with some exposed decomposing granites)	1.46
	57 <i>Grevillea nematophylla</i> subsp. <i>supraplana</i> , <i>Acacia pruinocarpa</i> scattered low trees (low open woodland on parts of lower slopes) over <i>Acacia ramulosa</i> var. <i>linophylla</i> tall open shrubland to tall shrubland over <i>Eremophila glutinosa</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> , <i>Trachymene decussata</i> scattered shrubs over <i>Aluta aspera</i> subsp. <i>hesperia</i> scattered low shrubs	40.20
	58 <i>Acacia ramulosa</i> var. <i>linophylla</i> , <i>Thryptomene decussata</i> tall shrubland over <i>Prostanthera campbellii</i> , <i>Eremophila latrobei</i> subsp. <i>latrobei</i> open shrubland. (Recorded on chert rockpiles)	0.27
	6 <i>Melaleuca stereophloia</i> open heath over <i>Alternanthera nodiflora</i> , <i>Myriocephalus oldfieldii</i> and <i>Centipeda minima</i> subsp. <i>macrocephala</i> open herbland	0.38
	7 <i>Eucalyptus victrix</i> open woodland over <i>Melaleuca stereophloia</i> tall open heath over <i>Leptochloa fusca</i> subsp. <i>muelleri</i> and <i>Setaria dielsii</i> open grassland over <i>Myriocephalus oldfieldii</i> open herbland	0.41
	8 <i>Eucalyptus camaldulensis</i> subsp. <i>obtusata</i> and <i>Casuarina obesa</i> open forest over <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> and <i>Rhagodia eremaea</i> open shrubland over <i>Cyperus gymnocaulos</i> sparse sedgeland over <i>Eriochloa pseudoacrotricha</i> sparse grassland <i>Atriplex semilunaris</i> , <i>Salsola australis</i> and <i>Amaranthus clementii</i> open herbland.	9.02
	9 <i>Eucalyptus victrix</i> open woodland over <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> over <i>Eriochloa pseudoacrotricha</i> , <i>Cenchrus ciliaris</i> and <i>Dichanthium sericeum</i> subsp. <i>humilis</i> over <i>Pluchea rubelliflora</i> , <i>Streptoglossa cylindriceps</i> and <i>Swainsona pterostylis</i> open herbland.	3.58
	Completely degraded	328.40
	Degraded	25.46
Camraron Mullewa Road 21.7 SLK	34 <i>Acacia coolgardiensis</i> tall shrubland over <i>Aluta aspera</i> subsp. <i>hesperia</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and <i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i> open shrubland over <i>Monachather paradoxus</i> and <i>Thyridolepis multiculmis</i> sparse grasses over <i>Goodenia mimuloides</i> , <i>Goodenia occidentalis</i> and <i>Haloragis odontocarpa</i> open herbland	42.61
	Completely degraded	3.64
Camraron Mullewa Road 166.81 SLK	28 <i>Acacia pteraneura</i> low woodland over <i>Eremophila galeata</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and mixed <i>Senna</i> spp. open shrubland over mixed <i>Ptilotus</i> sparse herbs over <i>Eragrostis dielsii</i> , <i>Eragrostis pergracilis</i> and <i>Aristida contorta</i> open grassland	7.50
	36 <i>Acacia pteraneura</i> low open woodland over <i>Thryptomene decussata</i> , <i>Acacia umbraculiformis</i> tall open shrubland	21.66
	37 <i>Acacia pteraneura</i> scattered low trees over <i>A grasbyi</i> , <i>A. cuthbertsonii</i> subsp. <i>cuthbertsonii</i> , <i>A. tetragonophylla</i> scattered tall shrubs to tall open shrubland <i>Ptilotus obovatus</i> and mixed <i>Senna</i> spp. low sparse shrubs (quartz plains, low rises and hill slopes)	86.6
	Completely degraded	2.31
Camraron Mullewa Road 201.13 SLK	54 (<i>Acacia tetragonophylla</i> scattered tall shrubs) over <i>Eremophila exilifolia</i> shrubland	1.01
	31 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>Thryptomene decussata</i> tall shrubland over mixed <i>Eremophila</i> spp. and <i>Grevillea</i> spp. open shrubland over <i>Ptilotus polystachyus</i> very open herbland over <i>Thyridolepis multiculmis</i> sparse grasses	72.42
	36 <i>Acacia pteraneura</i> low open woodland over <i>Thryptomene decussata</i> , <i>Acacia umbraculiformis</i> tall open shrubland	138.73
	37 <i>Acacia pteraneura</i> scattered low trees over <i>A grasbyi</i> , <i>A. cuthbertsonii</i> subsp. <i>cuthbertsonii</i> , <i>A. tetragonophylla</i> scattered tall shrubs to tall open shrubland <i>Ptilotus obovatus</i> and mixed <i>Senna</i> spp. low sparse shrubs (quartz plains, low rises and hill slopes)	13.50
	40 <i>Thryptomene decussata</i> , (<i>Acacia aulacophylla</i>) open shrubland over <i>Micromyrtus sulphurea</i> , <i>Aluta aspera</i> subsp. <i>Hesperia</i> , <i>Calytrix divergens</i> , <i>Phyllothea brucei</i> subsp. <i>brucei</i> low open shrubland with <i>Neurachne minor</i> , <i>Eriachne mucronata</i> , <i>Styliidium longibracteatum</i> scattered grasses and herbs. (On laterite outcropping).	2.57
	Completely degraded	18.94
Camraron Mullewa Road 244.21 SLK	20 <i>Acacia burkittii</i> , <i>A. cuthbertsonii</i> subsp. <i>cuthbertsonii</i> and <i>A. tetragonophylla</i> tall shrubland <i>Maireana carnosae</i> , <i>Sclerolaena eriacantha</i> and <i>Calandrinia ptychosperma</i> herbland over <i>Eragrostis dielsii</i> and open <i>Aristida contorta</i> grassland	7.15
	34 <i>Acacia coolgardiensis</i> tall shrubland over <i>Aluta aspera</i> subsp. <i>hesperia</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and <i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i> open shrubland over <i>Monachather paradoxus</i> and <i>Thyridolepis multiculmis</i> sparse	53.41

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	grasses over <i>Goodenia mimuloides</i> , <i>Goodenia occidentalis</i> and <i>Haloragis odontocarpa</i> open herbland		
Carnarvon Mullewa Road 253.39 SLK	18 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>A. acuminata</i> and <i>A. tetragonophylla</i> tall shrubland over <i>Aristida contorta</i> , <i>Austrostipa nitida</i> and <i>Monachather paradoxus</i> open grassland over mixed annual herbs	7.30	
	31 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>Thryptomene decussata</i> tall shrubland over mixed <i>Eremophila</i> spp. and <i>Grevillea</i> spp. open shrubland over <i>Ptilotus polystachyus</i> very open herbland over <i>Thyridolepis multiculmis</i> sparse grasses	6.42	
	34 <i>Acacia coolgardiensis</i> tall shrubland over <i>Aluta aspera</i> subsp. <i>hesperia</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and <i>Grevillea obliquistigma</i> subsp. <i>obliquistigma</i> open shrubland over <i>Monachather paradoxus</i> and <i>Thyridolepis multiculmis</i> sparse grasses over <i>Goodenia mimuloides</i> , <i>Goodenia occidentalis</i> and <i>Haloragis odontocarpa</i> open herbland	45.21	
	39 <i>Acacia umbraculiformis</i> , <i>A. coolgardiensis</i> and <i>A. burkittii</i> tall shrubland over <i>Senna</i> sp. Austin (A. Strid 20210), <i>Ptilotus obovatus</i> and <i>Sida ectogama</i> open shrubland over <i>Aristida contorta</i> open grassland over <i>Borya phaeocephala</i> very open herbland	1.67	
	Completely degraded	2.29	
Carnarvon Mullewa Road 275.1 SLK	18 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>A. acuminata</i> and <i>A. tetragonophylla</i> tall shrubland over <i>Aristida contorta</i> , <i>Austrostipa nitida</i> and <i>Monachather paradoxus</i> open grassland over mixed annual herbs	1.90	
	Completely degraded	0.02	
	19 <i>Acacia ramulosa</i> var. <i>linophylla</i> , <i>A. burkittii</i> and <i>A. tetragonophylla</i> tall shrubland over <i>Aristida contorta</i> and <i>Austrostipa nitida</i> open grassland over mixed annual herbs	29.67	
	30 <i>Acacia ramulosa</i> var. <i>linophylla</i> , (<i>Acacia murrayana</i>) tall open shrubland over <i>Eremophila simulans</i> subsp. <i>magecalyx</i> , (<i>Eremophila forrestii</i> subsp. <i>forrestii</i>) open shrubland over <i>Monachather paradoxus</i> scattered grasses	73.57	
	36 <i>Acacia pteraneura</i> low open woodland over <i>Thryptomene decussata</i> , <i>Acacia umbraculiformis</i> tall open shrubland	0.35	
	52 <i>Acacia ramulosa</i> var. <i>linophylla</i> tall shrubland over <i>Ptilotus obovatus</i> , <i>Eremophila lachnocalyx</i> low open shrubland	19.82	
	56 <i>Acacia ramulosa</i> var. <i>linophylla</i> , <i>Thryptomene decussata</i> tall shrubland over <i>Eremophila latrobei</i> subsp. <i>latrobei</i> scattered shrubs over <i>Aluta aspera</i> subsp. <i>Hesperia</i> , <i>Philothea sericea</i> scattered low shrubs over <i>Monachather paradoxus</i> open grassland. (Associated with some exposed decomposing granites)	8.01	
Twin Peaks Wooleen 12.8 SLK	28h <i>Acacia pteraneura</i> low open woodland to low woodland over <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> scattered tall shrubs over <i>Senna</i> spp., <i>Eremophila forrestii</i> subsp. <i>forrestii</i> scattered shrubs.	1.69	
	30 <i>Acacia ramulosa</i> var. <i>linophylla</i> , (<i>Acacia murrayana</i>) tall open shrubland over <i>Eremophila simulans</i> subsp. <i>magecalyx</i> , (<i>Eremophila forrestii</i> subsp. <i>forrestii</i>) open shrubland over <i>Monachather paradoxus</i> scattered grasses	19.79	
	31 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>Thryptomene decussata</i> tall shrubland over mixed <i>Eremophila</i> spp. and <i>Grevillea</i> spp. open shrubland over <i>Ptilotus polystachyus</i> very open herbland over <i>Thyridolepis multiculmis</i> sparse grasses /57 <i>Grevillea nematophylla</i> subsp. <i>supraplana</i> , <i>Acacia pruinocarpa</i> scattered low trees (low open woodland on parts of lower slopes) over <i>Acacia ramulosa</i> var. <i>linophylla</i> tall open shrubland to tall shrubland over <i>Eremophila glutinosa</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> , <i>Trachymene decussata</i> scattered shrubs over <i>Aluta aspera</i> subsp. <i>hesperia</i> scattered low shrubs	34.6	
	41 <i>Acacia aulacophylla</i> , <i>A. coolgardiensis</i> and <i>A. umbraculiformis</i> open shrubland over <i>Micromyrtus prochytes</i> and <i>Calytrix uncinata</i> sparse low shrubs over <i>Eriachne pulchella</i> subsp. <i>pulchella</i> sparse grasses	1.49	
	49 <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> high open shrubland over scattered low shrubs	28.86	
	57 <i>Grevillea nematophylla</i> subsp. <i>supraplana</i> , <i>Acacia pruinocarpa</i> scattered low trees (low open woodland on parts of lower slopes) over <i>Acacia ramulosa</i> var. <i>linophylla</i> tall open shrubland to tall shrubland over <i>Eremophila glutinosa</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> , <i>Trachymene decussata</i> scattered shrubs over <i>Aluta aspera</i> subsp. <i>hesperia</i> scattered low shrubs	115.51	
Twin Peaks Wooleen 15.2 SLK	28h <i>Acacia pteraneura</i> low open woodland to low woodland over <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> scattered tall shrubs over <i>Senna</i> spp., <i>Eremophila forrestii</i> subsp. <i>forrestii</i> scattered shrubs.	1.72	
	31 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>Thryptomene decussata</i> tall shrubland over mixed <i>Eremophila</i> spp. and <i>Grevillea</i> spp. open shrubland over <i>Ptilotus polystachyus</i> very open herbland over <i>Thyridolepis multiculmis</i> sparse grasses	6.7	
	40 <i>Thryptomene decussata</i> , (<i>Acacia aulacophylla</i>) open shrubland over <i>Micromyrtus sulphurea</i> , <i>Aluta aspera</i> subsp. <i>Hesperia</i> , <i>Calytrix divergens</i> , <i>Philothea brucei</i> subsp. <i>brucei</i> low open shrubland with <i>Neurachne minor</i> , <i>Eriachne mucronata</i> , <i>Stylidium longibracteatum</i> scattered grasses and herbs. (On laterite outcropping).	1.10	
	48 <i>Eremophila fraseri</i> subsp. <i>fraseri</i> open shrubland over <i>Ptilotus obovatus</i> scattered low shrubs with sparsely scattered to scattered <i>Acacia pteraneura</i> and scattered <i>Acacia grasbyi</i>	0.50	
	49 <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> high open shrubland over scattered low shrubs	12.15	
	56 <i>Acacia ramulosa</i> var. <i>linophylla</i> , <i>Thryptomene decussata</i> tall shrubland over <i>Eremophila latrobei</i> subsp. <i>latrobei</i> scattered shrubs over <i>Aluta aspera</i> subsp. <i>Hesperia</i> , <i>Philothea sericea</i> scattered low shrubs over <i>Monachather paradoxus</i> open grassland. (Associated with some exposed decomposing granites)	4.3	
	57 <i>Grevillea nematophylla</i> subsp. <i>supraplana</i> , <i>Acacia pruinocarpa</i> scattered low trees (low open woodland on parts of lower slopes) over <i>Acacia ramulosa</i> var. <i>linophylla</i> tall open shrubland to tall shrubland over <i>Eremophila glutinosa</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> , <i>Trachymene decussata</i> scattered shrubs over <i>Aluta aspera</i> subsp. <i>hesperia</i> scattered low shrubs	94.10	
	Completely degraded	0.58	
Wooleen Mt Wittenoom 4 SLK	28 <i>Acacia pteraneura</i> low woodland over <i>Eremophila galeata</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and mixed <i>Senna</i> spp. open shrubland over mixed <i>Ptilotus</i> sparse herbs over <i>Eragrostis dielsii</i> , <i>Eragrostis pergracilis</i> and <i>Aristida contorta</i> open grassland	1.27	
	Completely Degraded	0.27	
	28F <i>Acacia pteraneura</i> low woodland over <i>Acacia craspedocarpa</i> , <i>Acacia tetragonophylla</i> , <i>Eremophila platycalyx</i> subsp. <i>platycalyx</i> tall open shrubland to tall shrubland over <i>Abutilon cryptopetalum</i> scattered low shrubs and mixed open herbland	3.75	
	28h <i>Acacia pteraneura</i> low open woodland to low woodland over <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> scattered tall shrubs over <i>Senna</i> spp., <i>Eremophila forrestii</i> subsp. <i>forrestii</i> scattered shrubs.	41.25	
	28w <i>Acacia pteraneura</i> low open woodland over <i>Acacia tetragonophylla</i> , (<i>Acacia ramulosa</i> var. <i>linophylla</i>) scattered tall shrubs over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> scattered shrubs over (<i>Eremophila spuria</i> low open shrubland) with <i>Monachather paradoxus</i> , <i>Eriachne helmsii</i> scattered grasses to very open grassland and <i>Ptilotus polystachyus</i> scattered herbs	25.58	
	30 <i>Acacia ramulosa</i> var. <i>linophylla</i> , (<i>Acacia murrayana</i>) tall open shrubland over <i>Eremophila simulans</i> subsp. <i>magecalyx</i> , (<i>Eremophila forrestii</i> subsp. <i>forrestii</i>) open shrubland over <i>Monachather paradoxus</i> scattered grasses	23.06	
	31 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>Thryptomene decussata</i> tall shrubland over mixed <i>Eremophila</i> spp. and <i>Grevillea</i> spp. open shrubland over <i>Ptilotus polystachyus</i> very open herbland over <i>Thyridolepis multiculmis</i> sparse grasses.	10.75	
	36 <i>Acacia pteraneura</i> low open woodland over <i>Thryptomene decussata</i> , <i>Acacia umbraculiformis</i> tall open shrubland	30.51	
	40 <i>Thryptomene decussata</i> , (<i>Acacia aulacophylla</i>) open shrubland over <i>Micromyrtus sulphurea</i> , <i>Aluta aspera</i> subsp. <i>Hesperia</i> , <i>Calytrix divergens</i> , <i>Philothea brucei</i> subsp. <i>brucei</i> low open shrubland with <i>Neurachne minor</i> , <i>Eriachne mucronata</i> , <i>Stylidium longibracteatum</i> scattered grasses and herbs. (On laterite outcropping).	11.78	
	42 <i>Acacia pteraneura</i> low woodland over <i>Acacia scleroclada</i> , <i>Hibiscus</i> sp. <i>Gardneri</i> (A.L. Payne PRP 1435) open shrubland over <i>Indigofera monophylla</i> scattered low shrubs over <i>Tetragonia cristata</i> , <i>Trachymene pilbarensis</i> very open herbland and <i>Monachather paradoxus</i> , <i>Aristida contorta</i> grassland. (Recorded on granite outcrop).	0.33	
	Degraded	10.37	

Appendix A

Woolleen Mt Wittenoom 11 SLK RHS	28F <i>Acacia pteraneura</i> low woodland over <i>Acacia craspedocarpa</i> , <i>Acacia tetragonophylla</i> , <i>Eremophila platycalyx</i> subsp. <i>platycalyx</i> tall open shrubland to tall shrubland over <i>Abutilon cryptopetalum</i> scattered low shrubs and mixed open herbland	6.62
	30 <i>Acacia ramulosa</i> var. <i>linophylla</i> , (<i>Acacia murrayana</i>) tall open shrubland over <i>Eremophila simulans</i> subsp. <i>magecalyx</i> , (<i>Eremophila forrestii</i> subsp. <i>forrestii</i>) open shrubland over <i>Monachather paradoxus</i> scattered grasses	2.75
	36 <i>Acacia pteraneura</i> low open woodland over <i>Thryptomene decussata</i> , <i>Acacia umbraculiformis</i> tall open shrubland	12.46
	37 <i>Acacia pteraneura</i> scattered low trees over <i>A grasbyi</i> , <i>A. cuthbertsonii</i> subsp. <i>cuthbertsonii</i> , <i>A. tetragonophylla</i> scattered tall shrubs to tall open shrubland <i>Ptilotus obovatus</i> and mixed <i>Senna</i> spp. low sparse shrubs (quartz plains, low rises and hill slopes)	2.45
	40 <i>Thryptomene decussata</i> , (<i>Acacia aulacophylla</i>) open shrubland over <i>Micromyrtus sulphurea</i> , <i>Aluta aspera</i> subsp. <i>Hesperia</i> , <i>Calytrix divergens</i> , <i>Philothea brucei</i> subsp. <i>brucei</i> low open shrubland with <i>Neurachne minor</i> , <i>Eriachne mucronata</i> , <i>Stylidium longibracteatum</i> scattered grasses and herbs. (On laterite outcropping).	2.56
	48 <i>Eremophila fraseri</i> subsp. <i>fraseri</i> open shrubland over <i>Ptilotus obovatus</i> scattered low shrubs with sparsely scattered to scattered <i>Acacia pteraneura</i> and scattered <i>Acacia grasbyi</i>	53.50
	26 <i>Acacia pteraneura</i> and <i>A. grasbyi</i> low open woodland over <i>Acacia ramulosa</i> var. <i>linophylla</i> tall shrubland over mixed <i>Senna</i> spp. and <i>Ptilotus obovatus</i> sparse shrubs over <i>Ptilotus macrocephalus</i> , <i>Ptilotus polystachyus</i> and <i>Calandrinia creethiae</i> open herbland over <i>Eragrostis pergracilis</i> and <i>Aristida contorta</i> open tussock grassland	0.48
28F <i>Acacia pteraneura</i> low woodland over <i>Acacia craspedocarpa</i> , <i>Acacia tetragonophylla</i> , <i>Eremophila platycalyx</i> subsp. <i>platycalyx</i> tall open shrubland to tall shrubland over <i>Abutilon cryptopetalum</i> scattered low shrubs and mixed open herbland	3.74	
28h <i>Acacia pteraneura</i> low open woodland to low woodland over <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> scattered tall shrubs over <i>Senna</i> spp., <i>Eremophila forrestii</i> subsp. <i>forrestii</i> scattered shrubs.	41.76	
30 <i>Acacia ramulosa</i> var. <i>linophylla</i> , (<i>Acacia murrayana</i>) tall open shrubland over <i>Eremophila simulans</i> subsp. <i>magecalyx</i> , (<i>Eremophila forrestii</i> subsp. <i>forrestii</i>) open shrubland over <i>Monachather paradoxus</i> scattered grasses	47.98	
31 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>Thryptomene decussata</i> tall shrubland over mixed <i>Eremophila</i> spp. and <i>Grevillea</i> spp. open shrubland over <i>Ptilotus polystachyus</i> very open herbland over <i>Thyridolepis multiculmis</i> sparse grasses.	4.10	
36 <i>Acacia pteraneura</i> low open woodland over <i>Thryptomene decussata</i> , <i>Acacia umbraculiformis</i> tall open shrubland	13.58	
40 <i>Thryptomene decussata</i> , (<i>Acacia aulacophylla</i>) open shrubland over <i>Micromyrtus sulphurea</i> , <i>Aluta aspera</i> subsp. <i>Hesperia</i> , <i>Calytrix divergens</i> , <i>Philothea brucei</i> subsp. <i>brucei</i> low open shrubland with <i>Neurachne minor</i> , <i>Eriachne mucronata</i> , <i>Stylidium longibracteatum</i> scattered grasses and herbs. (On laterite outcropping).	7.2	
48 <i>Eremophila fraseri</i> subsp. <i>fraseri</i> open shrubland over <i>Ptilotus obovatus</i> scattered low shrubs with sparsely scattered to scattered <i>Acacia pteraneura</i> and scattered <i>Acacia grasbyi</i>	3.47	
53 <i>Eremophila fraseri</i> subsp. <i>fraseri</i> , <i>Senna artemisioides</i> subsp. <i>helmsii</i> open shrublands	12.13	
Bare Rock	2.24	
Boolarly Woolleen 13.6 SLK	28 <i>Acacia pteraneura</i> low woodland over <i>Eremophila galeata</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and mixed <i>Senna</i> spp. open shrubland over mixed <i>Ptilotus</i> sparse herbs over <i>Eragrostis dielsii</i> , <i>Eragrostis pergracilis</i> and <i>Aristida contorta</i> open grassland	87.68
	30 <i>Acacia ramulosa</i> var. <i>linophylla</i> tall shrubland over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> open shrubland over <i>Monachather paradoxus</i> and <i>Aristida contorta</i> open grassland	15.09
	Completely Degraded	3.25
Beringarra Pindar Rd 116.4 SLK	23 <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> and <i>A. synchronicia</i> tall open shrubland over mixed <i>Senna</i> spp. sparse shrubs over <i>Salsola australis</i> sparse herbs	35.00
Beringarra Pindar Rd 138.55 SLK	9 <i>Eucalyptus victrix</i> open woodland over <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> over <i>Eriochloa pseudoacrotricha</i> , <i>Cenchrus ciliaris</i> and <i>Dichanthium sericeum</i> subsp. <i>humilis</i> over <i>Pluchea rubelliflora</i> , <i>Streptoglossa cylindriceps</i> and <i>Swainsona pterostylis</i> open herbland.	1.47
	Completely Degraded	3.05
Beringarra Pindar Rd 146 SLK	28 <i>Acacia pteraneura</i> low woodland over <i>Eremophila galeata</i> , <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and mixed <i>Senna</i> spp. open shrubland over mixed <i>Ptilotus</i> sparse herbs over <i>Eragrostis dielsii</i> , <i>Eragrostis pergracilis</i> and <i>Aristida contorta</i> open grassland	56.2
Beringarra Pindar Rd 155 SLK	16 <i>Acacia synchronicia</i> tall open shrubland over <i>Eremophila laanii</i> , <i>Eremophila longifolia</i> and <i>Scaevola spinescens</i> open shrubland over <i>Setaria dielsii</i> open grassland over <i>Ptilotus divaricatus</i> , <i>Ptilotus macrocephalus</i> and <i>Tetragonia cristata</i> open herbland	7.89
	25 <i>Acacia eremaea</i> and <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> tall open shrubland over mixed <i>Chenopodiaceae</i> spp. low shrubs and herbs	4.58
	30 <i>Acacia ramulosa</i> var. <i>linophylla</i> , (<i>Acacia murrayana</i>) tall open shrubland over <i>Eremophila simulans</i> subsp. <i>magecalyx</i> , (<i>Eremophila forrestii</i> subsp. <i>forrestii</i>) open shrubland over <i>Monachather paradoxus</i> scattered grasses	45.5
	31 <i>Acacia ramulosa</i> var. <i>linophylla</i> and <i>Thryptomene decussata</i> tall shrubland over mixed <i>Eremophila</i> spp. and <i>Grevillea</i> spp. open shrubland over <i>Ptilotus polystachyus</i> very open herbland over <i>Thyridolepis multiculmis</i> sparse grasses.	34.01
	40 <i>Thryptomene decussata</i> , (<i>Acacia aulacophylla</i>) open shrubland over <i>Micromyrtus sulphurea</i> , <i>Aluta aspera</i> subsp. <i>Hesperia</i> , <i>Calytrix divergens</i> , <i>Philothea brucei</i> subsp. <i>brucei</i> low open shrubland with <i>Neurachne minor</i> , <i>Eriachne mucronata</i> , <i>Stylidium longibracteatum</i> scattered grasses and herbs. (On laterite outcropping).	0.74
	49 <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> high open shrubland over scattered low shrubs	2.27
	50 <i>Acacia pteraneura</i> scattered low trees over scattered shrubs and very open herbland	5.23
	28F <i>Acacia pteraneura</i> low woodland over <i>Acacia craspedocarpa</i> , <i>Acacia tetragonophylla</i> , <i>Eremophila platycalyx</i> subsp. <i>platycalyx</i> tall open shrubland to tall shrubland over <i>Abutilon cryptopetalum</i> scattered low shrubs and mixed open herbland	7.95
	25 <i>Acacia eremaea</i> and <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> tall open shrubland over mixed <i>Chenopodiaceae</i> spp. low shrubs and herbs	5.48
	55 <i>Maireana convexa</i> , <i>Maireana glomerifolia</i> chenopod low shrubland	3.65
40 <i>Thryptomene decussata</i> , (<i>Acacia aulacophylla</i>) open shrubland over <i>Micromyrtus sulphurea</i> , <i>Aluta aspera</i> subsp. <i>Hesperia</i> , <i>Calytrix divergens</i> , <i>Philothea brucei</i> subsp. <i>brucei</i> low open shrubland with <i>Neurachne minor</i> , <i>Eriachne mucronata</i> , <i>Stylidium longibracteatum</i> scattered grasses and herbs. (On laterite outcropping).	7.64	
28h <i>Acacia pteraneura</i> low open woodland to low woodland over <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> scattered tall shrubs over <i>Senna</i> spp., <i>Eremophila forrestii</i> subsp. <i>forrestii</i> scattered shrubs.	7.19	
41 <i>Acacia aulacophylla</i> , <i>A. coolgardiensis</i> and <i>A. umbraculiformis</i> open shrubland over <i>Micromyrtus procytes</i> and <i>Calytrix uncinata</i> sparse low shrubs over <i>Eriachne pulchella</i> subsp. <i>pulchella</i> sparse grasses	11.34	
30 <i>Acacia ramulosa</i> var. <i>linophylla</i> , (<i>Acacia murrayana</i>) tall open shrubland over <i>Eremophila simulans</i> subsp. <i>magecalyx</i> , (<i>Eremophila forrestii</i> subsp. <i>forrestii</i>) open shrubland over <i>Monachather paradoxus</i> scattered grasses	36.49	
36 <i>Acacia pteraneura</i> low open woodland over <i>Thryptomene decussata</i> , <i>Acacia umbraculiformis</i> tall open shrubland	55.82	
50 <i>Acacia pteraneura</i> scattered low trees over scattered shrubs and very open herbland	3.64	
49 <i>Acacia grasbyi</i> , <i>Acacia tetragonophylla</i> high open shrubland over scattered low shrubs	5.85	
Completely degraded	1.03	

(360 Environmental, 2016; 360 Environmental, 2017)

Landform Systems mapped within the application area:

- **Tindalarra System** - Near level hardpan wash plains, narrow drainage lines and moderately saline drainage floors; supporting tall mixed acacia shrublands with wanderrie grasses, also minor saltbush/bluebush low shrublands.
- **Nerramyne System** - Undulating plains of sandy-surfaced laterite and weathered granite with low remnant plateaux, breakaways and rises supporting acacia shrublands.
- **Kalli System** - Elevated gently undulating red sandplains edged by stripped surfaces on laterite and granite, supporting acacia tall shrublands with wanderrie grass understoreys.
- **Waguin System** - Sandplains and stripped granite or laterite surfaces with low fringing breakaways and lower plains; supports bowgada and mulga shrublands with wanderrie grasses and minor halophytic shrublands.
- **Yanganoo System** - Almost flat hardpan wash plains, with or without small wanderrie banks and weak groving; supporting mulga shrublands and wanderrie grasses on banks.
- **Bayou System** - Saline alluvial meander plains and river floodplains with anatomising river channels supporting halophytic shrublands with overstorey shrubs and eucalyptus trees.
- **Narryer System** - Low hills and lateritised breakaways above very gently undulating stony slopes and plains on gneiss and granite with sparse acacia shrublands.
- **Gabanintha System** - Greenstone ridges, hills and footslopes supporting sparse acacia and other mainly non-halophytic shrublands.
- **Jundee Systems** - Hardpan plains with variable gravelly mantles and minor sandy banks supporting weakly groved mulga shrublands.
- **Violet System** - Gently undulating gravelly plains on greenstone, laterite and hardpan, with low stony rises and minor saline plains; supporting groved mulga and bowgada shrublands and occasionally chenopod shrublands.
- **Challenge System** - Gently undulating gritty and sandy surfaced plains, occasional granite hills, tors and low breakaways, supporting acacia shrublands and occasional halophytic shrublands.
- **Wooleen System** - Saline, vegetated lake beds with almost flat, fringing saline alluvial plains and occasional elliptical sandy banks, supporting mostly halophytic shrublands and tussock grasslands.
- **Ero System** - Tributary floodplains with shallow, erodible duplex soils on red-brown hardpan, more or less saline and supporting acacia shrublands with halophytic and non-halophytic undershrubs.
- **Beringarra System** - Riverine plains with floodplains and channels, supporting halophytic shrublands, mixed acacia shrublands and low woodlands with minor perennial grasses.
- **Roderick System** - Broad, saline riverine plains, mainly supporting chenopod shrublands; also numerous grassy drainage foci, claypans and non-saline marginal hardpan plains with acacia shrublands.

Vegetation and Substrate Associations (VSA's) recorded within the application area

VSA 1: Drainage systems supporting *Eucalyptus camaldulensis*, *Acacia* shrublands and tussock grasslands. Major drainage support areas of *Casuarina obesa* and contain pools of water with fringing sedgeland and grasslands.

VSA 2: Floodplain depressions supporting chenopod shrublands (Samphire, Bluebush, Saltbush).

VSA 3: Major riverine plains with active lower floodplains flanking channelled watercourses; supports mixed *Acacia* shrublands, low woodlands with minor perennial grasses and areas halophytic shrublands. The Murchison and Roderick River floodplains.

VSA 4: Hardpan wash plains supporting mulga dominated shrublands and wanderrie grasses on occasional sandy banks. *Acacia* shrublands occur at a variable density (*Acacia aneura*, *Acacia tetragonophylla*, *Acacia grasbyi*, *Acacia ramulosa*), with *Eremophila* shrubs and scattered tussock grasses.

VSA 5: Sandplains supporting *Acacia* shrublands (eg. *Acacia ramulosa*, *Acacia aneura*) with occasional minor areas of granite outcropping.

VSA 6: Stony footslopes and undulating stony plains supporting sparse / open *Acacia* and *Eremophila* shrublands. Occasional low rocky hills support *Acacia* shrubs.

VSA 7: Granite outcrops, granite domes and hills supporting scattered *Acacia* shrublands and areas of *Callitris* woodland and fringing dense shrublands.

VSA 8: Low lateritic stony rises supporting *Acacia* shrublands (dominated by *Acacia aneura* and *Acacia quadramarginea*) with minor areas of outcropping.

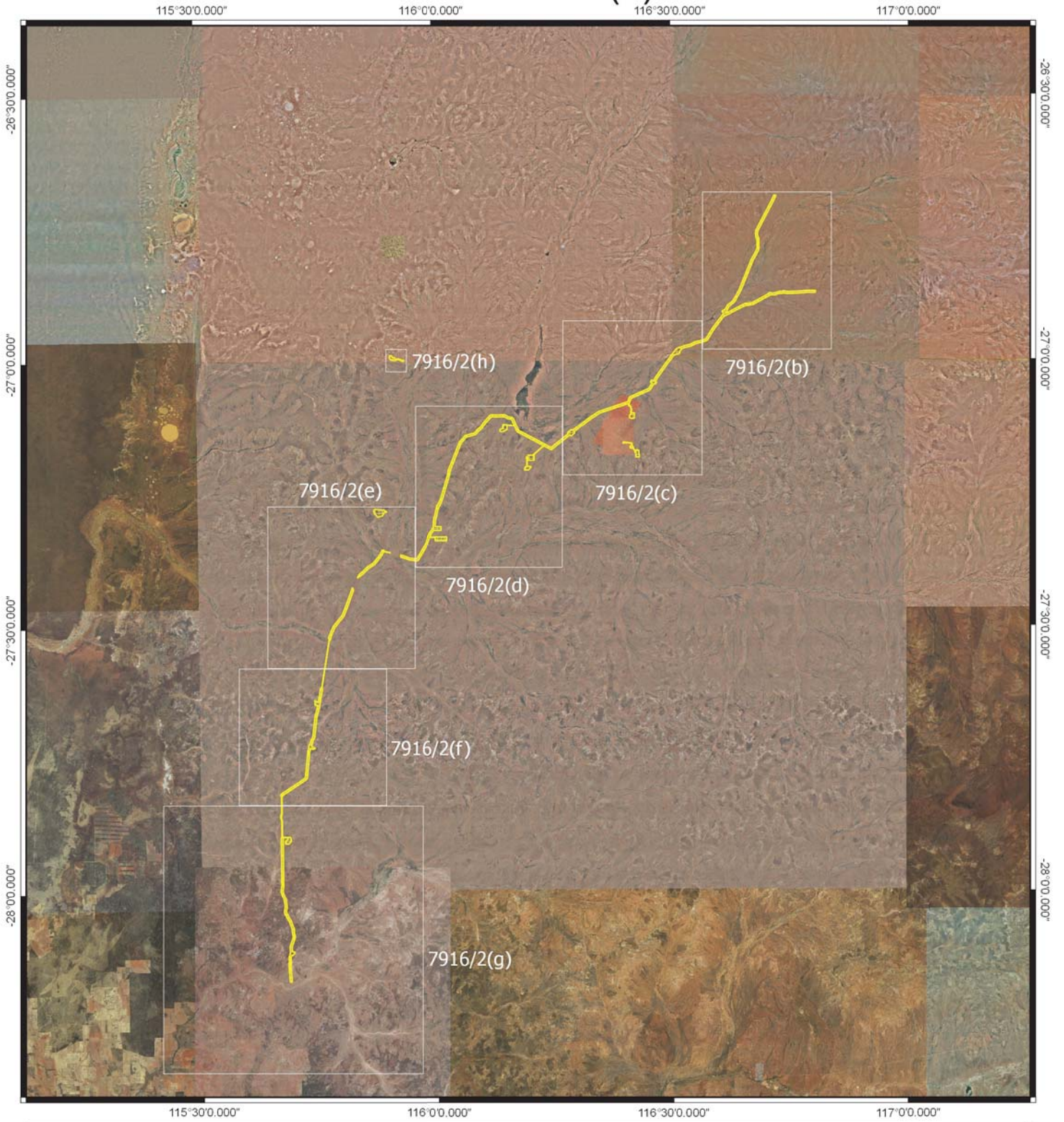
VSA 9: Lateritic, gravelly hills and stony rises supporting Mulga shrublands with an *Eremophila* shrub layer. Upper, stony slopes support areas of *Thryptomene decussata*.

Appendix A


VSA 10: Granitic breakaways, varying relief, some minor areas with cliff faces up to three metres, supporting *Acacia aneura* and *Acacia quadramarginea* shrublands.

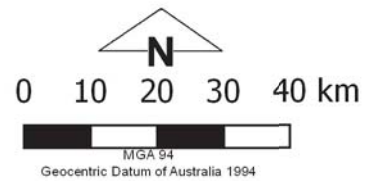
(Bamford Consulting Ecologists, 2016; Bamford Consulting Ecologists, 2017).


Plan 7916/2(a)



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
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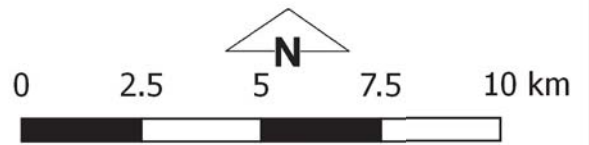


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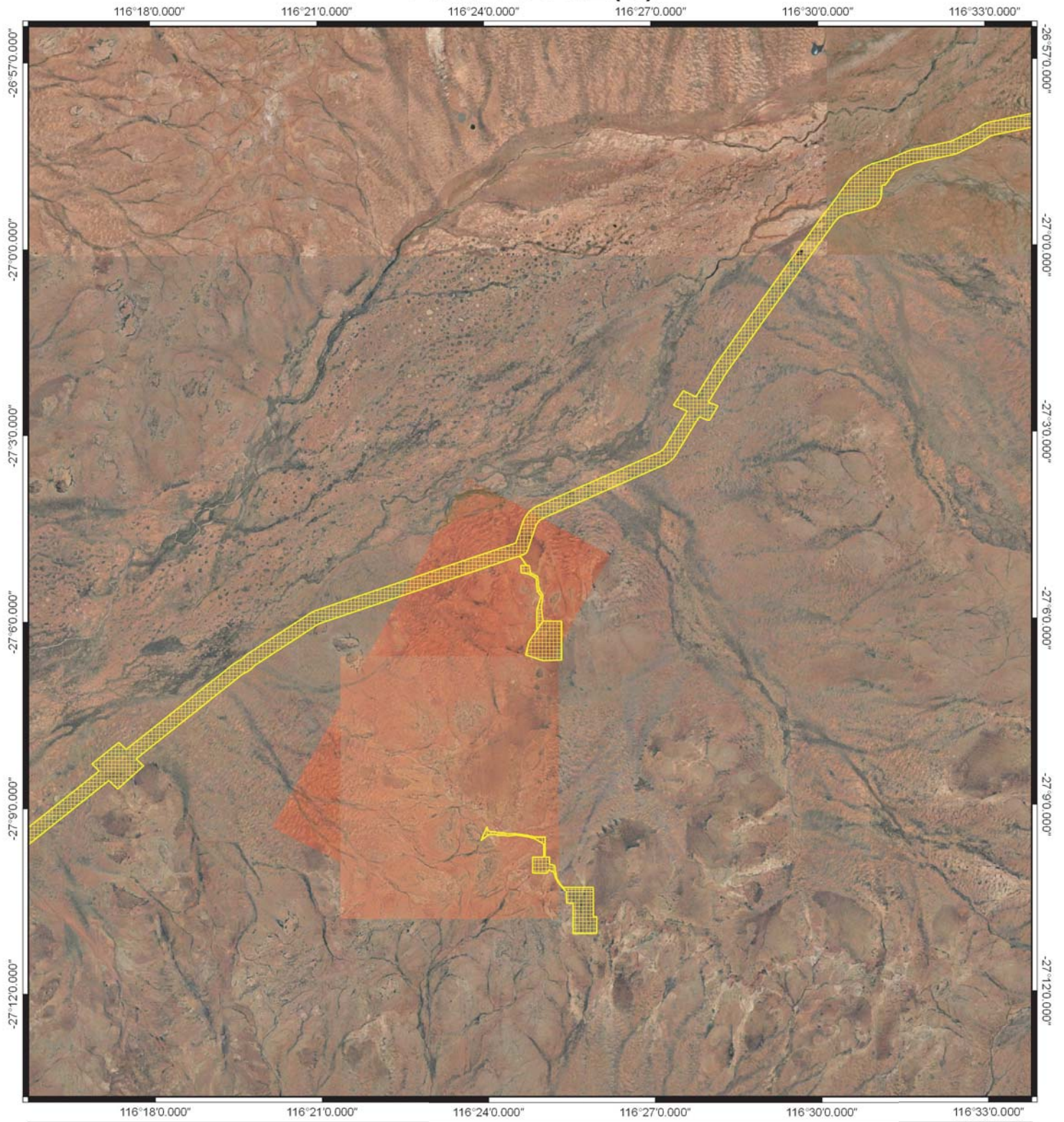
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


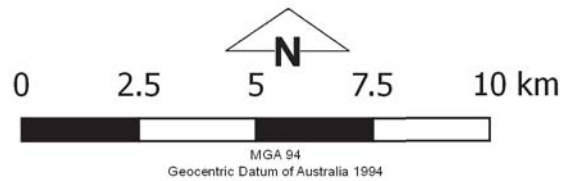
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


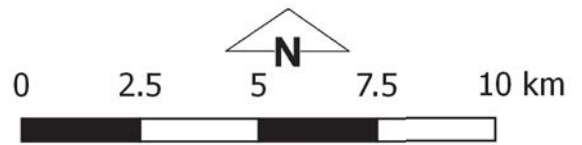
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


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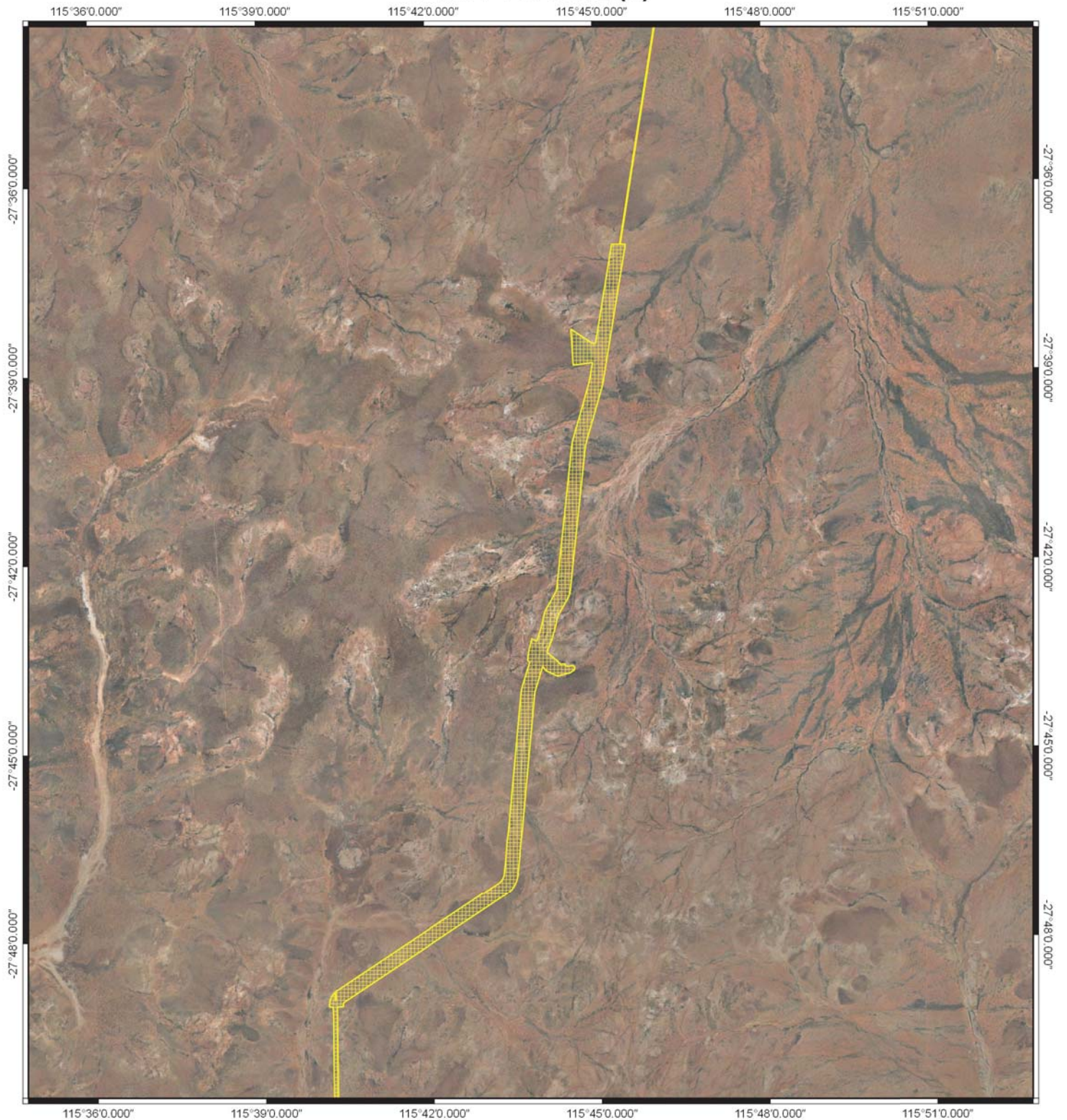
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


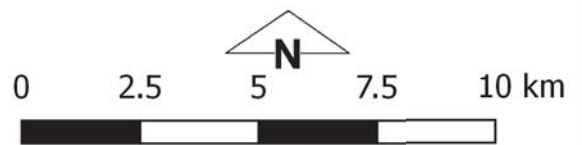
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
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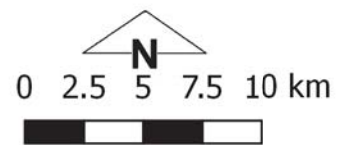


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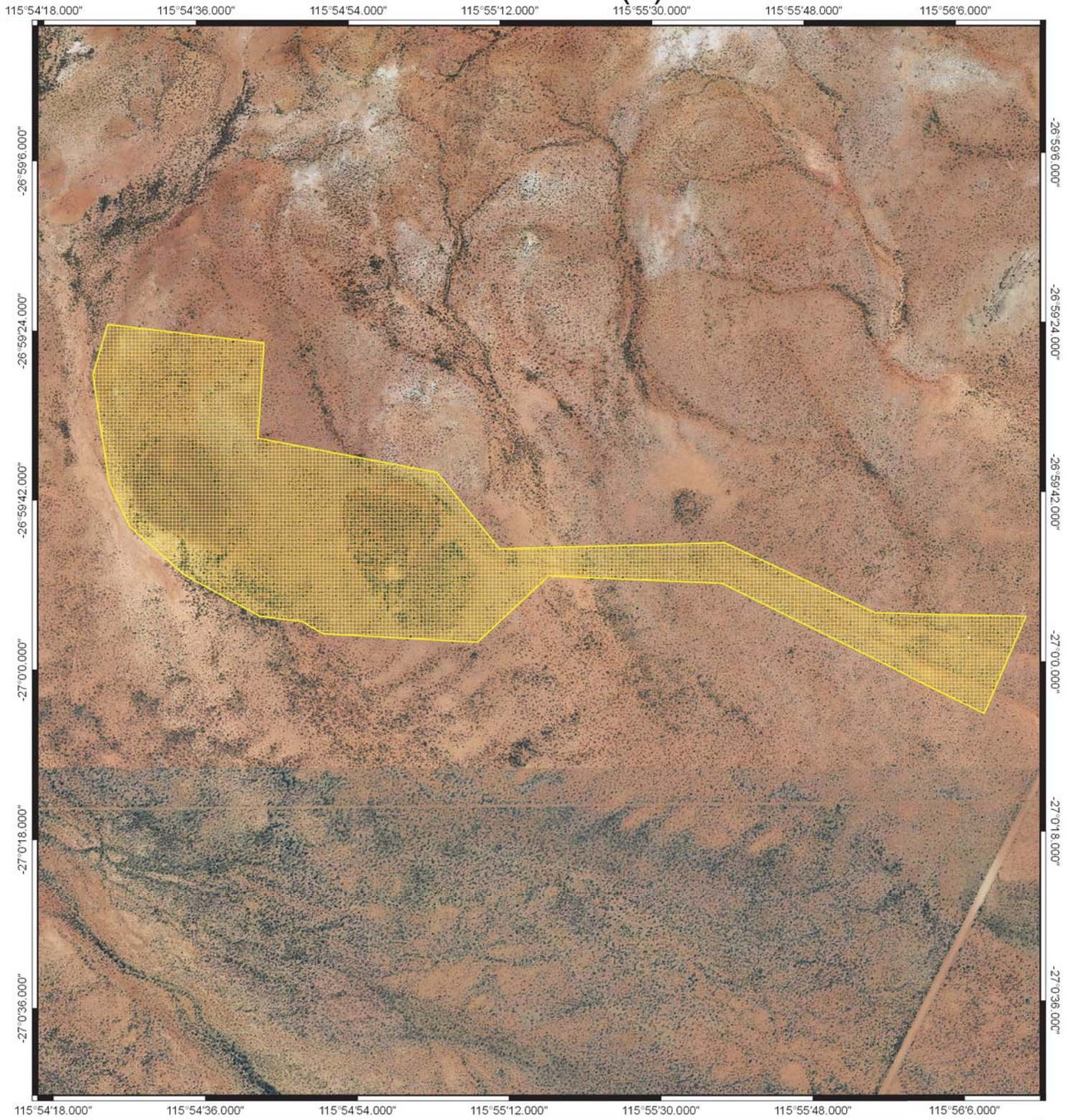
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


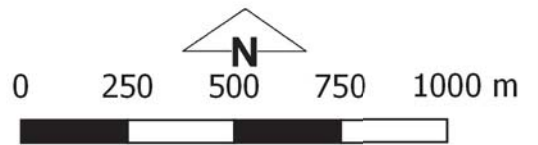
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Plan 7916/2(h)



Legend

 CPS areas approved to clear
Image



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1. Application details

1.1. Permit application details

Permit application No.: 7916/2
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Main Roads Western Australia
Application received date: 11 December 2017

1.3. Property details

Property: Numerous properties
Local Government Authority: Shire of Murchison and City of Greater Geraldton
Localities: Murchison, South Murchison, Woolgorong, Nerramyne and Nunierra

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
2000		Mechanical Removal	Road construction/upgrades and extractive industry.

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 11 February 2019
Reasons for Decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing is at variance to principles (a), (b) and (f), may be at variance to principles (c) and (h) and (i) and is not likely to be at variance to the remaining principles.

Based on the assessment of the application area, the Delegated Officer determined that:

- the application area comprises an area of high biological diversity;
- the application area contains significant habitat for the western spiny-tailed skink (*Egernia stokesii badia*) and suitable habitat for the malleefowl (*Leipoa ocellata*), northern shield-backed trapdoor spider (*Idiosoma* sp. 'MYG018'), gilled slender blue-tongue (*Cyclodomorphus branchialis*) and good-legged lerista (*Lerista eupoda*);
- the application area may include two threatened flora species;
- the proposed clearing may impact on the conservation status of up to 11 priority flora species;
- the proposed clearing may result in the spread of weeds into the ex- Woolgorong conservation reserve and Urawa Nature Reserve.

The Delegated Officer noted that the proposed impacts will occur over a distance of approximately 237 kilometres.

After consideration of the above, the Delegated Officer determined that the following requirements as specified within clearing permit conditions, would help to address the abovementioned impacts:

- pre-clearance surveys to identify gilled slender blue-tongue and good-legged lerista within the application area, and the relocation of any individuals of these species recorded during pre-clearance surveys in accordance with a fauna licence issued pursuant to Regulation 13 of the *Biodiversity Conservation Regulations 2018*;
- pre-clearance surveys to identify active malleefowl mounds within the application area, with no clearing to occur within 50 metres of any active malleefowl mounds identified;
- one directional clearing, in a slow progressive manner, to allow conservation significant fauna to move into adjacent habitat ahead of clearing;
- avoidance of the granite outcropping habitat type (SVA 7) identified within the Fauna Assessments, to minimise impacts to the western spiny-tailed skink;
- avoidance of 15 northern shield-backed trapdoor spider burrows located within the application area;
- pre-clearance flora surveys for two threatened flora species and 11 priority flora species, with a 50 metre buffer required around any of the threatened flora or Priority 1 and 2 flora identified within the Flora Assessments or follow up pre-clearance surveys, and a 20 metre buffer required around any of the specified Priority 3 flora identified within the Flora Assessments or follow up pre-clearance

- surveys;
- revegetation and rehabilitation of any temporary cleared areas to minimise the extent of long term impacts resulting from the proposed clearing; and
- weed hygiene measures to mitigate the risk of degradation of adjoining native vegetation, including vegetation within the ex-Woolgorong reserve and Urawa Nature Reserve.

The Delegated Officer also took into consideration that road upgrades are required to provide safe access for road trains to the Square Kilometre Array, a State Development project.

In determining to grant the amendment, the Delegated Officer considered that as no additional clearing area is required to facilitate the construction of the floodway on the Twin Peaks – Wooleen Road, the conditions on the clearing permit mitigate potential environmental impacts.

In determining to grant a clearing permit subject to conditions, the Delegated Officer found that the proposed clearing is unlikely to lead to an unacceptable risk to the environment.

2. Site Information

Clearing Description

The application is to upgrade a series of local roads in the City of Greater Geraldton and Shire of Murchison to allow road trains access to the future Square Kilometre Array (SKA) State Development project. As part of the project, 18 borrow pits have been identified to provide material for the proposed road works. The works will include the following at various locations along the local roads (Main Roads Western Australia (MRWA), 2017):

- Road and intersection realignments;
- Road widening;
- River crossing floodway construction;
- Culvert and cattle grid repairs and replacements; and
- Gravel re-sheeting.

It is noted that the application area comprises 10,959 hectares, with the proposed clearing to comprise no more than 2000 hectares within this larger footprint area. The applicant has advised that the proposed clearing for road upgrades comprises approximately 110.82 hectares and the proposed clearing for borrow pits comprises approximately 1,889.18 hectares.

Vegetation Description

The applicant commissioned two flora and vegetation assessments which encompass various portions of the application area, being:

- A flora and vegetation assessment (Flora Assessment 1) undertaken by 360 Environmental (2016) that largely incorporated the northern and southern portion of the application area. This Assessment identified 33 vegetation units within the surveyed portion of the application area; and
- A flora and vegetation assessment (Flora Assessment 2) undertaken by 360 Environmental (2017) that largely incorporated the central portion and small north eastern most portion of the application area. This Assessment identified 29 vegetation units within the surveyed portion of the application area.

A list of the abovementioned identified vegetation types is provided within Appendix A of Clearing Permit CPS 7916/2.

Vegetation Condition

The Flora Assessments identified the vegetation within the application area as being in the following condition (360 Environmental, 2016; 360 Environmental, 2017):

- Completely degraded (approximately 4.6 per cent of the surveyed portion of the application area);
- Degraded (approximately 1.4 per cent of the surveyed portion of the application area);
- Good (approximately 11.3 per cent of the surveyed portion of the application area);
- Very good (approximately 78.37 per cent of the surveyed portion of the application area); and
- Excellent (approximately 4.33 per cent of the surveyed portion of the application area).

Soil type

There are 15 Landform Systems mapped within the application area. A list of these Landform Systems is provided within Appendix A of Clearing Permit CPS 7916/2.

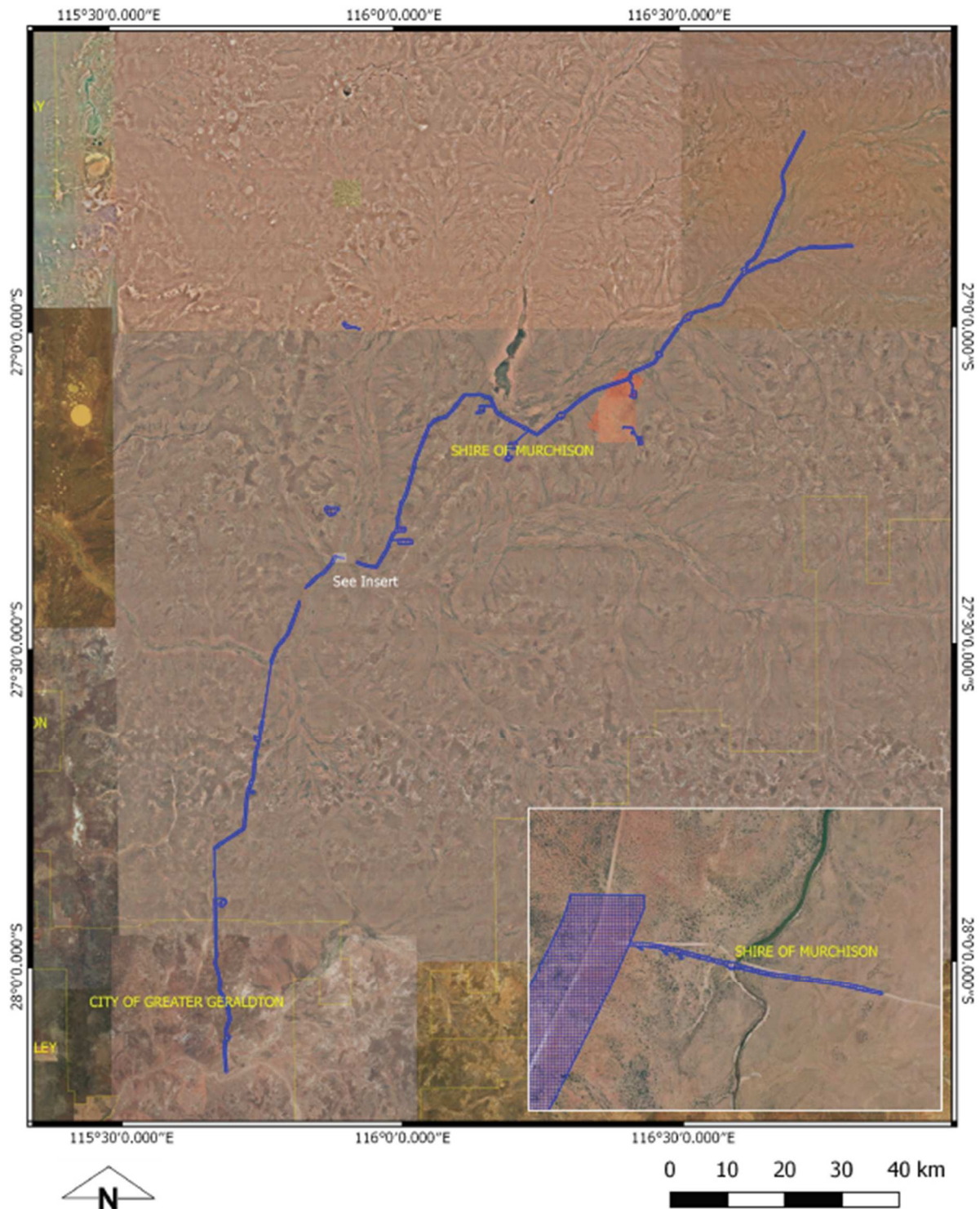


Figure 1: The application area (shown in the blue), in comparison to the Local Government Area boundaries (shown in yellow). The amendment to the approved clearing area is shown in the insert contained in the above Figure.

3. Minimisation and mitigation measures

The applicant has advised that the following general mitigation measures will be undertaken to avoid and minimise impacts associated with the proposed clearing (MRWA, 2017):

- The clearing of native vegetation within the application area will be minimised where possible, and existing cleared areas will be utilised where possible;
- All vegetation proposed to be cleared will be demarcated on site prior to the commencement of project activities. Specific exclusion areas that are to be retained will be marked accordingly;
- Native vegetation will be conserved as far as practicable, and will not be disturbed for such temporary works as side tracks, access tracks, temporary storage areas, campsites, spoil areas or site offices;
- The portion of the road project envelope that intersects Urawa Nature Reserve will be confined to the previously disturbed road corridor maintenance zone. As such this reserve will not be impacted; and
- All areas associated with clearing for borrow pits will be rehabilitated once material has been exhausted. Revegetation will be undertaken in accordance with Main Roads 'Guideline Revegetation Planning and Techniques, 2015'.

The applicant has also provided a commitment to other specific management measures for conservation significant flora and fauna species, which are referred to within the relevant clearing principles in clearing permit decision report CPS 7916/1.

4. Assessment of application against clearing principles

The requested amendment is a change to the boundary of the approved clearing area to allow for the construction of a floodway on the Twin Peaks – Wooleen Road. No additional clearing area is required to facilitate the construction of the floodway.

The assessment against the clearing principles has not changed and can be found in clearing permit decision report CPS 7916/1.

Planning instruments and other relevant matters

The assessment against planning instruments and other matters has not changed and can be found in clearing permit decision report CPS 7916/1.

5. References

- 360 Environmental (2016) Flora and Vegetation Assessment. Murchison SKA Road Upgrade. Additional Information for Clearing Permit Application CPS 7916/1. DWER Ref A1595613.
- 360 Environmental (2017) Flora and Vegetation Assessment. Murchison SKA Road Upgrade. Additional Information for Clearing Permit Application CPS 7916/1. DWER Ref A1595578.
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2018a) Flora advice for Clearing Permit Application CPS 7916/1 received 29 March 2018 (DER Ref A1662020).
- Department of Biodiversity, Conservation and Attractions (DBCA) (2018b) Fauna advice for Clearing Permit Application CPS 7916/1 received 5 April 2018 (DER Ref A1662015).
- Department of the Environment (DotE) (2015) '*Leipooa ocellata*' in Species Profile and Threats Database, Department of the Environment, Canberra.
- Government of Western Australia (2018). 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. WA Department of Biodiversity, Conservation and Attractions.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Main Roads Western Australia (MRWA) (2017) Preliminary Environmental Impact Assessment and Environmental Management Plan. Square Kilometre Array. Additional information for Clearing Permit Application CPS 7916/1. DWER Ref 1578088.
- M.J. & A.R. Bamford Consulting Ecologists (Bamford Consulting Ecologists) (2016) Square Kilometre Array (SKA) Main Roads Upgrade Fauna Assessment, 5 February 2016. Additional Information for Clearing Permit Application CPS 7916/1. DWER Ref A1595578.
- M.J. & A.R. Bamford Consulting Ecologists (Bamford Consulting Ecologists) (2017) Square Kilometre Array Road Upgrade Project Fauna Assessment, 30 January 2017. Additional Information for Clearing Permit Application CPS 7916/1. DWER Ref A1595613.
- Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.
- Submission (2018) Direct Interest Submission received on 16 March 2018 in response to Clearing Permit Application CPS 7916/1 (DER Ref 1636641).
- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/> (Accessed April 2018).
- Yamatji Marlpa Aboriginal Corporation (2018) Direct interest response received on 15 March 2018 for Clearing Permit Application CPS 7916/1. DWER Ref 1635905.

GIS Databases:

- Aboriginal Sites of Significance
- DAFWA Heritage
- DBCA Estate
- DEC Covenant
- Groundwater salinity
- Hydrography, linear
- National Trust WA Covenant
- Remnant vegetation
- SAC bio datasets (accessed January 2019)
- Soils, Statewide
- Topographic contours
- Wetlands