



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8554/1
Permit Holder:	Commissioner of Main Roads Western Australia
Duration of Permit:	15 December 2019 – 15 December 2034

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 purposes of investigating and stockpiling material.

2. Land on which clearing is to be done

Crown Reserve 8920, Lake Austin
Unallocated Crown Land, Lake Austin
Kyarra Location 18, Meekatharra
Lot 100 on Deposited Plan 220127, Daggarr Hills
Lot 111 on Deposited Plan 221128, Daggarr Hills
Lot 111 on Deposited Plan 221128, Lake Austin
Lot 131 on Deposited Plan 29083, Reedy
Lot 137 on Deposited Plan 29081, Lake Austin
Lot 148 on Deposited Plan 238472, Meekatharra
Lot 149 on Deposited Plan 218690, Lake Austin
Lot 153 on Deposited Plan 238571, Meekatharra
Lot 170 on Deposited Plan 218689, Daggarr Hills
Lot 240 on Deposited Plan 218692, Reedy
Lot 279 on Deposited Plan 217089, Meekatharra
Lot 283 on Deposited Plan 217089, Meekatharra
Great Northern Highway Road Reserve (PIN 11519465), Lake Austin
Great Northern Highway Road Reserve (PIN 11666949), Daggarr Hills
Great Northern Highway Road Reserve (PIN 11725549), Meekatharra
Great Northern Highway Road Reserve (PIN 11726201), Reedy
Road Reserve (PIN 11519464), Lake Austin
Unnamed Road Reserve (PIN 1017222), Meekatharra

3. Area of Clearing

The Permit Holder must not clear more than 390 hectares of native vegetation within the area hatched yellow on attached Plan 8554/1a, Plan 8554/1b, Plan 8554/1c, Plan 8554/1d and Plan 8554/1e.

4. Period in which clearing is authorised

The Permit Holder shall not clear any native vegetation after 15 December 2029.

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 work 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. Fauna management - direction of clearing

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

9. Flora management - *Angianthus microcephalus*

- (a) Prior to undertaking any clearing authorised within the areas cross-hatched yellow on attached Plan 8554/1d, the Permit Holder must engage a *botanist* to conduct *targeted flora* surveys for the presence of *Angianthus microcephalus*;
- (b) The Permit Holder shall ensure that no clearing occurs within 10 metres of *Angianthus microcephalus* individuals identified through the surveys required by condition 9(a), unless the clearing is done in accordance with a Flora Management Plan required under condition 11 which has been approved by the *CEO*; and
- (c) Prior to undertaking any clearing within the areas cross-hatched yellow on attached Plan 8554/1d, the Permit Holder shall provide the results of the *targeted flora* survey in a report to the *CEO*.

10. Flora management - *Goodenia berrinbinensis*

- (a) Prior to undertaking any clearing authorised within the areas cross-hatched yellow on attached Plan 8554/1b and Plan 8554/1c, the Permit Holder must engage a *botanist* to conduct *targeted flora* surveys for the presence of *Goodenia berrinbinensis*;
- (b) The Permit Holder shall ensure that no clearing occurs within 10 metres of *Goodenia berrinbinensis* individuals identified through the surveys required by condition 10(a), unless the clearing is done in accordance with a Flora Management Plan required under condition 11 which has been approved by the *CEO*; and
- (c) Prior to undertaking any clearing within the areas cross-hatched yellow on attached Plan 8554/1b and Plan 8554/1c, the Permit Holder shall provide the results of the *targeted flora* survey in a report to the *CEO*.

11. Flora Management Plan

- (a) Where clearing within 10 metres of individuals of *Angianthus microcephalus* and/or *Goodenia berrinbinensis* is unavoidable, the Permit Holder must submit a Flora Management Plan to the *CEO* for approval. The management plan must contain the following:
 - (i) The results of the surveys carried out in accordance with condition 9 and/or 10;
 - (ii) Details of the Permit Holder's attempts to avoid and minimise impacts to *Angianthus microcephalus* and/or *Goodenia berrinbinensis*; and
 - (iii) Proposed methods of minimising, mitigating and/or offsetting the residual impacts to *Angianthus microcephalus* and/or *Goodenia berrinbinensis*.

12. Watercourse management

Where a *watercourse* is to be impacted by clearing authorised under this Permit, the Permit Holder shall maintain the existing surface water flow.

13. 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 introduction and spread of *weeds*:

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

14. 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) At an *optimal time* within 12 months following completion of material extraction, *revegetate* and *rehabilitate* the areas cleared for temporary works, by:
 - (i) ripping the ground on the contour to remove soil compaction; and
 - (ii) laying the vegetative material and topsoil retained under condition 14(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 14(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 14(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 14(c)(ii) of this Permit, the Permit Holder shall repeat condition 14(c)(i) and 14(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 14(c)(i) and (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 14(c)(ii), the *CEO* may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 14(c)(ii).

PART III - RECORD KEEPING AND REPORTING

15. 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;
 - (ii) the date that the area was cleared;
 - (iii) the size of the area cleared (in hectares);
 - (iv) the direction that clearing was undertaken; and
 - (v) purpose for which clearing was undertaken.

- (b) Actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 7 of this Permit.
- (c) Flora management actions undertaken in accordance with conditions 9, 10 and 11 of this Permit.
- (d) Actions taken to maintain the existing surface water flow of *watercourses* in accordance with condition 12 of this Permit.
- (e) Actions taken to minimise the risk of introduction and spread of weeds in accordance with condition 13 of this Permit.
- (f) In relation to the *revegetation* and *rehabilitation* of areas pursuant to Condition 14 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;
 - (ii) a description of the *revegetation* and *rehabilitation* activities undertaken;
 - (iii) the size of the area *revegetated* and *rehabilitated* (in hectares); and
 - (iv) the species composition, structure and density of *revegetation* and *rehabilitation*.

16. 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 15 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 15 September 2034, the Permit Holder must provide to the *CEO* a written report of records required under condition 15 of this Permit where these records have not already been provided under condition 16(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 specialising in environmental science or equivalent, and has a minimum of 2 years work experience in Western Australian flora identification and undertaking flora surveys native to the bioregion being inspected or surveyed, or who is approved by the *CEO* as a suitable *environmental specialist* for the bioregion, and who holds a valid flora licence issued under the *Biodiversity Conservation Act 2016*;

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;

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 200 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;

optimal time means the period from November to December for undertaking *direct seeding*;

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

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;

targeted flora survey means a field-based investigation, including a review of established literature, of the biodiversity of flora and vegetation of the Permit Area, focusing on habitat suitable for *Angianthus microcephalus* and/or *Goodenia berringbinensis* which is being targeted. Targeted survey should be carried out during the optimal time to identify *Angianthus microcephalus* and/or *Goodenia berringbinensis*;

watercourse/s has the meaning given to it in section 3 of the *Rights in Water and Irrigation Act 1914*;

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.



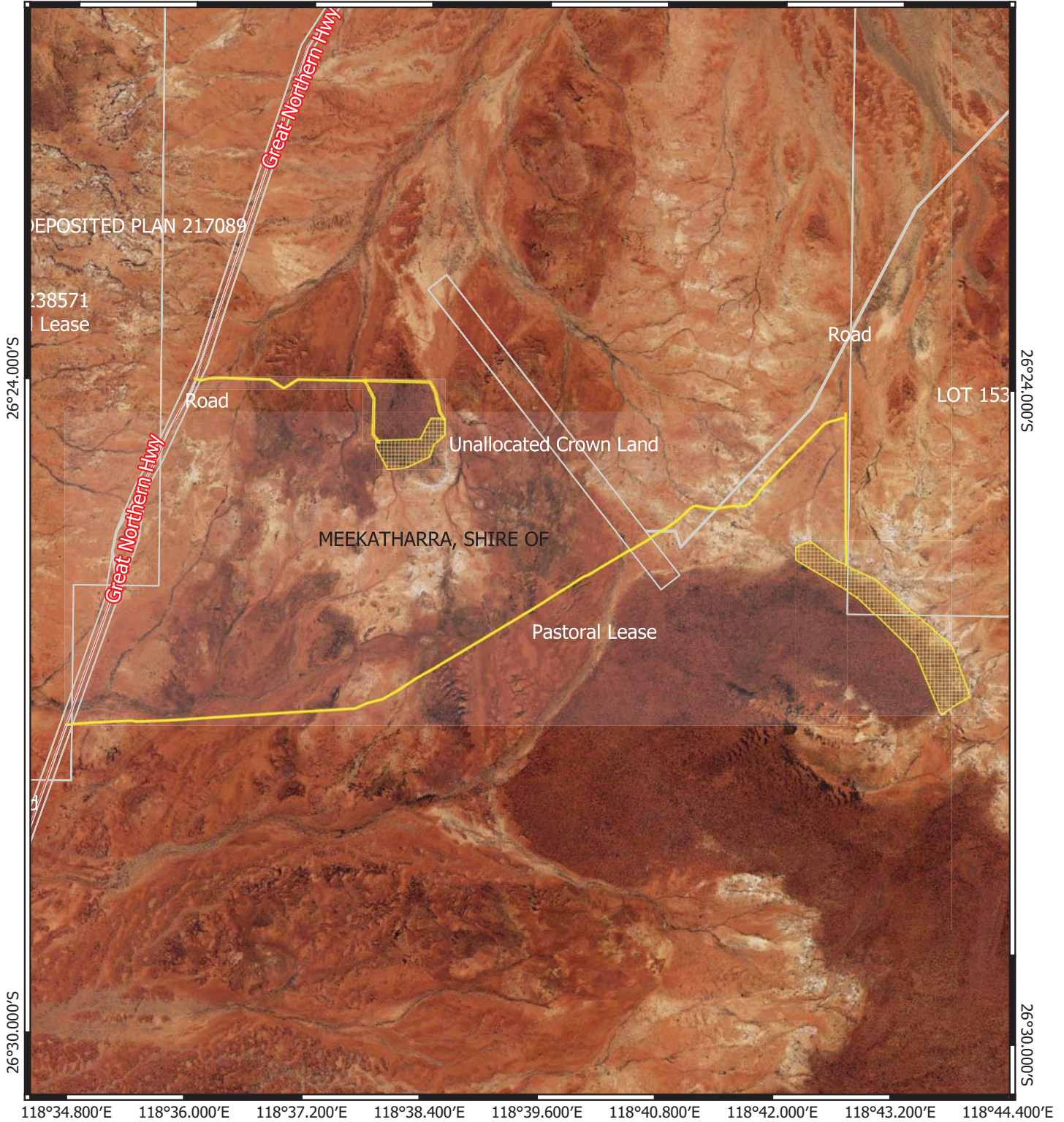
Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

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

15 November 2019


Plan 8554/1a

118°34.800'E 118°36.000'E 118°37.200'E 118°38.400'E 118°39.600'E 118°40.800'E 118°42.000'E 118°43.200'E




Legend

CPS layers

 CPS areas approved to clear

base layers

 Road Centrelines

 Cadastre - LGATE 218

Local Government Authorities


Image



MGA 94
Geocentric Datum of Australia 1994

0 1 2 3 4 km



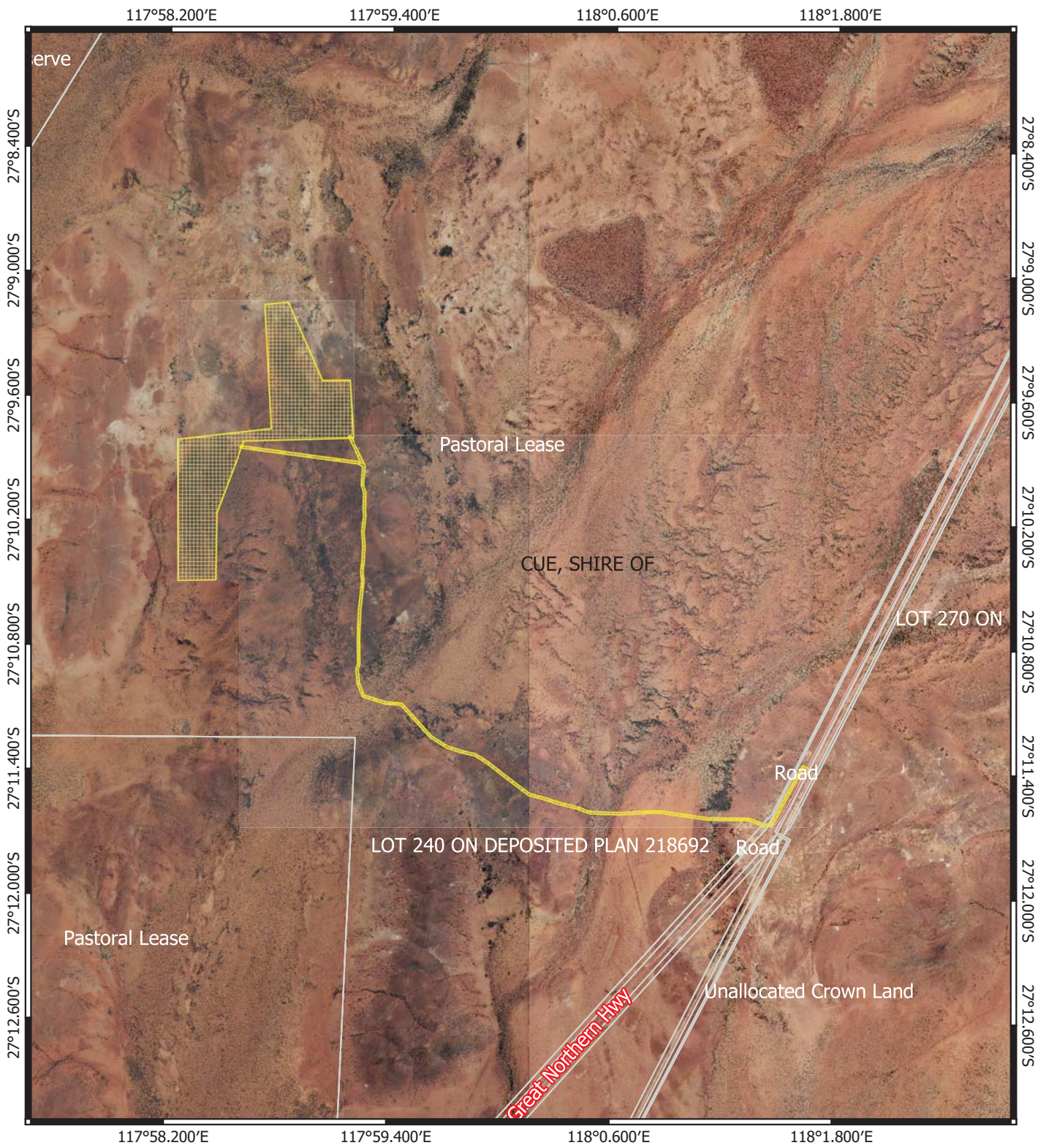

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Officer delegated under section 20 of the
Environmental Protection Act 1986




GOVERNMENT OF
WESTERN AUSTRALIA

Plan 8554/1b




Legend

CPS layers

 CPS areas approved to clear

base layers

 Road Centrelines

 Cadastrate - LGATE 218


Local Government Authorities

Image



MGA 94
Geocentric Datum of Australia 1994

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Officer delegated under section 20 of the
Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA

Plan 8554/1c

117°57.000'E

117°58.200'E

27°24.600'S

27°24.600'S

27°25.200'S

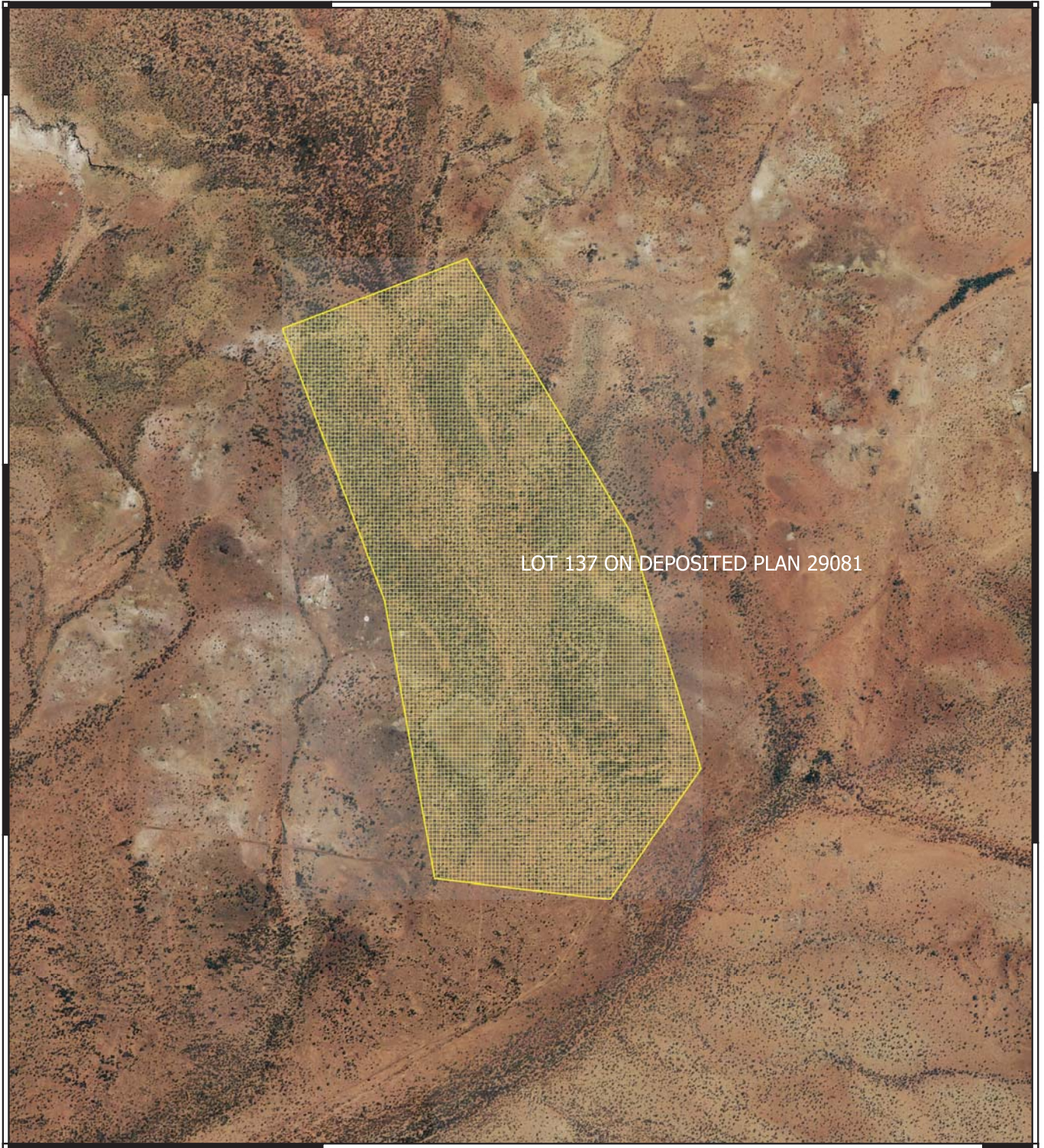
27°25.200'S

27°25.800'S

27°25.800'S

117°57.000'E


117°58.200'E



LOT 137 ON DEPOSITED PLAN 29081

Legend

CPS layers

 CPS areas approved to clear

base layers

 Road Centrelines

 Cadastre - LGATE 218

Local Government Authorities

Image



MGA 94
Geocentric Datum of Australia 1994

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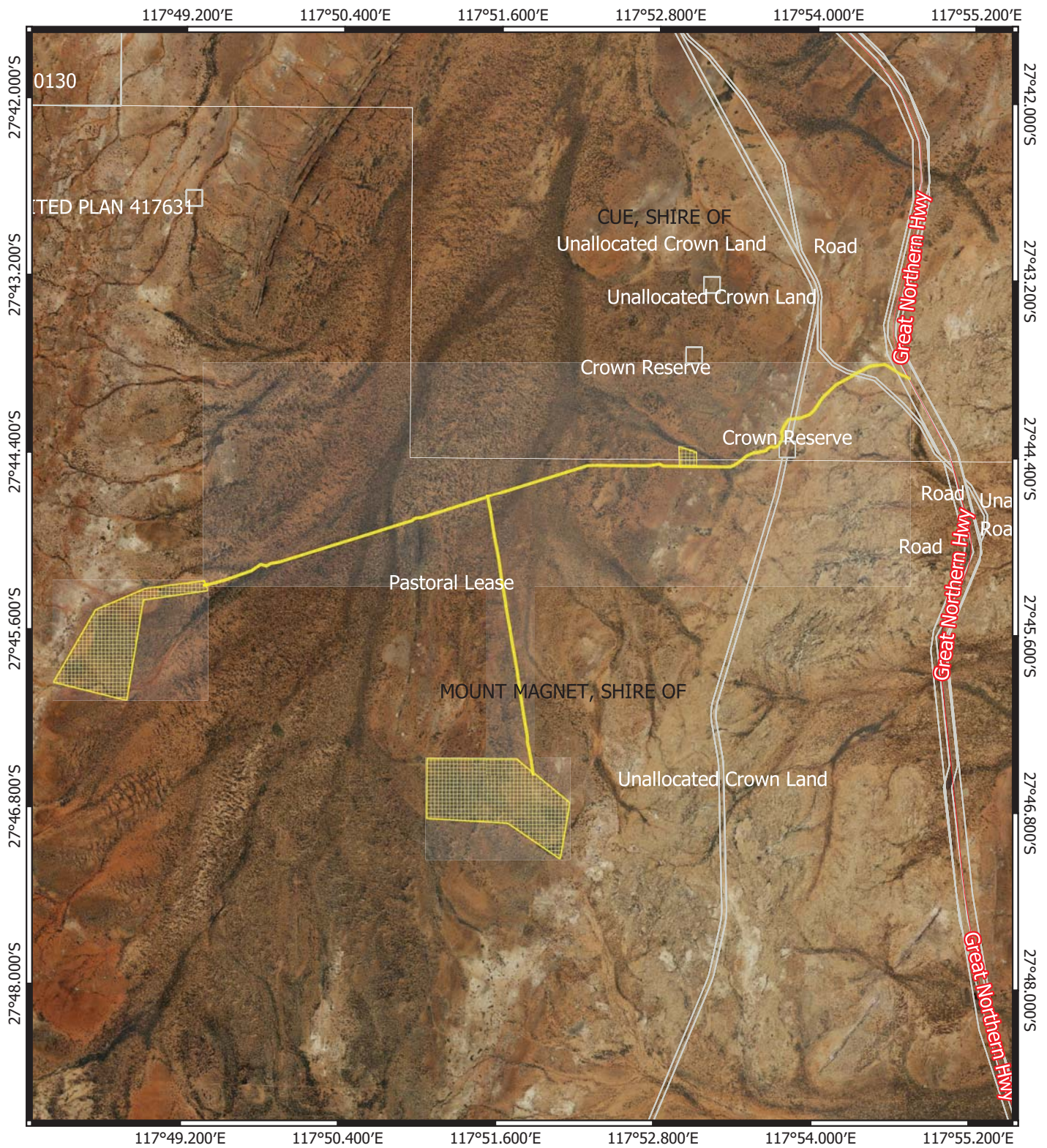
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Officer delegated under section 20 of the
Environmental Protection Act 1986




GOVERNMENT OF
WESTERN AUSTRALIA

Plan 8554/1d




Legend

CPS layers

 CPS areas approved to clear

base layers

 Road Centrelines

 Cadastre - LGATE 218


Local Government Authorities

Image



MGA 94
Geocentric Datum of Australia 1994




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Officer delegated under section 20 of the
Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA

Plan 8554/1e

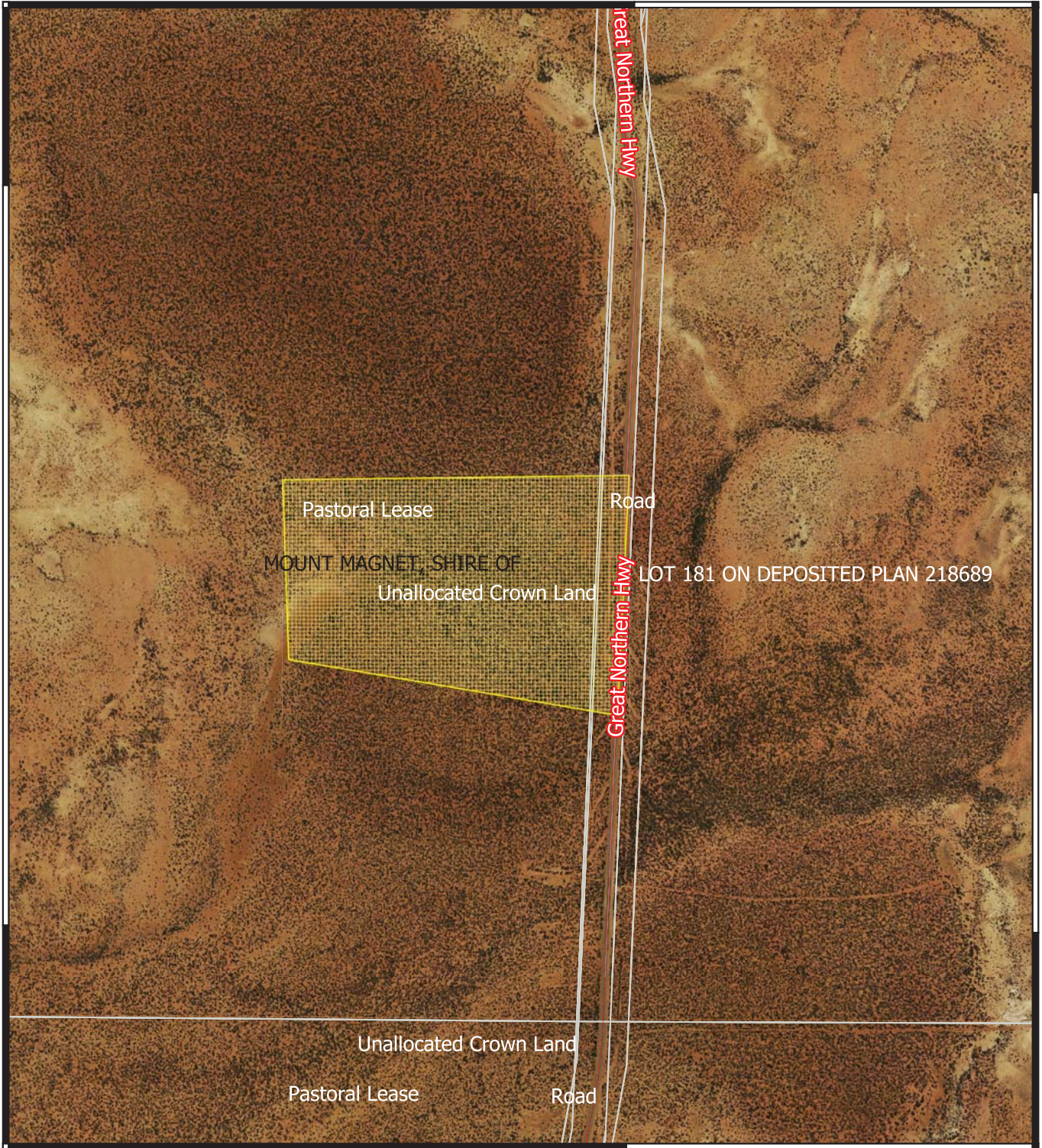
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28°16.800'S

28°16.800'S

28°18.000'S


28°18.000'S



117°51.600'E


Legend

CPS layers

 CPS areas approved to clear

base layers

 Road Centrelines

 Cadastre - LGATE 218

Local Government Authorities

Image



MGA 94
Geocentric Datum of Australia 1994

0 0.25 0.5 0.75 1 km

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Officer delegated under section 20 of the
Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA



1. Application details

1.1. Permit application details

Permit application No.: 8554/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Commissioner of Main Roads Western Australia
Application received date: 18 June 2019

1.3. Property details

Property:
Crown Reserve 8920, Lake Austin
Unallocated Crown Land, Lake Austin
Kyarra Location 18, Meekatharra
Lot 100 on Deposited Plan 220127, Daggar Hills
Lot 111 on Deposited Plan 221128, Daggar Hills
Lot 111 on Deposited Plan 221128, Lake Austin
Lot 131 on Deposited Plan 29083, Reedy
Lot 137 on Deposited Plan 29081, Lake Austin
Lot 148 on Deposited Plan 238472, Meekatharra
Lot 149 on Deposited Plan 218690, Lake Austin
Lot 153 on Deposited Plan 238571, Meekatharra
Lot 170 on Deposited Plan 218689, Daggar Hills
Lot 240 on Deposited Plan 218692, Reedy
Lot 279 on Deposited Plan 217089, Meekatharra
Lot 283 on Deposited Plan 217089, Meekatharra
Great Northern Highway Road Reserve (PIN 11519465), Lake Austin
Great Northern Highway Road Reserve (PIN 11666949), Daggar Hills
Great Northern Highway Road Reserve (PIN 11725549), Meekatharra
Great Northern Highway Road Reserve (PIN 11726201), Reedy
Road Reserve (PIN 11519464), Lake Austin
Unnamed Road Reserve (PIN 1017222), Meekatharra
Shires of Cue, Meekatharra, and Mount Magnet
Local Government Authority: Shires of Cue, Meekatharra, and Mount Magnet
Localities: Cooladar Hill, Lake Austin, Daggar Hills, Meekatharra and Reedy

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
390		Mechanical Removal	Investigating and stockpiling materials

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 15 November 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 with principle (f), may be at variance with principle (a), (g) and (i), is not at variance with principle (e), and is not likely to be at variance with the remaining clearing principles.

The Delegated Officer noted that the proposed clearing will result in the loss of native vegetation growing in association with minor non-perennial watercourses, and may also impact the surface water flows of these watercourses.

The Delegated Officer noted that the proposed clearing will result in the loss of suitable habitat for priority flora species, comprising of 11 individuals of *Drummondita miniata* (P3) from two locations (retention of 84 per cent of recorded individuals), and increase the risk of weeds being introduced or spread into adjacent areas.

The Delegated Officer also noted that the proposed clearing may directly impact ground-dwelling fauna species through collision with machinery if care is not taken during clearing activities.

In determining to grant the clearing permit, the Delegated Office considered that the above-listed impacts may be mitigated by:

- Limiting the extent of clearing to access tracks within riparian vegetation at all projects sites except for Cue Wondinong 7.1 SLK;
- The implementation of standard watercourse management measures proposed by the applicant;

- Excluding areas of known locations of individuals and suitable habitat for priority flora species;
- Requiring the applicant to undertake targeted flora surveys (at an appropriate time for the targeted species) prior to clearing, and avoiding individuals where practicable; and where not practicable, requiring the application to undertake clearing in accordance with a Flora Management Plan;
- Requiring the applicant to undertake weed management; and
- Requiring clearing to be undertaken in a slow, progressive, and directional manner to allow fauna to move away from the application area.

Given the above, the Delegated Officer decided to grant a clearing permit subject to weed management, flora management, fauna management (directional clearing), watercourse management, and revegetation and rehabilitation conditions; and determined that the proposed clearing is not likely to result in unacceptable environmental impacts.

2. Site Information

Clearing Description

The application is to clear up to 390 hectares of native vegetation within a permit boundary of approximately 877 hectares, for the purpose of investigation and stockpiling road building material areas for future road maintenance and construction projects. The proposed clearing for the excavation of test pits will be on a 100 by 100 metre, 50 by 50 metre, or 25 by 25 metre grid. All excavations will be backfilled on the completion of the investigations (MRWA, 2019a).

The applicant advised that the proposed clearing will be staged, depending on specific needs of future projects (MRWA, 2019a).

The application area comprises six project sites (MRWA, 2019a) (Figure 1):

1. Great Northern Highway (GNH) 523 SLK LHS;
2. GNH 593 SLK;
3. GNH 660 SLK;
4. GNH 764 SLK;
5. GNH 770 SLK; and
6. Cue Wondinong 7.1 SLK.

Vegetation Description

The following five Beard vegetation associations have been mapped within the application area (Shepherd et al., 2002):

- 18: Low woodland; mulga (*Acacia aneura*);
- 29: Sparse low woodland; mulga, discontinuous in scattered groups;
- 40: Shrublands; acacia scrub, various species;
- 107: Hummock grasslands, shrub steppe; mulga and *Eucalyptus kingsmillii* over hard spinifex; and
- 313: Succulent steppe with open scrub; scattered *Acacia sclerosperma* and *Acacia victoriae* over bluebush.

The flora and vegetation survey conducted by Astron Environmental Services (Astron) during 10 and 17 October 2018 recorded the following vegetation types occurring within the application area (Astron, 2018):

Vegetation Type	Description	Sites Recorded
P1	Occasional <i>Eucalyptus kingsmillii</i> scattered low trees over <i>Acacia ?caesaneura</i> (narrow phyllode variant) and <i>Acacia ramulosa</i> var. <i>ramulosa</i> and/or <i>Acacia pteraneura</i> tall shrubland over occasional <i>Eremophila glutinosa</i> , <i>Senna glaucifolia</i> and <i>Eremophila ?forrestii</i> open shrubland over <i>Eriachne helmsii</i> and <i>Eragrostis</i> sp. very open tussock grassland.	- GNH 764 SLK - GNH 770 SLK
P2	<i>Acacia incurvaneura</i> and <i>Acacia quadrimarginea</i> tall open shrubland over <i>Calytrix uncinata</i> and <i>Micromyrtus sulphurea</i> scattered low shrubs.	- GNH 764 SLK
P3	<i>Acacia pteraneura</i> and <i>Acacia grasbyi</i> scattered tall shrubs to tall open shrubland over <i>Scaevola spinescens</i> and/or <i>Eremophila ?phyllopoda</i> and <i>Eremophila spathulata</i> open shrubland sometimes over <i>Maireana georgei</i> scattered low shrubs.	- Cue Wondinong 7.1 SLK - GNH 764 SLK

P4	<i>Ptilotus rotundifolius</i> scattered shrubs over <i>Ptilotus schwartzii</i> scattered low shrubs.	- GNH 764 SLK - GNH 770 SLK
P5	<i>Acacia pruinocarpa</i> , <i>Acacia pteraneura</i> and <i>Eremophila linearis</i> tall open shrubland.	- GNH 660 SLK
P5/P6	<i>Acacia pruinocarpa</i> , <i>Acacia aptaneura</i> and <i>Acacia pteraneura</i> tall open shrubland over <i>Eremophila ?forrestii</i> scattered shrubs.	- GNH 660 SLK
P6	<i>Acacia pruinocarpa</i> , <i>Acacia aptaneura</i> and <i>Acacia incurvaneura</i> tall open shrubland.	- GNH 660 SLK
P7	<i>Acacia incurvaneura</i> and <i>Acacia pruinocarpa</i> open shrubland over <i>Ptilotus obovatus</i> low open shrubland.	- Cue Wondinong 7.1 SLK
P8	<i>Acacia masliniana</i> , <i>Acacia synchronicia</i> and <i>Acacia pteraneura</i> tall open shrubland over <i>Maireana triptera</i> , <i>Ptilotus obovatus</i> and <i>Sclerolaena eriacantha</i> low open shrubland.	- Cue Wondinong 7.1 SLK
P9	Occasional <i>Acacia pruinocarpa</i> low open woodland over <i>Acacia incurvaneura</i> , <i>Acacia ramulosa</i> var. <i>linophylla</i> and sometimes <i>Acacia ?incurvaneura</i> x <i>mulganeura</i> tall shrubland over occasional <i>Eremophila galeata</i> scattered shrubs over <i>Ptilotus schwartzii</i> var. <i>schwartzii</i> scattered herbs.	- GNH 593 SLK - Cue Wondinong 7.1 SLK
P10	<i>Acacia pruinocarpa</i> low open woodland over <i>Acacia ?fuscanera</i> and <i>Acacia grasbyi</i> tall shrubs over <i>Acacia tetragonophylla</i> scattered shrubs over <i>Maireana tomentosa</i> and <i>Ptilotus obovatus</i> scattered low shrubs.	- GNH 593 SLK
P11	<i>Salsola australis</i> and <i>Sclerolaena patenticuspis</i> scattered low shrubs.	- GNH 593 SLK
P12	<i>Acacia pteraneura</i> and <i>Acacia crapedocarpa</i> scattered tall shrubs to tall open shrubland sometimes over <i>Eremophila galeata</i> open shrubland over <i>Ptilotus schwartzii</i> scattered herbs.	- GNH 523 SLK LHS - GNH 593 SLK
P13	<i>Acacia xiphophylla</i> and <i>Acacia grasbyi</i> tall shrubland over <i>Acacia tetragonophylla</i> scattered shrubs over <i>Eremophila latrobei</i> subsp. <i>latrobei</i> , <i>Scaevola spinescens</i> and <i>Sclerolaena</i> spp. scattered low shrubs.	- GNH 593 SLK
P14	<i>Hakea preissii</i> and <i>Acacia tetragonophylla</i> scattered tall shrubs over <i>Ptilotus obovatus</i> , <i>Eremophila galeata</i> and <i>Maireana triptera</i> scattered low shrubs.	- GNH 593 SLK
P15	<i>Acacia xiphophylla</i> tall open shrubland over <i>Ptilotus obovatus</i> and <i>Maireana triptera</i> scattered low shrubs.	- GNH 593 SLK
P16	<i>Acacia mulganeura</i> with <i>Acacia aneura</i> and/or <i>Acacia ayersiana</i> (hybrid) tall open shrubland over <i>Eremophila forrestii</i> subsp. <i>forrestii</i> and <i>Acacia ramulosa</i> var. <i>ramulosa</i> or <i>Eremophila spuria</i> scattered shrubs over <i>Eriachne helmsii</i> scattered tussock grasses.	- GNH 523 SLK LHS - GNH 764 SLK
P17	<i>Acacia fuscanera</i> and <i>Acacia synchronicia</i> tall shrubland over <i>Eremophila spathulata</i> , <i>Senna</i> sp. Meekatharra (E. Bailey 1-26) and <i>Acacia tetragonophylla</i> open shrubland over <i>Aristida contorta</i> scattered grasses.	- GNH 764 SLK - GNH 770 SLK
CC	<i>Acacia macraneura</i> and <i>Acacia ?fuscanera</i> tall open shrubland over <i>Eragrostis xerophila</i> (<i>Eriachne flaccida</i>) tussock grassland on clay plain.	- GNH 660 SLK
CC1	<i>Hakea preissii</i> and <i>Pittosporum angustifolium</i> tall open shrubland over <i>Sclerolaena cuneata</i> low open shrubland over <i>Eragrostis australasica</i> open tussock grassland with <i>Eleocharis acuta</i> very open sedgeland on clay plain.	- GNH 660 SLK
CC2	<i>Eragrostis eriopoda</i> scattered tussock grasses on clay plain.	- GNH 593 SLK
D1	<i>Acacia pteraneura</i> , <i>Acacia tetragonophylla</i> and <i>Acacia synchronicia</i> (<i>Hakea preissii</i> and	- GNH 593 SLK - GNH 764 SLK

	<i>Acacia ayersiana</i> (narrow phyllode variant)) tall shrubland over <i>Eremophila ?phyllopoda</i> scattered shrubs over <i>Ptilotus obovatus</i> and <i>Eremophila galeata</i> low open shrubland over <i>Aristida contorta</i> scattered tussock grasses.	- GNH 770 SLK
D3	<i>Acacia craspedocarpa</i> , <i>Acacia tetragonophylla</i> and/or <i>Acacia ?incurvaneura x mulganeura</i> tall shrubland to tall open scrub over <i>Eremophila galeata</i> or <i>Eremophila ?forrestii</i> scattered shrubs over occasional <i>Ptilotus obovatus</i> low open shrubland.	- Cue Wondinong 7.1 SLK - GNH 660 SLK
DD1	<i>Maireana pyramidata</i> and <i>Maireana glomerifolia</i> open shrubland.	- GNH 593 SLK

Vegetation Condition

The flora and vegetation survey determined that the application area ranges from Good to Excellent (Keighery, 1994) condition (Astron, 2018) with the majority of the application area being in excellent (Keighery, 1994) condition.

Vegetation condition ratings are defined as follows:

- Pristine: Pristine or nearly so, no obvious signs of disturbance (Keighery, 1994).
- Excellent: Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species (Keighery, 1994).
- Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).
- Good: Vegetation structure significantly altered by very obvious signs of multiple disturbance; retains basic structure or ability to regenerate (Keighery 1994).
- Degraded: Basic vegetation structure severely impacted by disturbance; scope for regeneration but not to a state approaching Good condition without intensive management (Keighery 1994).
- Completely Degraded: The structure of the vegetation is no longer intact and the area is completely or almost completely without native species (Keighery, 1994).

The following vegetation condition ratings were identified within each project site:

- **GNH 523 SLK LHS** - Excellent
- **GNH 593 SLK** - Good to Excellent
- **GNH 660 SLK** - Good to Excellent
- **GNH 764 SLK** - Very Good to Excellent
- **GNH 770 SLK** - Very Good to Excellent
- **Cue Wondinong 7.1 SLK** - Good to Excellent

Soil type

The following twelve land systems have been mapped within the application area (Curry et al., 1994):

- Belele System: Hardpan wash plains with acacia tall shrublands, and low sandy banks supporting shrublands with wanderrie grasses;
- Bullimore System: Gently undulating sandplain with occasional linear dunes and stripped surfaces supporting spinifex grasslands with mallees and acacia shrubs;
- Challenge System: Gently undulating gritty and sandy surfaced plains, occasional granite hills, tors and low breakaways, supporting acacia shrublands and occasional halophytic shrublands;
- Gabanintha System: Greenstone ridges, hills and footslopes supporting sparse acacia and other mainly non-halophytic shrublands;
- Gransal System: Stony plains and low rises based on granite supporting mainly halophytic low shrublands;
- Jundee System: Hardpan plains with variable gravelly mantles and minor sandy banks supporting weakly groved mulga shrublands;
- Kalli System: Elevated gently undulating red sandplains edged by stripped surfaces on laterite and granite, supporting acacia tall shrublands with wanderrie grass understoreys;
- Sherwood System: Breakaways, kaolinised footslopes and extensive gently sloping plains on granite supporting mulga shrublands and minor halophytic shrublands;
- Trillbar System: Gently sloping stony plains with low rises of metamorphic rocks and gilgaied drainage foci; supporting shrublands of snakewood, mulga, bluebush and samphire with patches of tussock grassland;
- 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;
- Wiluna System: Low greenstone hills with occasional lateritic breakaways and broad stony slopes, lower saline stony plains and broad drainage tracts; supporting sparse mulga and other acacia shrublands with patches of halophytic shrubs; and

- Yandil System: Flat hardpan wash plains with mantles of small pebbles and gravels; supporting groved mulga shrublands and occasional wanderrie grasses.

The majority of the application area occurs within the Violet, Bullimore and Jundee land systems.

Comment

The local area referred to in the assessment of this application is defined as a 20 kilometre radius measured from the perimeter of the application area. A review of available databases has determined that the local area retains approximately 98 per cent of its pre-European clearing extent.

The vegetation condition in the flora and vegetation surveys are based on the vegetation condition scale from the Environmental Protection Authority’s Technical Guide on Flora and Vegetation Surveys for Environmental Impact Assessment (2016), after Trudgen (1988) (Astron, 2018). This vegetation condition scale has been converted to the Keighery (1994) scale for the purpose of this decision report.

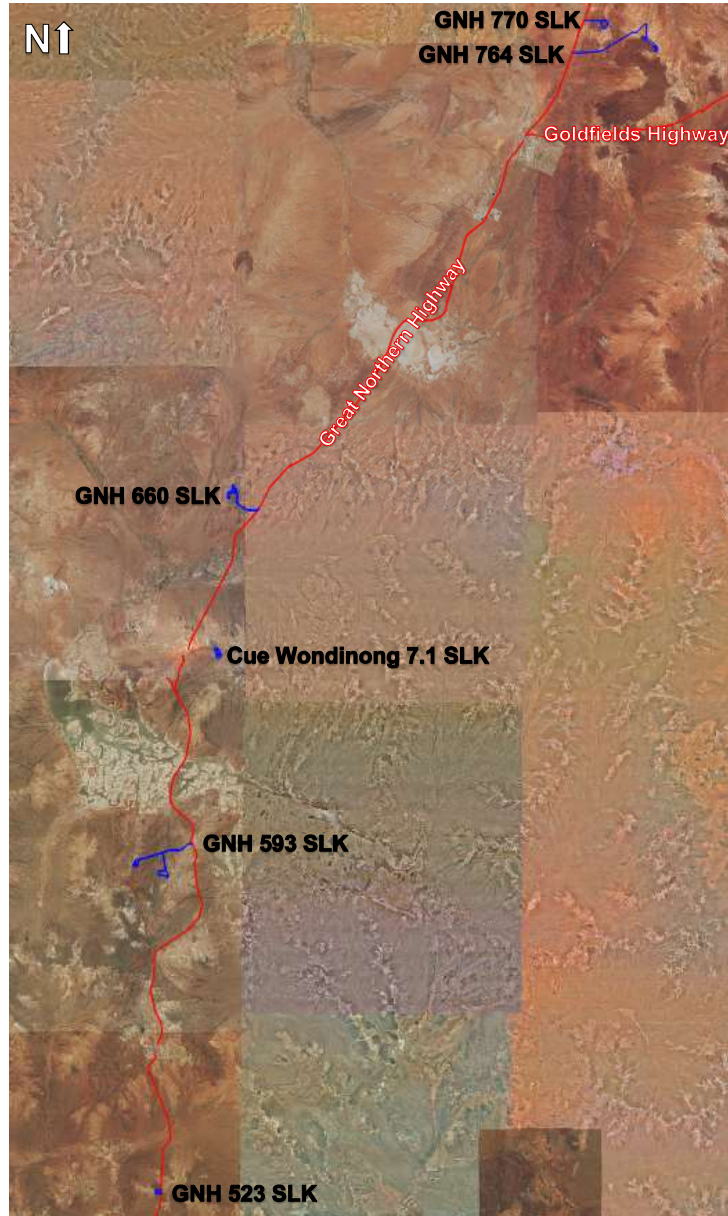


Figure 1. Application area (outlined blue; project sites labelled in black/white).

3. Minimisation and mitigation measures

The applicant has advised that, “The areas that have been nominated for this project are larger than required as the materials team are unsure as to the exact location of suitable material... The larger areas nominated gives the technicians scope to locate material. When carrying out material investigations, grid maps will be created and small holes dug to test the material. Once material is identified the project area can be reduced in scope to the areas where material occurs... In most circumstances the area cleared and stockpiled is considerably less than the area nominated in the clearing permit application...” (MRWA, 2019b).

It is noted that the proposed clearing is restricted by the presence of the material required to undertake road management, whereby the depth of material only extends to a maximum of approximately 2 metres deep. Consequently, material must be sourced over a larger horizontal area as greater vertical area is not available (MRWA, 2019a).

The applicant has minimised the potential impacts of the proposed clearing by (MRWA, 2019a; MRWA, 2019b; MRWA, 2019e):

- Minimising the direct impact to *Drummondita miniata* (Priority 3) by excluding four of the six recorded locations from the application area. The survey recorded 68 individuals occurring within the area, and the applicant has limited the proposed clearing to 11 individuals (i.e. retention of 84 per cent of recorded individuals);
- Minimising the extent of clearing within riparian vegetation. Approximately 87 hectares of riparian vegetation was mapped within the application area, of this, the applicant proposes to clear up to 10.13 hectares; and
- Avoided the construction of a new access track to the proposed pit at Cue Wondinong 7.1 SLK through the utilisation of an existing access track to the south of the pit that provides adequate access.

The applicant has also advised that once a material pit has been exhausted, it will be rehabilitated (MRWA, 2019a). The applicant has advised that they will look for opportunities to minimise clearing where possible in the investigation and operation of the proposed pits (MRWA, 2019e)

In regard to managing potential impact to riparian vegetation, the applicant has advised that standard watercourse management actions will be implemented to minimise the potential impacts to surface water flow and erosion. These management actions include (MRWA, 2019d):

- *"Pit design should maintain existing surface water flows and incorporate erosion control measures;*
- *Existing natural drainage paths and channels within the vicinity of the project area will not be unnecessarily blocked or restricted;*
- *Temporary drainage systems may be installed to carry surface water away from the areas where excavation work is taking place or from any other area where there is an accumulation of water caused by the project;*
- *Staged revegetation will occur as cells are exhausted to minimise erosion;*
- *Pit floor will be contoured to ensure that there is no ponding or excessive disruption to natural flow;*
- *Area will be monitored to ensure that no water flow or erosion issues are occurring; and*
- *Runoff from disturbed areas must be managed to minimise adverse impacts on surrounding vegetation, watercourses and properties.*

If monitoring indicates erosion issues the following may be implemented:

- *Earth bunds to prevent sediment from moving to drainage systems;*
- *Coir and jute matting embedded into slopes using biodegradable corn starch pegs and with cuts to allow for plant into plastic, cellular mesh stretched over and anchored at the top and bottom of steep slopes; and*
- *Surface roughening and benching of bare soil by creating furrows across slopes, terracing, or by surface roughing (tracking the soil surface)."*

4. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biodiversity.

Proposed clearing may be at variance with this Principle

As described in Section 2, twenty-three vegetation types and one mosaic vegetation unit were mapped within the application area during a flora and vegetation survey conducted by Astron (2018). The survey determined that the vegetation condition ranges from good to excellent (Keighery, 1994) condition, with the majority of the application area being in excellent (Keighery, 1994) condition.

According to available databases, 34 priority flora species and one threatened flora species has been recorded within the local area (Western Australian Herbarium, 1998-). Of these, three priority flora species, *Angianthus microcephalus* (P2), *Drummondita miniata* (P3), and *Goodenia berringbinensis* (P4), were identified as having the potential to occur within the application area, based on the suitability of the habitat present (Astron, 2019; DBCA, 2019).

The survey recorded one of these priority flora species, *Drummondita miniata* (P3), and no threatened flora species as occurring within the application area (Astron, 2018). *Drummondita miniata* was recorded from six locations comprising 68 individuals during the survey. The application area encompasses two of these locations, including 11 individuals (MRWA, 2019a).

The Department of Biodiversity, Conservation and Attractions (DBCA) provided comment on the proposed impact to *Drummondita miniata* and advised that (DBCA, 2019).

- *"Drummondita miniata (Priority 3) has a known range of approximately 150 kilometres north-south and 140 kilometres east-west. It is known from 24 collections, the majority of which are historical records... Although historical records would suggest the species has been recorded in large numbers where it occurs (estimates of approximately 200-500 individuals), the more recent records only record smaller populations, estimated to be between 10-150 individuals. The record within the application area is within the known range of both the historical and current records..."*
- *MRWA should commit to avoiding impacts, where practicable, or minimising impacts to ensure a sustainable proportion of the local population is conserved. Alternatively, if it is likely that the population extends beyond the application area, then the broader extent of the local population could be surveyed, which would potentially reduce the calculated proportional impact to the population at the local scale".*

Noting that the applicant has minimised the extent of impact to *Drummondita miniata* to retain 84 per cent of the total number of individuals recorded, the proposed clearing is not likely to impact on the local conservation status of this flora species.

Angianthus microcephalus occurs in sandy or clayey soils, in salt swamps and pans (Western Australian Herbarium, 1998-). Vegetation type DD1, located within the project site GNH 593 SLK, was considered to comprise suitable habitat for this species. Vegetation type DD1 is likely to be inundated following adequate rainfall and also observed to have surface salt expression (Astron, 2019).

Goodenia berringbinensis has been previously recorded in drainage lines, watercourses, seasonally inundated areas and claypans (Astron, 2019). Vegetation type D3 occurs in ephemeral drainage lines that are likely to experience inundation following adequate rainfall. As such, vegetation unit D3 within project sites GNH 660 SLK and Cue Wondinong 7.1 SLK is considered to contain potential habitat (Astron, 2019).

It is noted that the survey was conducted outside of the recommended season for flora and vegetation assessments in the Eremaean Botanical Province (EPA, 2016), and the application area experienced below average winter rainfall preceding the survey (Astron, 2018). Given this, the two other priority flora species, *Angianthus microcephalus* (P2) and *Goodenia berringbinensis* (P4), would not have been recorded during the survey, even if they had occurred (Astron, 2018). Given this, a condition will be placed on the permit requiring the applicant to undertake a targeted flora survey for these species, prior to clearing within the relevant project sites. If priority flora species are recorded, and the area cannot be avoided, the applicant will be required to develop a flora management plan that outlines the minimisation measures to be implemented.

It is noted that *Goodenia neogoodenia* (P4) was also initially considered to potentially occur within the application area (Astron, 2018). This species has previously been recorded from low plains, clay pans, floodplains and drainage lines, which are habitat types that were recorded during the survey (Western Australian Herbarium, 1998-; Astron, 2018). However, a post-survey likelihood of occurrence assessment has determined that the application area is not likely to provide suitable habitat for this species, as none of the potential habitats within the application area are likely to be inundated for sufficient time for this species to persist (Astron, 2019).

As discussed under Principle (c), no threatened flora species were recorded within the application area during the survey (Astron, 2018), and none were identified as potentially occurring within the application area based on the availability of suitable habitat for those threatened flora recorded in the local area.

According to available databases, two priority ecological community (PEC) intersect the application area, including the Priority 1 "Lake Austin vegetation complexes (banded iron formation)" and the Priority 3 'Trillbar Land Systems'. The survey identified some banded iron formation (BIF) in the form of rock piles within the application area, which may represent this PEC. According to available databases, this PEC is mapped over an extent of 25,526 hectares, of which approximately 0.33 hectares of the BIF rock piles habitat type was recorded within the portion of the application area that is mapped within this PEC. Given this, the proposed clearing is not considered likely to significantly impact this PEC. Vegetation representing the 'Trillbar Land Systems' PEC was not identified within the application area (Astron, 2018).

As discussed under Principle (d), none of the vegetation types recorded are representative of any State listed threatened ecological communities (TECs) (Astron, 2018). The vegetation types recorded within the application area are not representative of a federally listed TEC. Therefore, it is unlikely that any TECs will be impacted by the proposed clearing.

As discussed under Principle (b), eight broad fauna habitat types were recorded within the application area (Astron, 2018). Thirteen fauna species of conservation significance were identified as having a moderate likelihood of occurring within these fauna habitat types. Majority of the fauna habitat types are considered to be widespread in the region, and none of the conservation significant species are likely to be restricted to the extent of the application area.

The proposed clearing will impact on one priority flora species, and contains vegetation predominantly in an excellent (Keighery, 1994) condition. Given this, the proposed clearing may be at variance with this Principle.

It is considered that the applicant's efforts to minimise impacts to the recorded occurrence of the priority flora species, and commitment to rehabilitating cleared areas will assist in minimising impacts to biodiversity.

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.

Proposed clearing is not likely to be at variance with this Principle

The Level 1 fauna survey recorded eight broad fauna habitat types within the application area (Astron, 2018), described as:

- **Rocky plains:** Characterised by low shrubs to mid/tall *Acacia* sp. (occasionally Mulga complex) on rocky plain or stony mantle. This habitat contained moderate to low understory vegetation and leaf litter suitable as sheltering or foraging resources. The woodlands provide nesting and shelter habitats for birds and rocky substrate contained microhabitats such as crevices. The soils were generally stony and compact, reducing potential opportunities for burrowing species;
- **Mulga woodland on sandy plains:** Mulga woodland over grasses and herbs. Microhabitat include sandy substrate providing burrowing potential for ground dwelling burrowing species and leaf litter suitable for sheltering and foraging purposes;
- **Minor drainage line with mulga:** Habitat is characterised by vegetation communities dominated by Mulga (*Acacia aneura* complex) on sandy soil. The open to moderately dense woodlands consisted of an understorey composed of sparse tussock grasses provide habitat for small birds, reptiles and mammals. Substrate of sandy soil with a stony mantle providing burrowing potential for ground dwelling burrowing species;
- **Scattered tall shrubs on cracking clays:** This habitat was generally considered to be of low habitat value for conservation significant species, as generally do not support many of these species and these habitats were in a degraded condition. This low lying flat area would be regularly inundated during the wetter parts of the year after high

periods of rainfall. During significant rainfall events the area would have the potential to provide opportunities for burrowing/cocooning frog species that aestivate underground and emerge after significant rainfall;

- **Breakaway and BIF rock piles:** This habitat is characterized by small (approximately 4-5 metres) breakaways and small BIF rock piles. Microhabitats such as crevices, overhangs and shallow caves that provide shelter opportunities for fauna species;
- **Samphire plain:** Characterised by *Maireana* sp. providing foraging potential for some bird species. The micro-niche availability is low as there is minimal vegetation cover and the understory lacks any leaf litter. The sandy clay soils would potentially provide minimal opportunities for burrowing species; and
- **Calcrete flat:** *Salsola australis* over scattered herbs on a calcrete flat. This habitat contained little vegetation and no leaf litter suitable as sheltering or foraging resources. Microhabitats include sandy substrate providing burrowing potential for ground dwelling burrowing species.

According to available databases, sixteen fauna species of conservation significance has been recorded in the local area. The fauna survey recorded forty-one vertebrate species, comprising two reptilian species, thirty-three avian species and six mammalian species (including four introduced species). The survey did not record any fauna species listed under the *Biodiversity Conservation Act 2016* (BC Act) or the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Astron, 2018). However, based on the presence and suitability of habitat types and previous records, thirteen conservation significant fauna species were identified as having a moderate likelihood of occurring within the application area (Astron, 2018). This included two threatened fauna species, Malleefowl (*Leipoa ocellata*) and Curlew Sandpiper (*Calidris ferruginea*); two priority fauna species, Meekatharra Slider (*Lerista eupoda*, P1) and Long-tailed Dunnart (*Sminthopsis longicaudata*, P4); one other specially protected fauna species under the BC Act, Peregrine Falcon (*Falco peregrinus*); and eight shorebird species listed as Migratory under both the BC Act and EPBC Act, including the Bar-tailed Godwit (*Limosa lapponica*; also listed as threatened under the BC Act), Marsh Sandpiper (*Tringa stagnatilis*), Common Greenshank (*Tringa nebularia*), Wood Sandpiper (*Tringa glareola*), Common Sandpiper (*Tringa hypoleucos*), Red-necked Stint (*Calidris ruficollis*), Pectoral Sandpiper (*Calidris melanotos*), and Sharp-tailed Sandpiper (*Calidris acuminata*) (Astron, 2018).

The nine shorebirds (including the curlew sandpiper) listed above may utilise the 'Scattered tall shrubs on cracking clays' fauna habitat types when seasonally inundated following significant rainfall events. The Peregrine Falcon may utilise all mapped fauna habitat types for foraging. These avian species are highly mobile and are not restricted to any of the fauna habitat types recorded. Given this, the proposed clearing is not likely to impact significant habitat for these species.

The Meekatharra Slider may utilise the 'Mulga woodland on sandy plains' and 'Samphire plain' fauna habitat types, and the Long-tailed Dunnart may utilise the 'Rocky plains' and 'Breakaway and BIF rock piles' fauna habitat types (Astron, 2018). The mapped fauna habitat types are widespread and not restricted to the application area (Astron, 2018).

The 'Mulga woodland on sandy plains' and 'Minor drainage line with mulga' fauna habitat types are likely to provide suitable foraging habitat for the Malleefowl. No individuals or characteristic or the characteristic nest mounds from this species were recorded within the application area. Given the lack of understory and availability of mounding material, none of the recorded fauna habitat types are considered to be preferred nesting habitat for Malleefowl (Astron, 2019).

Given the above, the application area contains potential suitable habitat for numerous fauna species of conservation significance. It is noted that the 'Breakaway and BIF rock piles' fauna habitat type is an uncommon geological unit on a local scale (4 hectares mapped within the application area). However, extensive amounts of vegetation remains in the local area, and the remaining mapped fauna habitat types are widespread and not restricted to the application area (Astron, 2018). Given this, the proposed clearing is not likely to significantly impact native vegetation that is necessary for the maintenance of significant habitat for fauna.

Potential direct impacts to fauna may be minimised by the implementation of a fauna management condition that requires the permit holder to undertake slow, directional clearing methods to allow fauna species to move into surrounding habitat ahead of the clearing.

Based on the above, the proposed clearing is not likely to be at variance with this Principle.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

Proposed clearing is not likely to be at variance with this Principle

The flora and vegetation survey did not record any threatened flora species occurring within the application area (Astron, 2018). According to available databases, one threatened flora species, *Eremophila rostrata* subsp. *rostrata*, has been recorded within the local area, with the nearest record being approximately 3 kilometres from the application area (Western Australian Herbarium, 1998-).

In the Cue area, *Eremophila rostrata* subsp. *rostrata* is known to grown on stony, buff coloured saline clays at the base of quartzite hills in open shrubland of *Acacia* and *Eremophila* species over open low shrubs of *Ptilotus polakii*, and flowers between June and July (DotEE, 2009). Noting the flowering period, the October survey would not have recorded any individuals. However, a post-survey likelihood of occurrence assessment for *Eremophila rostrata* subsp. *rostrata* determined that this species is unlikely to occur within the application area, as no suitable habitat was located within the survey (Astron, 2018). No quartzite hills were recorded within the application area, and all vegetation associations that includes a component of open shrubland of *Acacia* and *Eremophila* with a quartz rock type occurred on orange brown sandy loam plains to dark reddish brown silty clay loamy plains, which are widespread on a regional scale (Astron, 2018). Given this, the application area is not considered to be necessary for the continued existence of threatened flora. The proposed clearing is not likely to be at variance with this Principle.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Proposed clearing is not likely to be at variance with this Principle

There are no known records of TECs located within or in close proximity to the application area (GIS Database). A flora and vegetation survey of the application area did not identify any TECs (Astron, 2018).

Based on the above, the proposed clearing is not likely to be at variance with this Principle.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Proposed clearing is not at variance with this Principle

The application area falls within the Murchison Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA). Approximately 99% of the pre-European vegetation still exists in the IBRA Murchison Bioregion (Government of Western Australia, 2018). The application area is broadly mapped as Beard vegetation associations 18, 29, 40, 107 and 313.

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). Over approximately 94% of the pre-European extent of each of these vegetation associations remains uncleared at both the state and bioregional level (Government of Western Australia, 2019; Table 1). Therefore, the application area does not represent a significant remnant of native vegetation in an area that has been extensively cleared.

Based on the above, the proposed clearing is not at variance with this Principle.

Table 1. Vegetation extents (Government of Western Australia, 2019).

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed lands (ha)	Extent remaining in all DBCA managed lands (proportion of Pre-European extent) (%)
IBRA bioregion:					
Murchison	28,120,586.77	28,044,823.42	99.73	2,185,987.96	7.77
Beard vegetation association:					
18	19,890,666.60	19,842,830.40	99.76	1,317,179.00	6.62
29	7,903,991.45	7,898,973.24	99.94	496,367.56	6.28
40	369,056.36	351,139.98	95.15	22,367.61	6.06
107	2,815,387.35	2,813,995.93	99.95	324,942.56	11.54
313	68,843.52	65,261.44	94.80	1.79	0
Beard vegetation association in IBRA bioregion:					
18	12,403,172.30	12,363,252.47	99.68	614,964.13	4.96
29	2,956,382.06	2,955,695.34	99.98	93,019.80	3.15
40	58,959.88	58,832.27	99.78	8,531.57	14.47
107	2,792,383.45	2,790,992.03	99.95	324,017.26	11.6
313	68,843.52	65,261.44	94.80	1.79	0

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is at variance with this Principle

According to available databases, no waterbodies intersect the application area. The nearest waterbody is Lake Austin, located approximately 2.7 kilometres east of the GNH 593 SLK project site. However, there are several minor non-perennial watercourses that pass through the application area at project sites Cue Wondinong 7.1 SLK, GNH 593 SLK, GNH 660 SLK, GNH 764 SLK and GNH 770 SLK. Therefore, the proposed clearing is at variance with this Principle.

The survey recorded three vegetation types, D1, D3 and DD1, as growing in association with these minor non-perennial watercourses. To minimise the potential impact to these vegetation types, clearing will be limited to access tracks at project sites GNH 593 SLK, GNH 660 SLK, GNH 764 SLK and GNH 770 SLK. The proposed clearing at project site Cue Wondinong 7.1 SLK will include a pit area.

To minimise the potential impacts to riparian vegetation, particularly at the Cue Wondinong 7.1 SLK project site, the applicant has proposed watercourse management measures to be implemented. These management measures are outlined in section 2, and are targeted to ensure surface water flows are not significantly impacted, and runoff from disturbed areas be managed to minimise adverse impacts on surrounding vegetation and vegetation occurring downstream.

Given the minimisation measures above, up to 10.13 hectares of these vegetation types is proposed to be clearing from a total of approximately 87 hectares of riparian vegetation that was mapped within the application area during the survey (MRWA, 2019a).

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Proposed clearing may be at variance with this Principle

As described in section 2, twelve land systems have been mapped over the application area. The majority of the application area occurs within the Violet, Bullimore and Jundee land systems. Drainage tracts and alluvial plains within these land systems may be susceptible to accelerated erosion if vegetation is degraded or soil surface is disturbed (Curry et al., 1994). As discussed in Principle (f), up to 10.13 hectares of native vegetation growing in association with minor non-perennial watercourses (i.e. drainage tracts) is proposed to be cleared. Given this, the proposed clearing may accelerate water erosion when these watercourses flow, following significant rainfall events.

To minimise the impact of water erosion, particularly within the proposed pit area at project site Cue Wondinong 7.1 SLK, the applicant has proposed to implement standard management actions, which are outlined in section 2. The management measures have been designed to ensure existing surface water flows are maintained, and runoff from disturbed areas do not impact the surrounding environment (MRWA, 2019d).

The potential impacts of erosion may also be minimised by imposing a condition on the permit requiring that all disturbed areas be rehabilitated within twelve months, following the completion of all temporary works.

Based on the above, the proposed clearing may be at variance with this Principle.

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Proposed clearing is not likely to be at variance with this Principle

The application area does not occur within any reserves or conservation areas. The closest nature reserve is located over 250 kilometres east of the application area. Given this distance, and the temporary and localised nature of the proposed clearing, it is unlikely that any nature reserves or conservation areas will be impacted.

Based on the above, the proposed clearing is not likely to be at variance with this Principle.

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Proposed clearing may be at variance with this Principle

The Cue Wondinong 7.1 SLK project site (approximately 0.136 hectares of the application area) is located within the Priority 1 Cue Water Reserve Public Drinking Water Source Area (PDWSA). According to the Water Quality Protection Note no. 25 (Department of Water, 2016), the proposed activities for investigation and stockpiling material is compatible with conditions in Priority 1 PDWSAs.

As discussed under principle (f), the proposed clearing will not impact on any permanent waterbodies, however, there are a number of minor, non-perennial watercourses that intersect the application area. As discussed under principle (g), the mapped land systems may be susceptible to erosion if the vegetation is degraded, particularly in drainage tracts. The proposed clearing within the Cue Wondinong 7.1 SLK project site includes the pit area, therefore, the local area may experience increase in turbidity following significant rainfall events. Given this, the proposed clearing may be at variance with this Principle. The watercourse management measures proposed by the applicant, as outlined in section 2, may minimise the potential impacts to surface water quality. The implementation of a watercourse management condition, requiring that no surface water flows are obstructed for the purpose of the clearing, may also minimise the potential impact to surface water quality.

The proposed clearing at project sites GNH 593 SLK, GNH 660 SLK, GNH 764 SLK and GNH 770 SLK, which also intersects minor non-perennial watercourses, will be limited to access tracks. Given this, the proposed clearing is not likely to result in the deterioration of surface water quality within these areas.

The groundwater in the local area has been recorded between 1,000 to 7,000 total dissolved solids (TDS), milligrams per litre. It would not be expected that the proposed clearing would cause salinity levels within the application area or the immediate vicinity to alter. Noting that the proposed clearing of 390 hectares is dispersed over a permit boundary of approximately 877 hectares where extensive amounts of native vegetation remains, it is unlikely that the proposed clearing will deteriorate the quality of groundwater.

Based on the above, the proposed clearing may be at variance with this Principle.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not likely to be at variance with this Principle

The climate of the application area is semi-arid, with a low average annual rainfall of approximately 233.9 millimetres in Cue, 237.9 millimetres in Meekatharra, and 239.1 millimetres in Mount Magnet, and an average annual evaporation rate of 3,400 millimetres (BOM, 2019a; BOM, 2019b; BOM, 2019c). Whilst temporary localised flooding may occur briefly following heavy rainfall events, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events.

Based on the above, the proposed clearing is not likely to be at variance with this Principle.

Planning instruments and other relevant matters.

The clearing permit application was advertised on the DWER website on 12 July 2019 with a 21 day submission period. One public submission was received in relation to this application. The public submission raised concerns on the following:

- Adequacy of survey timing for identifying conservation significant flora;
- Adequacy on the survey methodology and efforts;
- Potential impact to threatened and priority flora species; and
- Potential impact to riparian vegetation.

The potential environmental impact to threatened and priority flora species, and riparian vegetation have been addressed under the relevant clearing principles. Management measures proposed by the applicant to minimise potential impacts to watercourses are outlined in section 2.

No Aboriginal sites of significance have been mapped within the application area.

The application area occurs within the East Murchison Groundwater Area proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). It is the applicant's responsibility to obtain any other licences or approvals if required for the proposed works.

5. References

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- Astron Environmental Services (Astron) (2019). Great Northern Highway 523 to 746 SLK and Cue Wondinong 7.1 SLK Biological Assessment – Clarification on Threatened and Priority Species Likelihoods. Letter to Main Roads Western Australia prepared by Astron Environmental Services, October 2019 (DWER Ref: A1838639).
- Bureau of Meteorology Website (BOM) (2019a). Climate statistics for Australian locations, Cue. http://www.bom.gov.au/climate/averages/tables/cw_007017.shtml (accessed November 2019).
- Bureau of Meteorology Website (BOM) (2019b). Climate statistics for Australian locations, Meekatharra Airport. http://www.bom.gov.au/climate/averages/tables/cw_007045.shtml (accessed November 2019).
- Bureau of Meteorology Website (BOM) (2019c). Climate statistics for Australian locations, Mount Magnet. http://www.bom.gov.au/climate/averages/tables/cw_007057.shtml (accessed November 2019).
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- Main Roads Western Australia (MRWA) (2019a). GNH 523, 593, 660, 770, 764 and Cue Wondinong 7.1 SLK Strategic Material Pits Supporting Document. Report prepared by Main Roads Western Australia, June 2019 (DWER Ref: A1798061).
- Main Roads Western Australia (MRWA) (2019b). Additional information received in relation to clearing permit application CPS 8554/1, received 4 November 2019 (DWER Ref: A1838639).
- Main Roads Western Australia (MRWA) (2019c). Additional information received in relation to clearing permit application CPS 8554/1, received 13 November 2019 (DWER Ref: A1840857).
- Main Roads Western Australia (MRWA) (2019d). Additional information received in relation to clearing permit application CPS 8554/1, received 14 November 2019 (DWER Ref: A1841795).
- Main Roads Western Australia (MRWA) (2019e). Additional information received in relation to clearing permit application CPS 8554/1, received 14 November 2019 (DWER Ref: A1842088).
- Shepherd, D P, Beeston, G R, and Hopkins, A J. (2002). Native vegetation in Western Australia: extent, type and status. Department of Agriculture and Food, Western Australia, Perth. Report 249.
- Western Australian Herbarium (1998-). FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/> (accessed November 2019).

GIS Databases:

- Aboriginal Sites of Significance
- Department of Biodiversity, Conservation and Attractions, Managed Tenure
- Hydrography Linear – Linear
- Hydrography WA 250K – Surface Water Lines
- IBRA Australia
- PDWSA
- Pre-European Statistics
- Rangeland land systems
- RIWI Act Areas
- SAC bio datasets
- Threatened and Priority Fauna Data November 2019

- TPFL Data November 2019
- WA Herb Data November 2019
- WA TECPEC Boundaries