GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	6770/2
Permit Holder:	Process Minerals International Pty Ltd
Duration of Permit:	From 28 November 2015 to 28 November 2025

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

PART I - CLEARING AUTHORISED

1. **Land on which clearing is to be done**
   Mining Lease 15/717
   Mining Lease 15/1000
   Miscellaneous Licence 15/220
   Lot 105 on Deposited Plan 40396, Karramindie
   Coolgardie-Esperance Highway road reserve (PIN: 11331602), Karramindie

2. **Purpose for which clearing may be done**
   (a) Clearing for the purpose of mineral production within Mining Lease 15/717, Mining Lease 15/1000, Miscellaneous Licence 15/220 and Coolgardie-Esperance Highway road reserve (PIN: 11331602), Karramindie; and
   (a) Clearing for the purpose of mineral exploration within Lot 105 on Deposited Plan 40396, Karramindie.

3. **Area of Clearing**
   The Permit Holder must not clear more than 450 hectares of native vegetation. All clearing must be within the areas cross-hatched yellow or cross-hatched red on attached Plan 6770/2.

4. **Period in which clearing is authorised**
   The Permit Holder shall not clear any native vegetation after 28 November 2020.

5. **Staged Clearing**
   The Permit Holder shall not clear native vegetation unless the purpose for which the clearing is authorised is enacted within three months of the clearing being undertaken.

6. **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.

PART II – MANAGEMENT CONDITIONS

7. **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.

8. **Malleefowl management**

(a) Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna specialist* to conduct a *fauna survey* within the area cross-hatched red on Plan 6770/2 to identify *Leipoa ocellata* (malleefowl) mounds and *Leipoa ocellata* (malleefowl) *critical habitat*.

(b) Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall provide the results of the *fauna survey* in a report to the CEO.

(c) The *fauna survey* report must include;

(i) the location of each *Leipoa ocellata* (malleefowl) mound, 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, to the CEO.
(ii) The location of the *Leipoa ocellata* (malleefowl) *critical habitat*, 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, to the CEO.
(iii) the methodology used to survey the Permit Area and to establish the *Leipoa ocellata* (malleefowl) *critical habitat* and identify the mound/s;
(iv) the extent of the *critical habitat* of the *Leipoa ocellata* (malleefowl) shown on a map; and
(v) a description of the *critical habitat* found.

(d) Where *Leipoa ocellata* (malleefowl) mounds are identified under condition 8(a) of this Permit, the Permit Holder shall ensure that no clearing of *critical habitat* of the identified *Leipoa ocellata* (malleefowl) mounds occurs, unless first approved by the CEO.

9. **Revegetation and rehabilitation**

Within Lot 105 on Deposited Plan 40396, Karramindie, 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 six months following clearing authorised under this permit within Lot 105 on Deposited Plan 40396, Karramindie, *revegetate* and *rehabilitate* the areas 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;
(ii) laying the vegetative material and topsoil retained under Condition 9(a) on the cleared area; and
(iii) ripping the ground on the contour to remove soil compaction.

(c) within 4 years of undertaking *revegetation* and *rehabilitation* in accordance with Condition 9(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 9(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.

PART III - RECORD KEEPING AND REPORTING

10. Records to 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); and
(iv) purpose for which clearing was undertaken.

(b) In relation to the *revegetation* and *rehabilitation* of areas pursuant to Condition 9 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; and
(iii) the size of the area *revegetated* and *rehabilitated* (in hectares).

11. Reporting

(a) The Permit Holder must provide to the CEO on or before 31 July of each year, a written report demonstrating adherence to all conditions of this permit, and setting out the records required under Condition 10 of this permit in relation to clearing carried out between 1 July and 30 June of the previous financial year.

(b) If no clearing authorised under this Permit was undertaken between 1 July and 30 June of the previous financial year, a written report confirming that no clearing under this permit has been carried out must be provided to the CEO on or before 31 July each year.

(c) Prior to 28 August 2025, the Permit Holder must provide to the CEO a written report of records required under condition 10 of this Permit where these records have not already been provided under condition 11(a) of this Permit.

DEFINITIONS

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

critical habitat means any part of the Permit Area comprising of the habitat of flora or fauna species and its population, that is critical for the health and long term survival of the flora or fauna species and its population;

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 *Wildlife Conservation Act 1950*;

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 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;

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;

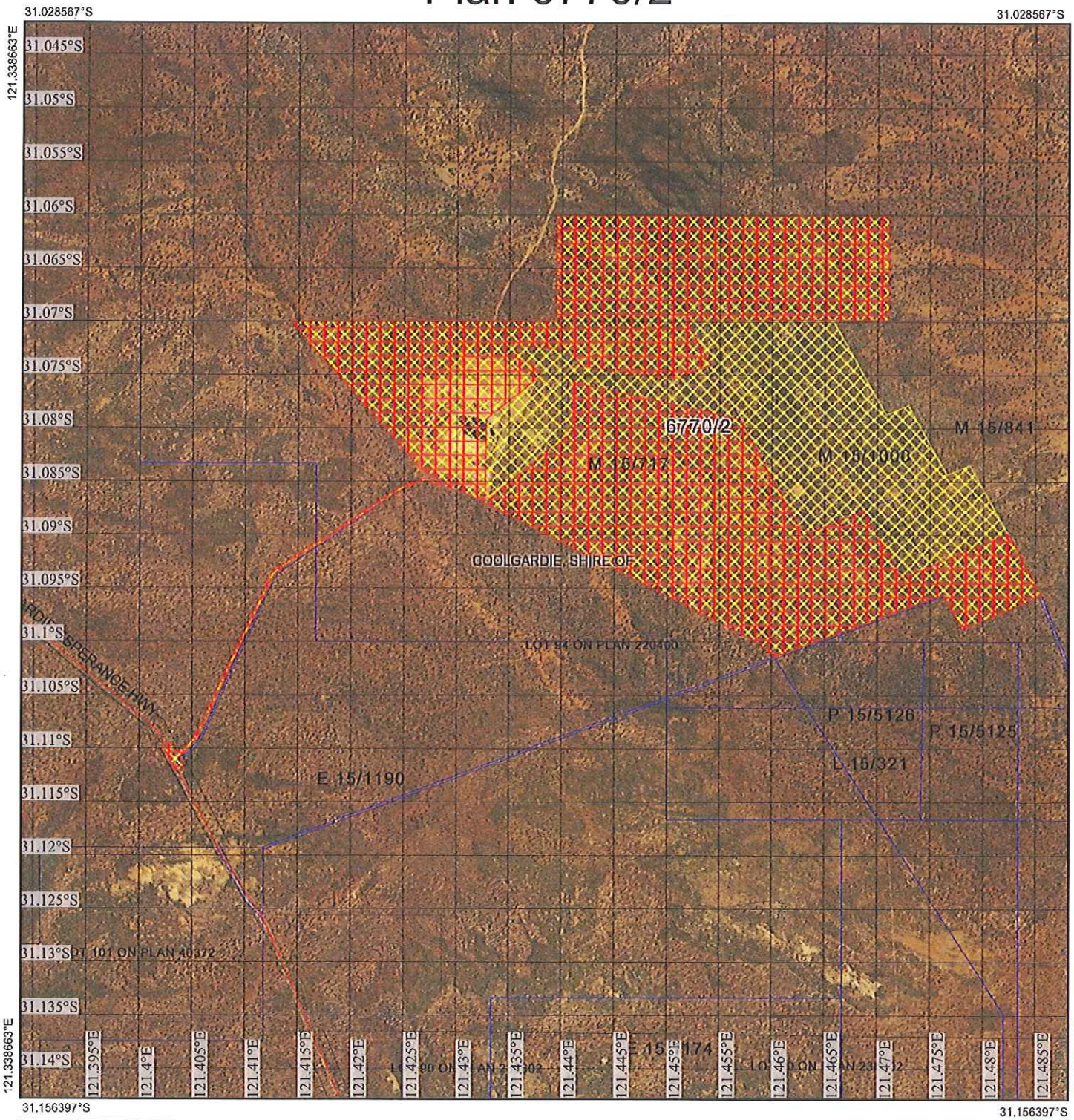
weed/s means any plant -
(a) that is declared under the section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
(b) published in a Department of Parks and Wildlife Regional Weed Summary, regardless of ranking; or
(c) not indigenous to the area concerned;

James Widenbar
MANAGER
CLEARING REGULATION

Officer with delegated authority under Section 20
of the Environmental Protection Act 1986

21 July 2016

Plan 6770/2



Legend

- Cadastre
- Imagery
- Clearing Instruments Activities
- Mining Tenements (For Printing)
- Roads
- Local Government Authority
- Clearing Instruments Conditions

N

0 2km

1:50,000

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

..... Date 21/2/2016

James Widenbar

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

Government of Western Australia
Department of Environment Regulation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6770/2
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Process Minerals International Pty Ltd

1.3. Property details

Property: Lot 105 on Deposited Plan 40396, Karramindie
Coolgardie-Esperance Highway road reserve (PIN: 11331602), Karramindie
Mining Lease 15/717
Mining Lease 15/1000
Miscellaneous Licence 15/220

Colloquial name: Mt Marion Project
Local Government Authority: Shire of Coolgardie
DER Region: Goldfields
Localities: Karramindie

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
450		Mechanical Removal	Mineral production

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 21 July 2016
Reasons for Decision: The clearing permit application received on 16 February 2016 has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the *Environmental Protection Act 1986*. It has been concluded that the proposed clearing is at variance to Principle (f), may be at variance to Principles (a), (b) and (g), is not likely to be at variance to Principles (c), (d), (h), (i) and (j), and is not at variance to Principle (e).

Through assessment it has been determined that the proposed clearing may impact habitat for malleefowl (*Leipoa ocellata*; rare or likely to become extinct under the *Wildlife Conservation Act 1950*) and cause appreciable land degradation via wind erosion. A malleefowl management condition requiring targeted surveys prior to clearing will minimise impacts to malleefowl. A condition requiring clearing to occur not more than three months prior to the implementation of the proposed land use will minimise wind erosion.

The assessment identified that the proposed clearing will impact on vegetation growing in association with a watercourse. These impacts are not likely to be significant.

The Delegated Officer determined that the clearing is unlikely to have any other significant environmental impacts. State policies and other relevant policies have been taken into consideration in the decision to grant a clearing permit.

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

Two Beard vegetation associations have been mapped within the application area:

Beard vegetation association 9: Medium woodland; coral gum (*Eucalyptus torquata*) and goldfields blackbutt (*Eucalyptus le soufii*); and

Beard vegetation association 936: Medium woodland; salmon gum (Shepherd et al., 2001).

A vegetation survey over the clearing permit area of CPS 6770/1 was undertaken by Recon Environmental in September, November and December 2009 (Recon Environmental, 2009), and a Level 1 flora and vegetation survey was undertaken within the entire application area of CPS 6770/2 by Native Vegetation Solutions using data collected in January to March 2013 and October 2015 (NVS, 2016). A total of 12 vegetation associations were recorded within the CPS 6770/1 application area by Recon Environmental (2009), and 20 vegetation associations were recorded within the entire current application area by NVS (2016). Vegetation association descriptions and mapped locations are inconsistent between these surveys, and are therefore listed separately.

Vegetation associations mapped by Recon Environmental (2009):

- **PEXW:** Plain Eucalypt eremophila-chenopod woodland: consisted of an open *Eucalyptus lesouefii* woodland with *E. longicornis* and *E. salmonophloia over Eremophila interstans* subsp. *interstans* with *Exocarpos aphyllus*, above *Senna artemisioides* subsp. *filifolia*, *Maireana georgei*, *M. trichoptera*, *Atriplex nummularia*, *Sclerolaena drummondii*, *Eremophila caerulea* subsp. *caerulea*, *E. parvifolia* subsp. *auricampa*, and *Acacia erinacea*.
- **GNEW:** Greenstone, non-halophytic eucalypt woodland: characterised by the presence of *Eucalyptus torquata* growing on greenstone hills. While *E. torquata* may not always be dominant in terms of cover, there is an open low woodland beneath which is found a diverse shrub layer.
- **PEMW:** Plain, Melaleuca pauperiflora woodland: occurs on the undulating lower slopes between the hills and plains in the Mt Marion project area. The upper canopy is generally dominated by *Eucalyptus longicornis* over *Melaleuca pauperiflora* subsp. *fastigiata* above scattered low shrubs.
- **RHSH:** Rocky hillslope, shrubland: tall to medium shrubland dominated by *Dodonaea lobulata* with *Eremophila oppositifolia*, *Trymalium myrtillus*, *Scaevola spinescens*, *Dodonaea microzyga* subsp. *acrolobata*, and scattered *Acacia tetragonophylla*, *Eremophila alternifolia*, *Acacia erinacea*, *Olearia muelleri* with emergent *Eucalyptus torquata* shrubland on steep rocky slopes.
- **PEEW:** Plain *Eucalyptus eremophila* woodland: consists of open *Eucalyptus lesouefii* woodland with *E. ravida* over *Eremophila interstans* subsp. *interstans and E. alternifolia* above *Dodonaea lobulata*, *Senna artemisioides* subsp. *filifolia*, *Acacia erinacea*, *Olearia muelleri*, and mixed shrubs in red/brown clay loam soils.
- **SCJS:** Stony close jam shrubland: characterised by *Acacia acuminata* in the tall shrub layer with *Acacia quadrimarginea* and *Melaleuca uncinata* over *Prostanthera semiteres* subsp. *semiteres* and *Dodonaea microzyga* subsp. *acrolobata* with *Mirbelia granitica* and *Cryptandra aridicola* in the low shrub layer.
- **GRHS:** Granite hill mixed shrubland: tall to medium shrubland dominated by *Acacia quadrimarginea* with *A. acuminata*, *Eremophila granitica*, *Prostanthera semiteres* subsp. *semiteres*, *Philotheca brucei* subsp. *brucei*, *Dodonaea microzyga* subsp. *acrolobata*, and *Pimelea microcephala* subsp. *microcephala* with occasional emergent *Eucalyptus websteriana* subsp. *websteriana* shrubland.
- **PMXS:** Plain mallee mixed shrubland: consists of scattered trees (*Eucalyptus lesouefii* with *E. moderata*) amongst *Eucalyptus griffithsii* with *E. Celastroides* subsp. *celastroides*, above *Eremophila oppositifolia*, *E. oldfieldii*, with *Acacia acuminata*, above *Dodonaea lobulata*, *Senna artemisioides* subsp. *filifolia*, *Eremophila caerulea* subsp. *caerulea*, *Scaevola spinescens*, *Acacia erinacea*, *Olearia muelleri*, and *Westringia rigida*.
- **PELM:** Plain *Eucalyptus longicornis* woodland with *Melaleuca* sp.: occurs on the undulating lower slopes between the hills and plains in the Mt Marion project area. The upper canopy is generally dominated by *Eucalyptus longicornis* with *E. lesouefii*, over *Melaleuca sheathiana*, above *Senna artemisioides* subsp. *filifolia*, *Atriplex nummularia*, *Scaevola spinescens*, over scattered *Acacia erinaecea*, *Olearia muelleri*, *Westringia rigida* and *Eremophila parvifolia* subsp. *auricampa*.
- **EWLS:** Eucalyptus woodland over low shrubs on undulating slopes: Open woodland with *Eucalyptus lesouefii*, *E. salmonophloia*, *E. celastroides* subsp. *celastroides* and *E. ravida* over scattered low shrubs dominated by *Eremophila caerulea* subsp. *caerulea* with *Olearia muelleri*, *Acacia erinacea* and *Maireana georgei*. This habitat tends to occur mid slope on low hills in the Mt Marion project area.

- **SCAS:** Stony close *Allocasuarina shrubland*: tall *Allocasuarina eriochlamys* subsp. *grossa* (Priority 3) shrubland with *Acacia acuminata* and *A. Quadrimarginea* over *Prostanthera semiteres* subsp. *semiteres*, and *Hybanthus floribundus* subsp. *curvifolius* on stony hillslopes.
- **ECLS:** *Eucalyptus celastroides* over low shrubs: consists of an open *Eucalyptus celastroides* subsp. *celastroides* shrubland over the low shrub *Diocirea acutifolia* (Priority 3). ECLS appears to occupy a narrow band on the lower slopes between low hill and plain habitats.

Vegetation associations mapped by NVS (2016). Descriptions consist of the dominant flora species in that association:

- **Transitional *Eucalyptus* woodland over mixed shrubland:** *Eucalyptus transcontinentalis, E. gracilis, E. salmonophloia, E. ravida, Senna artemisioides subsp. artemisioides and Eremophila scoparia.*
- **Mixed *Eucalyptus* woodland over sclerophyll shrubland on undulating hills:** *Eucalyptus transcontinentalis, E. lesouefii, E. gracilis, E. ravida, Melaleuca sheathiana, Acacia erinacea* and *Trymalium myrtillus.*
- ***Acacia* acuminata shrubland with emergent *Eucalyptus griffithsii*:** *Eucalyptus griffithsii, Acacia acuminata, Trymalium myrtillus, Scaevola spinescens,* and *Acacia erinacea.*
- **Open *Eucalyptus salmonophloia* woodland:** *Eucalyptus salmonophloia, Senna artemisioides* subsp. *filifolia, Acacia hemiteles* and *Eremophila interstans* subsp. *virgata.*
- **Eucalyptus salmonophloia woodland over mixed shrubland:** *Eucalyptus salmonophloia over Eremophila scoparia, Senna artemisioides subsp. artemisioides, and Dodonaea lobulata.*
- ***Eucalyptus lesouefii* and *E. gracilis* woodland on rocky hill slopes:** *Eucalyptus lesouefii, E. gracilis, Halgania andromedifolia, and Acacia erinacea.*
- **Mixed Eucalyptus woodland over *Melaleuca sheathiana* shrubland:** *Eucalyptus transcontinentalis, E. lesouefii, E. oleosa subsp. oleosa, E. salmonophloia, E. gracilis, Melaleuca sheathiana, Senna artemisioides subsp. artemisioides, Eremophila scoparia and Olearia muelleri.*
- ***Eucalyptus ravida* woodland:** *Eucalyptus ravida, Tecticornia disarticulata and Atriplex codonocarpa.*
- **Mixed Eucalyptus woodland over sclerophyll shrubland with *Diocirea acutifolia* (P3) on undulating hills:** *Eucalyptus transcontinentalis, E. gracilis, E. lesouefii, E. oleosa subsp. oleosa, E. salmonophloia, Eremophila decipiens subsp. decipiens, and Diocirea acutifolia.*
- ***Melaleuca sheathiana* shrubland with *Eucalyptus oleosa* over *Cratystylis conocephala*:** *Eucalyptus oleosa, and Melaleuca sheathiana and Cratystylis conocephala.*
- ***Eucalyptus lesouefii* woodland:** *Eucalyptus lesouefii, Senna artemisioides subsp. filifolia.*
- ***Eucalyptus gracilis* woodland:** *Eucalyptus gracilis, Eremophila oldfieldii subsp. angustifolia, E. scoparia and Olearia muelleri.*
- ***Eucalyptus transcontinentalis* and *E. campaspe* woodland over *Melaleuca sheathiana* shrubland:** *Eucalyptus transcontinentalis, E. campaspe, Melaleuca sheathiana,* and *Eremophila clavata.*
- ***Casuarina pauper* shrubland with *Eucalyptus lesouefii* over mixed shrubland across greenstone hills:** *Casuarina pauper, E. lesouefii, Eremophila interstans* subsp. *virgata,* and *Scaevola spinescens.*
- ***Eucalyptus griffithsii* woodland:** *Eucalyptus griffithsii, Senna artemisioides* subsp. *filifolia, Eremophila interstans* subsp. *virgata* and *E. scoparia.*
- ***Eucalyptus campaspe* and *E. gracilis* woodland:** *Eucalyptus campaspe, Eucalyptus gracilis and Melaleuca sheathiana.*
- ***Eucalyptus stricklandii and E. lesouefii woodland over Beyeria sulcata:*** *Eucalyptus stricklandii, E. lesouefii, Beyeria sulcata* var. *sulcata.*
- **Transitional *Eucalyptus* woodland over *Diocirea acutifolia:*** *Eucalyptus transcontinentalis, E. gracilis, E. salmonophloia, E. ravida,Senna artemisioides* subsp. *artemisioides, and Diocirea acutifolia.*
- ***Acacia quadrimarginea* over *Allocasuarina* shrubland:** *Acacia quadrimarginea, Allocasuarina campestris, Allocasuarina helmsii, Acacia acuminata, Trymalium myrtillus* subsp. *myrtillus* and *Scaevola spinescens.*
- **Revegetation Shrubland:** *Dodonaea lobulata, Radyera farragei, Alyogyne hakeifolia,Allocasuarina campestris, Maireana tomentosa, Maireana trichoptera, Sclerolaena diacanthaand Acacia erinacea.*

Clearing Description

The applicant has applied to amend CPS 6770/1 to clear an additional 157.77 hectares (a total of 450 hectares) within an application footprint of 1,718 hectares for the purpose of mineral production.

Vegetation Condition

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

To

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).

Comment

The vegetation condition was determined via flora surveys conducted within the application area (Recon Environmental, 2009; NVS, 2016). The application area includes previously cleared areas currently used for mineral production activities.

The majority of the previous clearing permit area associated with CPS 6770/1 is covered by expired clearing permit CPS 3549/1. Approximately 100 hectares of vegetation was cleared under this permit, however the area was not utilised and vegetation has regrown over the area.

3. Assessment of application against clearing principles

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

Comments

Proposed clearing may be at variance to this Principle

The application area occurs in the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This bioregion is comprised of mallees and shrublands on sandplains, and is rich in endemic eucalypts on low greenstone hills, valley alluvials and calcareous plains, and endemic acacias in the east (Grant et al., 2002). In a flora and vegetation survey over the area covered by the previous version of the clearing permit (CPS 6770/1) and surrounds, Recon Environmental (2009) recorded a total of 133 taxa from 68 genera and 39 families. A flora and vegetation survey conducted by NVS (2016) over the amended application area recorded a total of 186 species from 38 families and 82 genera within a total survey area of 6,107 hectares (of which the application area covers 1,718 hectares). This level of flora taxa is indicative of a moderate level of diversity for this region (Recon Environmental, 2009).

The flora and vegetation survey undertaken by Recon Environmental during September, November and December 2009 recorded three priority flora species; *Austrostipa blackii* (priority 3), *Allocasuarina eriochlamys* subsp. *grossa* (priority 3) and *Diocirea acutifolia* (priority 3) (Recon Environmental, 2009).

NVS conducted a flora and vegetation survey of the current application area (including the area surveyed by Recon Environmental in 2009) in January, February and March 2013 and October 2015 (NVS, 2016). The majority of the application area was surveyed in October 2015 (NVS, 2016). One priority flora species, *Diocirea acutifolia*, was detected (NVS, 2016). Neither *Austrostipa blackii* nor *Allocasuarina eriochlamys* subsp. *grossa* were recorded by NVS (2016). Only one individual *Austrostipa blackii plant* was recorded by Recon Environmental (2009), and it is possible that this species no longer exists at this location. *Allocasuarina eriochlamys* subsp. *grossa* was recorded at five locations by Recon Environmental (2009), and in particular was identified as the dominant species in vegetation association 'SCAS: Stony closed Allocasuarina shrubland' (Recon Environmental, 2009). The Department of Parks and Wildlife (Parks and Wildlife, 2016) advise that either the survey conducted by NVS (2016) was not intensive enough to identify *Austrostipa blackii* and/or *Allocasuarina eriochlamys* subsp. *grossa*, or there has been a misidentification of *Allocasuarina eriochlamys* subsp. *grossa* by either survey.

Priority 3 flora species are poorly known but do not appear to be under imminent threat, and the proposed clearing is therefore not likely to impact the conservation of these species. However, an additional rare flora species, two priority 1 flora species (*Acacia websteri* and *Thryptomene* sp. Londonderry (R.H. Kuchel 1763)) and two priority 2 flora species (*Acacia kerryana* and *Phebalium clavatum*) are known to occur in the local area (20 kilometre radius), and Parks and Wildlife (2016) advised that suitable habitat for these species may occur within the additional areas under application.

The species of rare flora is known from three records within one population located 20 kilometres south of the Mt Marion Project within an area of similar geology to the application area (Parks and Wildlife, 2016). This species has been observed to flower in November and mid- December (Parks and Wildlife, 2016), which is outside the timing of the survey conducted by NVS (2016) and partly outside the timing of the survey conducted by Recon Environmental (2009). However, in the survey report NVS advised that the botanists conducting the survey were qualified in identifying the genus to which the rare flora belongs, and no individuals of this genus were recorded during the flora survey (NVS, 2016).

Acacia websteri (priority 1) is known from 21 records at five locations across the Avon Wheatbelt, Coolgardie and Murchison IBRA bioregions and the Shires of Trayning, Coolgardie and Leonora, with the nearest record located 12 kilometres south of the application area. Ten records of this species occur within 40 kilometres of the application area, with five records noting that the species is locally abundant. Records occur on red sand, clay or loam in low-lying areas and flats, in association with *Eucalyptus* and *Acacia* species (Parks and Wildlife, 2016). On this basis, the application area includes habitat that may be suitable for this species (Parks and Wildlife, 2016).

Thryptomene sp. Londonderry (R.H. Kuchel 1763) (priority 1) is known from 18 records, all within 40 kilometres of the application area except one record, which is approximately 64 kilometres from the application area. Two records note that the species is locally abundant in that area. Parks and Wildlife (2016) advise that the vegetation association "*Acacia quadrimarginea* over *Allocasuarina* shrubland" recorded by NVS (2016) may provide suitable habitat for this species.

Acacia kerryana (priority 2) has been observed to flower in September to October and January to February and is likely to be reliant on rainfall events for flowering, irrespective of season (Parks and Wildlife, 2016). *Acacia kerryana* is known from 12 records at four locations, all within the Coolgardie IBRA bioregion and within the Shires of Coolgardie, Dundas and Kondinin on granitic loamy sand, stony clayey loam or clayey sand on low stony ridges and undulating plains (Parks and Wildlife, 2016). Records occur in open woodland scrub in association with *Acacia* sp., *Calothamnus* sp., *Eucalyptus* sp., *Grevillea* sp. and *Triodia* scoparium, and the application area contains habitat that may be suitable for this species (Parks and Wildlife, 2016). The nearest record is located 10 kilometres south of the application area, which is the only record within the Shire of Coolgardie and is located 103 kilometres from any other record.

Phebalium clavatum (priority 2) has been observed to flower in August to September (Parks and Wildlife, 2016). Parks and Wildlife (2016) advised that this indicates a seasonal flowering period that was not captured during the survey conducted by NVS (2016).This species is known from 13 records over four populations within the Coolgardie IBRA bioregion and the Shire of Coolgardie, with the nearest record located 10 kilometres south-west of the application area (Parks and Wildlife, 2016). All records occur within 50 kilometres of the application area. Records of *Phebalium clavatum* occur on granitic loamy sand, stony clayey loam or clayey sand on low stony ridges and undulating plains in association with *Eucalyptus* sp. mallee species (Parks and Wildlife, 2016). The application area may contain suitable habitat for this species (Parks and Wildlife, 2016).

Parks and Wildlife (2016) advised that the adequacy of the survey in searching for and identifying the priority flora listed above would be dependent on whether these species were in flower and the ability to detect these species when not in flower (Parks and Wildlife, 2016), which was not reported by the survey (NVS, 2016).

Further information regarding details of the flora survey was submitted by the applicant to assess the potential impacts to flora species (PMI, 2016b). The survey effort is considered appropriate to address the risk of significant impacts to conservation significant flora habitat.

A fauna survey conducted by Rapallo (2010) within the portion of Mining Lease15/1000 that intersected the CPS 6770/1 permit area identified four fauna habitat types that were considered to be of medium value based on available information, and would be of high value if conservation significant fauna were recorded. Two extinct malleefowl mounds (*Leipoa ocellata*; rare or likely to become extinct under the *Wildlife Conservation Act* [WC Act]) were recorded within the CPS 6770/1 permit area (Rapallo, 2010), with small patches of suitable habitat determined to be present. Suitable habitat for this species occurs within the current application area, within areas that have not yet been surveyed for malleefowl.

A fauna survey was conducted within a portion of Mining Lease 15/717 by Bamford Consulting Ecologists in 2012 (Bamford, 2012). Four fauna species of conservation significance were considered likely to utilise habitat within the survey area as either visitors or residents, including the malleefowl, peregrine falcon (*Falco peregrinus*; other specially protected fauna under the WC Act), Western rosella (*Platycercus icterotis xanthogenys*; priority 4), and the central long-eared bat (*Nyctophilus major tor*; priority 4).

No priority or threatened ecological communities (PEC/TEC) have been recorded within the local area (20 kilometre radius). Flora and vegetation surveys conducted by NVS (2016) and Recon Environmental (2009) within the application area recorded no PECs or TECs.

Based on the size of the application area (450 hectares within a footprint of 1,718 hectares) and the potential for priority and threatened fauna to occur within the application area, the proposed clearing may be at variance to this Principle. Impacts to malleefowl may be minimised by the implementation of targeted surveys to identify critical habitat for these species, and excluding these areas from clearing.

Methodology

References:
Bamford (2012)
Grant et al. (2002)
NVS (2016)
Parks and Wildlife (2016)
PMI (2016b)
Rapallo (2010)
Recon Environmental (2009)
Western Australian Herbarium (2016)

GIS Database:
- SAC bio datasets (Accessed June 2016)

(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 indigenous to Western Australia.

Comments

Proposed clearing may be at variance to this Principle

Two fauna surveys have been conducted within portions of the application area. A fauna survey of a portion of the application area within Mining Lease 15/1000 was undertaken by Rapallo in March 2010 (Rapallo, 2010), and a portion of the application area on Mining Lease 15/717 was surveyed by Bamford Consulting Ecologists in 2012 (Bamford, 2012).

Rapallo (2010) recorded 12 fauna habitat types within the application area, and Bamford (2012) recorded five vegetation and substrate associations (VSA). At least two of these habitat types/ VSAs were recorded by both surveys. Habitat types recorded during these surveys were noted to be well represented outside the application area. However, three habitat types were identified by Rapallo (2010) as being of particular value to fauna, being:

- Stony close *Allocasuarina* shrubland;
- Stony close jam (*Acacia acuminata*) shrubland; and
- Plain *Melaleuca pauperiflora* woodland.

Rapallo (2010) recorded two extinct malleefowl mounds within the survey area. These mounds were located within plain *Melaleuca pauperiflora* woodland and close to thickets of jam and *Allocasuarina* sp. (Rapallo, 2010). Plain *Melaleuca pauperiflora* woodland also supported the highest bird abundance and diversity (Rapallo, 2010).

While no extant malleefowl mounds were recorded during previous fauna surveys, Recon Environmental (2009) has stated that higher quality nesting habitat for malleefowl occurs within the northern portion of the amended application area within Lot 105 on Deposited Plan 40396. Further, habitat quality within mining tenure but outside of surveyed areas is unknown and may provide habitat utilised by conservation significant fauna. In particular, vegetation communities with leaf litter present is likely to provide suitable habitat for malleefowl nesting activities.

Based on the above, the proposed clearing may be at variance to this Principle. Potential impacts to malleefowl may be minimised by the implementation of targeted surveys within previously unsurveyed areas prior to clearing activities, ensuring that critical habitat for this species is not cleared.

Methodology References:
Bamford Consulting Ecologists (2012)
Rapallo (2010)
Recon Environmental (2009)

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

Comments **Proposed clearing is not likely to be at variance to this Principle**
Parks and Wildlife (2016) advised that a species of rare flora occurs 20 kilometres south of the Mt Marion Project over similar soils, and may therefore occur within the application area. The species has been recorded on the tops of low lateritised breakaways, kaolinised slopes of breakaways and the resulting minor creeklines leading directly off the breakaway footslopes (Parks and Wildlife, 2016). Associated species include *Eucalyptus stricklandii, Alyxia buxifolia, Leucopogon* sp. *kambalda, Melaleuca leiocarpa, Lepidosperma* sp. *Parker Range, Ptilotus helichrysiodes and Scaevola spinescens*. Of these, *Eucalyptus stricklandii, Alyxia buxifolia* and *Scaevola spinescens* were recorded by NVS (2016) in a number of vegetation types within the survey area.

This species has been observed to flower in November and mid- December (Parks and Wildlife, 2016), which is outside the timing of the survey conducted by NVS (2016). However, the survey report states that the surveying botanists were qualified in identifying the relevant genus (*Tetratheca*), and no *Tetratheca* sp. were recorded during the survey (NVS, 2016).

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

Methodology References:
NVS (2016)
Parks and Wildlife (2016)
Recon Environmental (2009)

GIS Database:
- SAC bio datasets (accessed June 2016)

(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.

Comments **Proposed clearing is not likely to be at variance to this Principle**
According to available databases, there are no threatened ecological communities (TECs) within the local area (20 kilometre radius). The vegetation surveys did not identify any vegetation communities considered to be a TEC within the application area (Recon Environmental, 2009; NVS, 2016).

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

Methodology References:
Recon Environmental (2009)
NVS (2016)

GIS Database:
- SAC bio datasets (Accessed April 2016)

(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.

Comments

Proposed clearing is not at variance to this Principle

The application area lies within the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 98 per cent of the pre-European vegetation remains (Government of Western Australia, 2014).

The vegetation of the application area has been broadly mapped as Beard vegetation associations 9 and 936. These vegetation associations have not been extensively cleared as over 96 per cent remains at both a State and bioregional level (Government of Western Australia, 2014). While a number of clearing permits have been granted for the purpose of mineral exploration and production within the local area (20 kilometre radius), the local area has not been extensively cleared and the application area is not likely to be a significant remnant of native vegetation.

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

Methodology

References:
Government of Western Australia (2014)

GIS Database:
- Goldfields remnant vegetation
- Imagery

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

Comments

Proposed clearing is at variance to this Principle

There are no permanent watercourses within the application area. There are four minor, non-perennial watercourses which intersect the application area. Three of the four minor watercourses are located across the centre of the application area, and the proposed clearing will impact on vegetation growing along these watercourses. Vegetation mapping conducted by NVS (2016) did not show any restricted vegetation communities to be associated specifically with a watercourse.

Recon Environmental (2009) states that these watercourses are not defined drainage lines but rather areas which concentrate minimal water flow and then pan out to sheet flow in lower lying areas.

Based on the presence of native vegetation within mapped watercourses within the application area, the proposed clearing is at variance with this Principle. However, given watercourses within the application area are minor and non-perennial, the proposed clearing of vegetation associated with watercourses is not likely to have a significant environmental impact.

Methodology

References:
NVS (2016)
Recon Environmental (2009)

GIS Database:
- Hydrography, linear

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

Comments

Proposed clearing may be at variance to this Principle

Soil mapping conducted by the Department of Agriculture and Food Western Australia (DAFWA, 2016) show two soil types to occur within the application area, being:

- Kambalda zone soils, described as calcareous loamy earths and red loamy earths with salt lakes soils and some red-brown hardpan shallow loams and red sandy duplexes; and
- Norseman zone soils, described as calcareous loamy earths, yellow sandy and loamy earths, red loamy earths, red deep sands and salt lake soils.

Land degradation risk has not been mapped over the application area, however the surrounding area is associated with the Graves, Gumland and Moriarty land systems, which may be susceptible to wind and water erosion if vegetative cover is removed, especially within watercourses (Pringle et al. 1994).

Based on the above, the proposed clearing may be at variance to this Principle. A condition requiring that vegetation is not cleared more than three months before the land is used for the purpose of mineral production was included in clearing permit CPS 6770/1 to decrease the risk of land degradation via wind erosion.

Methodology

References:
DAFWA (2016)
Pringle et al. (1994)

GIS Database:
- Rangeland land system mapping

(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.

Comments

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

The application area is not located within any conservation areas. The nearest conservation area is the Yallari Timber Reserve, which is located approximately 3.5 kilometres west of the mining leases, and 100 metres west of the proposed haul road where it joins the Coolgardie-Esperance Highway. The Yallari Timber Reserve is vested with the Conservation Commission of WA and managed by Parks and Wildlife.

Given the amount of native vegetation that remains in the local area (20 kilometre radius), the application area is not likely to form a significant ecological linkage to the Yallari Timber Reserve.

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

Methodology

GIS Database:
- Parks and Wildlife tenure
- Roads

(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.

Comments

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

There are no permanent watercourses within the application area. There are four minor, non-perennial watercourses which intersect the application area. Recon Environmental (2009) states that these watercourses are not defined drainage lines but rather areas which concentrate minimal water flow and then pan out to sheet flow in lower lying areas. Therefore, clearing within these mapped watercourses is not likely to have a significant impact on the quality of surface water.

The application area is characterised by saline groundwater of between 14,000 to 35,000 milligrams/litre total dissolved solids. Information provided by Newland Environmental (2009) supporting a related clearing permit application indicates that the water table occurs between 100 and 70 metres depth within the application area. Given the depth and hypersaline nature of groundwater in the area, it is unlikely that the proposed clearing will have a significant impact on groundwater quality.

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

Methodology

References:
Newland Environmental (2009)
Recon Environmental (2009)

GIS Database:
- Groundwater salinity, statewide
- Hydrography, linear

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

Comments

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

The nearest weather station to the application area is located at Coolgardie, approximately 25 kilometres from Karramindie. Climate statistics from the Bureau of Meteorology (BoM, 2016) show that the region receives an average annual rainfall of 270 millimetres, with rainfall spread throughout the year and each month receiving between 13 and 29 millimetres of rainfall. Given the low likelihood of extreme rainfall events and the presence of permeable sandy and loamy soils mapped within the application area (DAFWA, 2016), the proposed clearing is not likely to cause or increase the incidence or intensity of flooding.

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

Methodology

References:
BoM (2016)
DAFWA (2016)

Planning instruments and other relevant matters.

Comments

The application area was amended on 13 June 2016 to correct an error detected by the applicant. No change to the size of the clearing was proposed (REF: A1112278).

The application area was amended again on 30 June 2016, to include an area within the Coolgardie-Esperance Highway road reserve. No change to the size of the clearing was proposed (REF: A1127383).

There are no native title claims over the application area (Department of Aboriginal Affairs, 2015). The tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the Act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

Mining proposals for the proposed works within Mining Lease 15/717, Mining Lease 15/1000 and Miscellaneous Licence 15/220 were granted by the Department of Mines and Petroleum on 24 November 2015 and 11 March 2016.

The Department of Water granted the applicant a licence to take groundwater and a licence to construct a well on 22 March 2016 (PMI, 2016).

The Shire of Coolgardie granted development approval for mineral exploration within Lot 105 on Deposited Plan 40396 on 1 June 2016.

According to available databases, there are four registered Aboriginal sites of significance within the application area. It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal sites of significance are damaged through the clearing process.

The clearing permit application was advertised in *The West Australian* newspaper on 14 March 2016 for a 21 day comment period. No public submissions were received.

Methodology

References:
Department of Aboriginal Affairs (2016)
PMI (2016a)
Shire of Coolgardie (2016)

GIS Database:
- Aboriginal sites register system

4. References

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BoM (2016) Climate statistics for Australian locations, Coolgardie. Bureau of Meteorology. http://www.bom.gov.au/climate/averages/tables/cw_012018.shtml (Accessed April 2016).

DAFWA (2016) NRMInfo (Natural Resource Management) Portal. Department of Agriculture and Food Western Australia. URL: http://maps.agric.wa.gov.au/nrminfo/. Accessed April 2016.

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NVS (2016) Level 1 Flora and Vegetation survey for the Mt Marion Project Area. Unpublished report prepared by Native Vegetation Solutions for Minerals Resources Ltd.

Parks and Wildlife (2016) Flora advice received from the Department of Parks and Wildlife on 7 April 2016. DER REF: A1081241.

PMI (2016a) Additional information provided by Process Minerals International Pty Ltd on 2 May 2016. DER REF: A1094762.

PMI (2016b) Additional information provided by Process Minerals International Pty Ltd on 30 June 2016. DER REF: A1127377.

Pringle, H.J.R., Van Vreeswyk, A.M.E., & Gilligan, S.A. (1994) An inventory and condition survey of rangelands in the northeastern Goldfields, Western Australia. Department of Agriculture, South Perth.

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Shire of Coolgardie (2016) Advice received on 4 May 2016 from the Shire of Coolgardie. DER REF: A1094683.

Western Australian Herbarium (2016) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. http://florabase.dpaw.wa.gov.au/ (Accessed April 2016).