



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7445/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Mt Magnet Gold Pty Ltd

1.3. Property details

Property: Mining Leases 58/4, 58/5, 58/8, 58/11, 58/30, 58/47, 58/64, 58/78, 58/79, 58/81, 58/120, 58/121, 58/130, 58/136, 58/146, 58/157, 58/172, 58/179, 58/181, 58/185, 58/186, 58/187, 58/191, 58/192, 58/193, 58/194, 58/195, 58/198, 58/202, 58/205, 58/208, 58/209, 58/231, 58/232, 58/234, 58/235, 58/236, 58/248, 58/285, 58/286, 58/320;
Miscellaneous Licence 58/20
Local Government Area: Shire of Mount Magnet
Colloquial name: Mount Magnet Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
800		Mechanical Removal	Mineral Production and Associated Activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 30 March 2017

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia. Two Beard vegetation associations have been mapped within the application area (GIS Database).

312: Succulent steppe with very open shrubs; very sparse mulga and *Acacia sclerosperma* over saltbush and bluebush; and

313: Succulent steppe with open scrub; scattered *Acacia sclerosperma* and *Acacia victoriae* over bluebush.

Several flora and vegetation surveys have been undertaken over the application area since 1993, with the most recent surveys having been undertaken by Niche Environmental Services (2010) and Outback Ecology (2012). These surveys have identified the following 29 vegetation associations:

Clay-Loam Plain

Acacia Forests and Woodlands (MVG6)

Acacia aneura var. *aneura* and *Eremophila oldfieldii* Low Forest B Over *A. grasbyi* and *A. tetragonophylla* Scrub Over *Eremophila simulans* subsp. *lapidensis*, *Eremophila platycalyx* subsp. *platycalyx* and *Senna artemisioides* subsp. *x sturtii* Heath B Over *Maireana georgei*, *M. convexa* and *M. triptera* Low Heath D.

Acacia aneura var. *aneura* Open Low Woodland A Over *Philotheca brucei*, *Thryptomene decussata* and *Grevillea didymobotrya* subsp. *didymobotrya* Heath B.

Acacia craspedocarpa and *Brachychiton gregorii* Low Woodland B Over *A. grasbyi*, *A. aneura* var. *aneura* and *Senna glaucifolia* Open Scrub Over *Thryptomene decussata*, *A. tetragonophylla* and *A. ramulosa* var. *ramulosa* Low Scrub B.

Acacia aneura var. *aneura* Low Woodland B Over *Thryptomene decussata*, *A. rhodophloia* and *Eremophila latrobei* subsp. *latrobei* Dwarf Scrub C Over *Stylidium longibracteatum* Very Open Herbs.

Acacia aneura var. *aneura* Low Woodland B Over *A. aneura* var. *tenuis* and *A. ramulosa* var. *ramulosa* Scrub Over *Eremophila punicea* and *Maireana thesioides* Dwarf Scrub C.

Acacia Open Woodlands (MVG13)

Low Open Woodland of *Acacia* spp. with occasional Low Open Shrubland of *Maireana* spp. and *Tecticornia* spp. on flats.

Acacia aneura var. *aneura* Open Low Woodland B Over *A. aneura* var. *fulginea* and *A. demissa* Scrub Over *A. quadrimarginea* and *Eremophila exilifolia* Heath B over *Ptilotus schwartzii* and *P. obovatus* var. *obovatus* Dwarf Scrub D.

Acacia aneura var. *aneura* and *Brachychiton gregorii* Open Low Woodland B Over *A. craspedocarpa* and *Eremophila galeata* Dense Heath B Over *Eremophila punicea* and *Enchylaena tomentosa* var. *tomentosa* Low Heath C Over *Ptilotus obovatus* var. *obovatus* and *P. schwartzii* Open Herbs.

Acacia aneura var. *aneura*, *Grevillea obliquistigma* subsp. *obliquistigma* and *A. craspedocarpa* Open Low Woodland B Over *A. ramulosa* var. *ramulosa*, *A. exocarpoides* and *Eremophila latrobei* subsp. *latrobei* Low Scrub B.

Acacia aneura var. *aneura* and *Eremophila oldfieldii* subsp. *angustifolia* Open Woodland Over *A. quadrimarginea*, *A. craspedocarpa* and *A. grasbyi* Heath A Over *Eremophila punicea* and *Ptilotus obovatus* var. *obovatus* Dwarf Scrub.

Acacia Shrublands (MVG16)

Acacia ramulosa var. *ramulosa*, *Acacia aneura* var. *aneura* Scrub over *Maireana villosa*, *Sclerolaena densiflora*, *Sclerolaena eriakantha* Dwarf Scrub.

Acacia ramulosa var. *ramulosa*, *Acacia aneura* var. *fuliginea* open scrub over *Monachather paradoxus*, *Eragrostis eriopoda* scattered grass.

Acacia aneura var. *aneura*, *A. quadrimarginea*, *Thryptomene decussata* Scrub over *A. rhodophloia* Open Dwarf Scrub D.

Acacia grasbyi, *Thryptomene decussata* and *Hakea preissii* Scrub Over *Olearia stuartii*, *Philotheca brucei* and *Eremophila latrobei* subsp. *latrobei* Low Scrub B over *Ptilotus obovatus* var. *obovatus*, *Stylidium longibracteatum* Dwarf Scrub D Over *Erodium cicutarium* Very Open Herbs.

Acacia craspedocarpa and *Acacia rhodophloia* Scrub Over *Acacia sibirica*, *Aluta aspera* subsp. *hesperia*, *Eremophila latrobei* subsp. *latrobei* Heath B.

Chenopod Shrublands, Samphire Shrublands and Forblands (MVG 22)

Acacia aneura var. *aneura*, *Acacia grasbyi*, *Hakea preissii* scattered tall shrubs over *Maireana triptera*, *Sclerolaena densiflora* open dwarf scrub.

Maireana triptera, *Sclerolaena densiflora* Open Dwarf Scrub with occasional tall shrubs of *Acacia aneura* var. *aneura*, *Acacia grasbyi* and *Hakea preissii*.

Other Shrublands (MVG 17)

Calytrix divergens Open Dwarf Scrub on eroded duricrust.

Eremophila exilifolia, *Acacia* sp. narrow phyllode, and *Senna artemisioides* subsp. *filifolia* Low Scrub A over *Maireana pentagona* and *Solanum lasiophyllum* Open Dwarf Scrub C.

Hakea preissii Open Scrub over *Roycea divaricata* and *Maireana triptera* Dwarf scrub D.

Closed Depression

Chenopod Shrublands, Samphire Shrublands and Forblands (MVG 22)

Low Open Shrubland of *Tecticornia disarticulata* on a clay pan.

Hillslope/Ridge

Acacia Forests and Woodlands (MVG6)

Low Woodland of *Acacia* spp. over Low Open Shrubland of mixed species on a low Banded Ironstone Formation.

Acacia Shrublands (MVG16)

Acacia aneura var. *aneura* Open Scrub over *Thryptomene decussata*, *Philotheca brucei* subsp. *brucei*, *Aluta aspera* subsp. *hesperia*, *Eremophila latrobei* Open Low Scrub over mixed scattered Grass.

Open Depression

Acacia Forests and Woodlands (MVG6)

Low Woodland of *Acacia* spp. over Low Open Shrubland of mixed species in an ephemeral drainage line.

Acacia caesaneura, *A. aneura* var. *aneura*, *A. grasbyi*, *A. ramulosa* var. *ramulosa* Thicket over *Maireana triptera*, *Sclerolaena densiflora* Open Dwarf Scrub.

Acacia Forests and Woodlands (MVG6)

Low Woodland of *Acacia* spp. over Low Open Shrubland of mixed species on gibber flat with quartz and ironstone.

Rocky/stony Plain

Acacia Shrublands (MVG16)

Acacia ramulosa var. *ramulosa*, *Acacia aneura* var. *fuliginea* open scrub over *Monachather paradoxus*, *Eragrostis eriopoda* scattered grass on plains with lag gravel.

Acacia grasbyi and *A. quadrimarginea* Open Scrub over *Thryptomene decussata*, *Philotheca brucei* subsp. *brucei* and *Eremophila latrobei* subsp. *latrobei* Low Scrub.

Chenopod Shrublands, Samphire Shrublands and Forblands (MVG 22)

Eremophila fraseri subsp. *galeata*, *Acacia aneura* var. *aneura* Open Low Scrub over sparse chenopods and grasses.

Clearing Description	Mount Magnet Gold Project Mount Magnet Gold Pty Ltd proposes to clear up to 800 hectares of native vegetation within a total boundary of approximately 5,684 hectares for the purposes of mineral production and associated activities. The project is located approximately 400 metres west of Mount Magnet in the Shire of Mount Magnet.
Vegetation Condition	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994); To: Very Good: Vegetation structure altered, obvious signs of disturbance (Keighery, 1994).
Comment	The vegetation condition is derived from flora and vegetation surveys conducted by Niche Environmental Services (2010) and Outback Ecology (2012). The mining operation consists of: 65 open pits (including backfilled open pits), 45 Waste Rock Landforms (WRL), 4 Tailings Storage Facilities (TSF's), 2 closed and 1 active underground (UG) mine and a range of supporting infrastructure (mill, power plant, run of mine pads (ROM), roads, pipelines and powerlines).

3. Assessment of application against clearing principles

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

Comments **Proposal is not likely to be at variance to this Principle**

Several flora and vegetation surveys have been conducted at the Mount Magnet site with approximately 90% of the application area surveyed at some point (Niche Environmental Services, 2010; Outback Ecology, 2007; Outback Ecology, 2012). A review of aerial imagery and topography shows vegetation of the unsurveyed area is likely to be similar to vegetation of the surveyed areas (GIS Database).

The surveys found that vegetation was generally sparse and disturbed by mining, exploration and grazing impacts. Aerial imagery shows a large proportion of the application area are already covered by existing mining infrastructure (GIS Database). The flora and vegetation survey undertaken by Outback Ecology in August and September 2007 focused on banded ironstone formation (BIF) ridges within and surrounding the Mount Magnet site. Outback Ecology (2007) considered vegetation of the BIF to be comparatively widespread with a general lack of habitat specificity. Level 1 surveys undertaken by Niche Environmental Services in September 2009 and March 2010 found the vegetation was either widespread or in a condition that was not thought to be a representative unit (Niche Environmental Services, 2010).

The Niche and Outback Ecology flora and vegetation surveys recorded between 25 and 120 taxa from between 8 and 33 families and 10 and 67 genera (Niche Environmental Services, 2010; Outback Ecology, 2007; Outback Ecology, 2012). Several weed species have been recorded at the Mount Magnet mine site. The presence of introduced weed species lowers the biodiversity values of the proposed clearing areas. Potential impacts from weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

Available databases show no known Threatened Flora or Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) occur within the application area (GIS Database). No Threatened Flora or TECs have been recorded in previous surveys undertaken at the Mount Magnet site (Cardno, 2013). No PECs were recorded by Outback Ecology in July 2012 (Outback Ecology, 2012). The Mount Magnet vegetation complexes (banded ironstone formation) PEC is located approximately 500 metres east of the application area, however is not likely to be impacted by the proposed clearing.

Several Priority Flora species have previously been recorded within and surrounding the Mount Magnet site including:

- *Stenanthemum mediale* (Priority 1) – Recorded at two locations between approximately 350 metres and 650 metres outside of the application area (Western Botanical, 2006; Niche Environmental Services, 2010). It has also been tentatively recorded at another location (insufficient plant matter for a confident identification) (Outback Ecology, 2007). This species occurs on red clayey sands and is known from nine records from the Murchison bioregion (DPaW, 2017).
- *Verticordia jamiesonii* (Priority 3) – Recorded at one location approximately 150 metres outside of the application area (Niche Environmental Services, 2010). This species occurs on lateritic breakaways and is known from 32 records from the Gascoyne, Gibson Desert, Great Victoria Desert, Murchison and Yalgoo bioregions (DPaW, 2017).
- *Ptilotus astrolasius* var. *luteolus* (more recently known as *Ptilotus luteolus* (Priority 3)) - Recorded at four locations between approximately 750 metres and 6 kilometres outside of the application area (Western Botanical, 2006). This species is known from 14 records from the Carnarvon, Gascoyne and Murchison bioregions (DPaW, 2017).
- *Acacia speckii* (Priority 4) – Recorded within the application area and at numerous locations outside the application area (Outback Ecology, 2012a; Cardno, 2013). This species occurs on rocky soils over granite, basalt or dolerite and rocky hills or rises and is known from 28 records from the Gascoyne, Murchison and Yalgoo bioregions (DPaW, 2017).
- *Dodonaea* sp. Ninghan (H. Demarz 5121) (more recently known as *Dodonaea amplisemina* (Priority 4)) –

Recorded at three locations between approximately 750 metres and 3 kilometres outside of the application area (Western Botanical, 2006). This species occurs on red-brown sandy clay on basalt and gabbro and banded ironstone or on dolerite and quartzite and rocky hills and is known from 31 records from the Avon Wheatbelt, Gascoyne, Murchison and Yalgoo bioregions (DPaW, 2017).

- *Acacia burrowsiana* and *Alyxia tetanifolia* (both Priority 3) - According to Naturemap (DPaW, 2017), these species have been recorded within five kilometres of the approximate centrepiece of the application area.

The proposed clearing will likely impact on *Acacia speckii*, however, this species has been recorded at numerous locations outside the application area and has a widespread distribution. The remainder of the abovementioned Priority Flora species were not detected within the surveyed areas of the application area and are unlikely to occur within the unsurveyed areas given vegetation is considered to be similar to the surveyed areas. Based on the above, the proposed clearing is unlikely to have a significant impact on Priority Flora species.

Given the application area has not been completely covered by existing surveys there may be other Priority Flora species present that may be impacted by the proposed clearing. However, given the majority of the vegetated areas have been surveyed and the disturbed nature of the application area, it is unlikely the proposed clearing will have a significant impact on Priority Flora species.

According to Naturemap, seven mammal, 80 bird, five amphibian, 14 invertebrate and 32 reptile species have been recorded within a 20 kilometre radius of the approximate centrepiece of the application area (DPaW, 20137). However, the application area has been disturbed by mine infrastructure, tracks and drilling disturbance and grazing by goats and rabbits and is located in close proximity to active mining areas. Based on this, the application area is not expected to support a high level of faunal diversity.

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

Methodology DPaW (2017)
Niche Environmental Services (2010)
Outback Ecology (2007)
Outback Ecology (2012)
Western Botanical (2006)

GIS Database:
- IBRA Australia
- Pre European Vegetation
- Threatened and Priority Flora
- Threatened Ecological Sites Buffered

(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 Proposal is not likely to be at variance to this Principle

A fauna survey has not been conducted over the whole application area, however, several fauna desktop studies have been conducted by Outback Ecology (2012). Portions of the application area have also been subject to a targeted Malleefowl survey undertaken by Outback Ecology on 6 and 7 February 2012 for clearing permit CPS 3713/1 located in the centre of the application area (Botanica Consulting, 2017). Ecologists also searched for Malleefowl mounds and tracks in areas of suitable habitat during the July 2012 flora and vegetation survey in the Brown Hill area (Outback Ecology, 2012).

The 2012 fauna desktop study used vegetation mapping from the flora and vegetation survey to determine broad fauna habitats. The following four broad fauna habitats were identified and mapped within the application area (Outback Ecology, 2012):

- Mulga Shrubland – Open *Acacia aneura* or *A. quadrimarginea* over scattered low shrubs over scattered grasses on stony red loam flats;
- Drainage Depression – Tall open scrub of *Acacia aneura* and other *Acacia* species over open shrubland of *Eremophila* and *Thryptomene* over open hermland in drainage lines;
- Open Stony Plain – Scattered Tall Shrubs of *Acacia quadrimarginea* over Very Open Mixed Shrubland with Hermland on stony plains; and
- Disturbed Area – cleared areas and waste landforms.

According to Outback Ecology (2012), these habitats are widespread and typical of the Murchison bioregion. The 2010 fauna desktop study identified the following seven fauna habitats over ten mining tenements (Outback Ecology, 2010):

- Mixed *Acacia* and *Eucalyptus* species rehabilitation;
- Mixed *Acacia* woodlands;
- Breakaways;
- Hillcrests and slopes;
- Minor drainage lines;
- Shrub plains; and

- Claypans.

Habitats such as mixed *Acacia* woodlands, hillcrests and slopes, minor drainage lines, shrub plains and claypans are widely represented throughout the Murchison region (ANRA, 2007) (cited in Outback Ecology, 2010). South facing breakaways have the potential to support short range endemic species, however, these breakaways appear to occur outside the application area to the north west (Outback Ecology, 2010).

Outback Ecology (2012) identified several conservation significant fauna as possible or likely to occur within the application area. These include the Malleefowl (*Leipoa ocellata*) (Vulnerable), Gilled Slender Blue-tongue (*Cyclodomorphus branchialis*) (Vulnerable), Western Spiny-tailed Skink (*Egernia stokesii badia*) (Vulnerable), Peregrine Falcon (*Falco peregrinus*) (Migratory), Good-legged Lerista (*Lerista eupoda*) (Priority 1), Fork-tailed Swift (*Apus pacificus*) (Migratory) and Rainbow Bee-eater (*Merops ornatus*) (Migratory).

The Malleefowl may occur in relatively dense patches of vegetation that may provide suitable cover (understorey) and mound-building material (leaf litter) (Outback Ecology, 2012). One long inactive Malleefowl mound (inactive for at least 10 to 20 years) was identified during the targeted Malleefowl survey. This was identified approximately 630 metres from the application area amongst mixed *Acacia* spp. in a relatively densely vegetated drainage depression and is likely to be a relic from an old Malleefowl population that persisted when the area was less disturbed (Outback Ecology, 2012). No Malleefowl or Malleefowl mounds or tracks were identified during the July 2012 flora and vegetation survey (Outback Ecology, 2012). The targeted survey concluded there was no Malleefowl within the survey area primarily because of the lack of suitable habitat within and surrounding the survey area. Outback Ecology (2012) adds that with the current level of mining activity and the scarcity of suitable Malleefowl habitat, it is highly unlikely the survey area would be used by Malleefowl in the future. Given the generally sparse and disturbed nature of the application area and presence of higher quality vegetation surrounding the mine site, it is unlikely the application area comprises significant habitat for the Malleefowl.

According to Outback Ecology (2012), the study area contains marginal habitat for the Western Spiny-tailed Skink and suitable habitat for the Common Slender Blue-tongue, Peregrine Falcon, Good-legged Lerista, Fork Tailed Swift and Rainbow Bee-eater. However, given that large amounts of better quality habitat is available outside of the application area, vegetation within the application area is not likely to represent significant habitat for these species.

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

Methodology Botanica Consulting (2017)
DPaW (2017)
Outback Ecology (2010)
Outback Ecology (2012)

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

Comments Proposal is not likely to be at variance to this Principle

According to available databases, there are no known records of Threatened Flora within the application area (GIS Database). A search of the Department of Parks and Wildlife's Threatened and Priority Flora databases identified no Threatened Flora species as occurring within a 20 kilometre radius of the application area (DPaW, 2017).

Based on flora and vegetation surveys conducted by Niche Environmental Services (2010) and Outback Ecology (2012), no Threatened Flora species were recorded within the application area.

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

Methodology DPaW (2017)
Niche Environmental Services (2010)
Outback Ecology (2012)

GIS Database:
- Threatened and Priority Flora

(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 Proposal is not likely to be at variance to this Principle

According to available databases, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is located approximately 200 kilometres south west of the application area (GIS Database).

According to Botanica Consulting (2017), no TECs have been recorded during previous surveys undertaken at the Mount Magnet site.

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

Methodology Botanica Consulting (2017)

GIS Database:
- Threatened Ecological Sites Buffered

(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 Proposal is not at variance to this Principle

The application area falls within the Murchison IBRA bioregion (GIS Database). The vegetation within the application area is broadly mapped as the following vegetation associations:

312: Succulent steppe with very open shrubs; very sparse mulga and *Acacia sclerosperma* over saltbush and bluebush; and

313: Succulent steppe with open scrub; scattered *Acacia sclerosperma* and *Acacia victoriae* over bluebush (GIS Database).

These vegetation associations have not been extensively cleared as over 90% remains at both a State and bioregional level for both vegetation associations (see table) (Government of Western Australia, 2015).

The vegetation within the application area is not a remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPaW Managed Land
IBRA Bioregion - Murchison	28,120,587	28,044,823	~99.73	Least Concern	7.78
Beard vegetation associations - State					
312	41,502	39,528	~95.24	Least Concern	0
313	68,843	65,261	~94.80	Least Concern	0
Beard vegetation associations - Bioregion					
312	41,502	39,528	~95.24	Least Concern	0
313	68,844	65,261	~94.8	Least Concern	0

* Government of Western Australia (2015)

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
Government of Western Australia (2015)

GIS Database:
- IBRA WA (Regions - Sub Regions)
- Pre-European Vegetation

(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 Proposal is at variance to this Principle

The application areas have numerous ephemeral drainage lines crossing them (GIS Database). These drainage lines are identified as being highly disturbed and have been dissected by existing roads and infrastructure (Botanica Consulting, 2017). Botanica Consulting (2017) reports that due to this disturbance these ephemeral watercourses have no connection to other drainage lines in the area, and aerial photographs of the site would support this.

Botanica Consulting (2017) reports that although the density of vegetation increased within the ephemeral drainage lines, the vegetation was noted as consisting of the same species occurring on the plains and ridges and was not groundwater dependent vegetation.

Based on the above, the proposed clearing is at variance to this Principle. However, the proposed clearing is unlikely to have any significant impact on vegetation associated with water courses.

Methodology Botanica Consulting (2017)

GIS Database:
- Geodata, Lakes
- Hydrography, Linear

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

Comments Proposal may be at variance to this Principle

The application area has been mapped as occurring on the Austin, Gabanintha, Jundee, Violet and Wiluna land systems (GIS Database). These are described as follows (Curry et al, 1994):

- Austin land system: Saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga; occurs mainly adjacent to lakes Austin and Annean, below greenstone hill systems.
- Gabanintha land system: Ridges, hills and footslopes of various metamorphosed volcanic rocks (greenstones), supporting sparse acacia and other mainly non-halophytic shrublands.
- Jundee land system: Hardpan wash plains with variable dark gravelly mantling and weakly groved vegetation; minor sandy banks; supports scattered mulga shrublands. Concentrated drainage zones and hardpan are mildly susceptible to accelerated erosion when degraded or severely degraded.
- Violet land system: Gently undulating gravelly plains on greenstone, laterite and hardpan, with low stony rises and minor saline plains; supports mulga and bowgada-dominated shrublands, with dense mulga groves and patchy halophytic shrublands. Drainage tracts and sandy surfaced gravelly plains are slightly to moderately susceptible to accelerated erosion if vegetation is degraded or the soil surface is disturbed.
- Wiluna land system: Low greenstone hills with occasional lateritic breakaways and broad stony slopes, lower saline stony plains and broad drainage tracts; supports sparse mulga shrublands with patches of halophytic shrubs. Sandy surfaced gravelly plains, alluvial fans and plains and drainage floors are mildly to moderately susceptible to accelerated erosion when degraded.

Based on the above there is potential for erosion to occur, particularly given the degraded nature of the application area. Potential impacts from erosion as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

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

Methodology Curry et al. (1994)

GIS Database:
- Imagery
- Rangeland Land System Mapping
- Topographic Contours, Statewide

(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 Proposal is not likely to be at variance to this Principle

The application area does not lie within any conservation areas or Department of Parks and Wildlife managed lands (GIS Database). The nearest conservation area is the former Lakeside pastoral lease located approximately 45 kilometres north of the application area (GIS Database). Based on the distance between the application area and the former pastoral lease, the proposed clearing is not likely to impact the environmental values of any conservation area.

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

Methodology GIS Database:
- DPaW Tenure
- Register of National Estate (Status)

(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 Proposal is not likely to be at variance to this Principle

There are no permanent waterbodies or watercourses within the application area, however, there are several minor non perennial watercourses within the application area (GIS Database). Aerial imagery shows these have been modified within and/or further downstream of the application area by mining infrastructure (GIS Database). Surface water harvesting is undertaken at the mine site by diverting creeks into adjacent open pits where mining has been completed (Cardno, 2013). No diversions are currently in place for the Boomer, Golden

Stream and O'Meara pits and these projects are not part of the surface water harvesting network (Cardno, 2013).

The nearest Public Drinking Water Source Area (PDWSA) is the Priority 2 Mount Magnet (Genga) Water Reserve located directly adjacent to the application area (GIS Database). The surface water diversions installed by the mine are considered to effectively remove the risk of contaminant transport lower down the catchment where the production bores are located, as surface water which represents the primary source of recharge to the borefield will be captured in mine pits (DoE, 2005) (cited in Cardno, 2013).

According to Outback Ecology (2012), secondary salinisation due to groundwater is not considered a risk due to the depth to groundwater. Given that the application area is disturbed and located within an active minesite, the further clearing of 80 hectares of native vegetation is unlikely to have a significant impact on surface or underground water quality.

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

Methodology Cardno (2013)
Outback Ecology (2012)

GIS Database:
- Hydrography, Linear
- Public Drinking Water Source Areas

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

Comments **Proposal is not likely to be at variance to this Principle**
The application area is located within the Yarra Monger catchment area (GIS Database). Given the size of the area to be cleared (800 hectares) in relation to the size of the catchment area (4,182,476 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

With an average annual rainfall of 258 millimetres and an average annual evaporation rate of 2,800 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2017; Cardno, 2013). Whilst large rainfall events may result in flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

Methodology BoM (2017)
Cardno (2013)

GIS Database:
- Hydrographic Catchments - Catchments

Planning instrument, Native Title, Previous EPA decision or other matter.

Comments

There is one Native Title claim over the area under application (WC1996/098) (DAA, 2017). The mining 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*.

There are several registered Aboriginal Sites of Significance within the application area (DAA, 2017). 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.

It is the proponent's responsibility to liaise with the Department of Environment Regulation, Department of Parks and Wildlife and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 6 February 2017 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

Methodology DAA (2017)

4. References

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5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DPaW and DER)
DEE	Department of the Environment and Energy, Australian Government
DER	Department of Environment Regulation, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DRF	Declared Rare Flora
DoE	Department of the Environment, Australian Government (now DEE)
DoW	Department of Water, Western Australia
DPaW	Department of Parks and Wildlife, Western Australia
DSEWPac	Department of Sustainability, Environment, Water, Population and Communities (now DEE)
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2015) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia):-

T

Threatened species:

Published as Specially Protected under the *Wildlife Conservation Act 1950*, listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened fauna is that subset of ‘Specially Protected Fauna’ declared to be ‘likely to become extinct’ pursuant to section 14(4) of the Wildlife Conservation Act.

Threatened flora is flora that has been declared to be ‘likely to become extinct or is rare, or otherwise

in need of special protection', pursuant to section 23F(2) of the Wildlife Conservation Act.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

- CR Critically endangered species**
Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EN Endangered species**
Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- VU Vulnerable species**
Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.
- EX Presumed extinct species**
Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.
- IA Migratory birds protected under an international agreement**
Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- CD Conservation dependent fauna**
Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- OS Other specially protected fauna**
Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P Priority species**
Species which are poorly known; or
Species that are adequately known, are rare but not threatened, and require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.
- P1 Priority One - Poorly-known species:**
Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
- P2 Priority Two - Poorly-known species:**
Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
- P3 Priority Three - Poorly-known species:**
Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if

they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

P4

Priority Four - Rare, Near Threatened and other species in need of monitoring:

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.