Government of Western Australia
Department of Mines, Industry Regulation and Safety

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7595/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Millennium Minerals Limited**

1.3. Property details

Property: Mining Lease 46/50
Mining Lease 46/192
Mining Lease 46/261
Mining Lease 46/262
Mining Lease 46/265
Mining Lease 46/266
Mining Lease 46/445
Local Government Area: Shire of East Pilbara
Colloquial name: Golden Eagle Satellite Deposits Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 6 July 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. One Beard vegetation association has been mapped over the application area (GIS Database):

Beard vegetation association 190: Hummock grasslands, sparse shrub steppe; *Acacia bivenosa* and *Acacia trachycarpa* over hard spinifex

Several Level 1 flora and vegetation surveys have been conducted within the local area (MML, 2017). A survey of the surrounding area was completed in February 2017. This survey was updated to include the entire application area in May 2017 and increase the total area surveyed from 4,223 hectares to 4,755 hectares (MML, 2017). The following broad vegetation communities were recorded during the May survey (Waters, 2017):

- Alluvial plain eucalypt buffel grass woodland;
- Alluvial plain hard spinifex grassland;
- Alluvial plain soft spinifex grassland;
- Drainage acacia hummock grass shrubland/ woodland;
- Drainage spinifex grassland with eucalypt overstorey;
- Hill spinifex grassland;
- Plain hard spinifex grassland; and
- Stony plain spinifex grassland with chenopods

Clearing Description

Golden Eagle Satellite Project
Millennium Minerals Limited proposes to clear up to 121.3 hectares of native vegetation within a total boundary of approximately 195 hectares, for the purpose of mineral production. The project is located approximately 10 kilometres south of Nullagine in the Shire of East Pilbara.

Vegetation Condition

Very Good: Vegetation structure altered, obvious signs of disturbance (Keighery, 1994);

To:

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

Comment

The vegetation condition was derived from aerial imagery and flora and vegetation surveys conducted by Plantecology & Woodgis environmental consultants (Waters, 2017).

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

The proposed clearing will allow for the development of additional deposits (Agate, Hutt, Crossing, Majuba Hill and Mundalla) in the greater Golden Eagle Project area and will include clearing required for other related infrastructure.

The application area lies within the Chichester subregion of the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by plains supporting a shrub steppe of *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, while *Eucalyptus leucophloia* tree steppes occur on the ranges (CALM, 2002).

Several flora surveys have been conducted over the wider project area, the most recent of which included the entire application area and increased the total area surveyed in the local area from 4,223 hectares to 4,755 hectares (MML, 2017). No Threatened Ecological Communities (TECs) or Threatened flora are known to occur within the application area, and none were identified during flora surveys (DPaW, 2017a; Waters, 2017; GIS Database).

Two Priority flora species were recorded within the application area; *Acacia aphanoclada* (P1) and *Atriplex spinulosa* (P1) (MML, 2017; Waters, 2017). *Acacia aphanoclada* is known from a range of approximately 40km north-south and 65km east-west with its distribution centred in the Mosquito Land System (DPaW, 2017b). The area of suitable habitat within the application area has not yet been clearly identified, however given that the area was traversed for this species the survey undertaken is considered adequate and the taking of 134 plants from 16,705 within the mapped area (0.8%) is not considered significant to the conservation of this species (DPaW, 2017b). *Atriplex spinulosa* is known from 3 disjunct locations, one historical (recorded in 1950) with an unconfirmed identification at Indarra (near Mullewa), one near Carnarvon and in the Mosquito Land System (DPaW, 2017b). This species is difficult to detect and identify. Data from the flora survey is not yet available to assist in determining impacts. However, as the proposed clearing will impact on 61 hectares of the Stony Saline Plain landform type (suitable habitat) out of the 1,453 hectares of suitable habitat known to occur in the survey area (4.2%) and only 0.13% of the total area (4,755 hectares) of suitable habitat in the Mosquito Land System, the level of impact is not considered to be significant to the conservation of this species (DPaW, 2017b).

The application area is located within the Stony saline clay plains of the Mosquito Land System, a Priority 3 Priority Ecological Community, which is currently not included in conservation reserves. Threats include grazing, weed invasion, secondary salinization (as a consequence of removal of vegetation), clearing associated with mining activity, and potential changes in hydrologic regime (DPaW, 2017b). Waters (2017) noted that the PEC (as currently defined) is extensive (~46,000 hectares in extent) and generally in good condition with some vegetation units that should be excluded from the PEC. Survey work indicated that the PEC can be redefined in terms of constituent vegetation associations of the Stony plains spinifex grassland with chenopod shrubs, rather than landform to delineate boundaries (DPaW, 2017b). The resulting comprehensive report provided Parks and Wildlife with vastly improved information about this poorly known community that will be used to redefine the community and will be utilised for re-evaluation of its status (DPaW, 2017b). The level of impact proposed is unlikely to be significant (DPaW, 2017b).

The area is not listed as having high species and ecosystem diversity, and an inventory of only 139 species was compiled from 59 quadrats (Waters, 2017). None of the remaining vegetation communities and/or habitats recorded within the application were considered to be unique or restricted (Bamford, 2017; MML, 2017; Waters, 2017).

The fauna assemblage is broadly typical of the eastern Pilbara, moderately rich, combining species associated with a range of different environments and including species close to the eastern edge of their range in the Pilbara. The assemblage is expected to be the broadly the same across the project area, although there will be differences due to specific habitat requirements. Areas of greater biodiversity are likely to be present in mesic areas and where there is a combination of several vegetation and substrate associations. Biodiversity is likely to be concentrated along drainage lines and specialist fauna are likely to be associated with rocky outcrops (Bamford, 2017). The application area does not intercept any major drainage lines and no mapped watercourses occur. Aerial mapping suggests that denser areas of vegetation (which could be associated with drainage lines), is largely located outside of areas proposed to be cleared. (GIS Database).

A number of introduced flora species (weeds) are known to occur within the region and application area. This includes four species that are listed as Declared Plants under the *Agriculture and Related Resources Act 1976* (MML, 2017). Clearing activities have the potential to spread existing weed species, and possibly introduce new species to the environment, which may negatively impact on the biodiversity of the local area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

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

Methodology

Bamford (2017)
CALM (2002)
DPaW (2016)
DPaW (2017a)
DPaW (2017b)
DPaW (2017c)
MML (2017)

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

Numerous vertebrate fauna surveys (including a Level 2 fauna survey over some areas) have been conducted over the project area since 2010, some of which included the application area. Recent surveys conducted in 2016 cover the proposed development areas and include parts of the application area. While not all survey data is directly applicable to the application area, given the amount of fauna data gathered, in conjunction with extensive flora and vegetation information, the suitability of the application area as habitat for local fauna species and species of conservation significance can be inferred.

The major habitat types identified in the project area consist of:

- Major drainage lines supporting fringing riparian associations including grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands. This includes Five Mile Creek, Twenty Mile and Cajuput Creeks which extend through the lease areas. Where the major drainage lines intersect hills, a small number of permanent and semi-permanent waterholes exist and support fringing Melaleuca forest;
- Minor drainage lines on clay/sand;
- Minor drainage lines on rock/sand;
- Alluvial floodplains of loam to sandy loam fringing major drainage lines and supporting Eucalypt Woodland, *Acacia* shrublands and *Triodia* hummock grasslands;
- Intermittently inundated loam soils on plains supporting *Triodia* hummock grasslands and open shrublands;
- Intermittently saturated gravelly loam soils on plains supporting *Triodia* hummock grasslands and open shrublands;
- Rocky and gravelly hills supporting *Triodia* hummock grasslands; and
- Scattered mine adits and shafts (varying in depth and decomposition).

Bamford Consulting Ecologists (2016) conducted a project-wide review of fauna, which included a review of previous surveys and field investigations. A total of 173 vertebrate fauna species have been recorded in the Project Area (Bamford, 2017). A number of conservation significant fauna species have been recorded or are considered likely to occur within, or within close proximity to, the application area, including the Pilbara Leaf-nosed Bat (*Rhinonicteris aurantius -VU)* Ghost Bat (*Macroderma gigas- VU*), Bilby (*Macrotis lagotis – VU)*, the Priority 1 skink species *Ctenotus nigrilineatus*,. There is also potential for the Northern Quoll (*Dasyurus hallucatus – EN),* Northern Brushtail Possum *(Trichosurus vulpecula arnhemensis - VU),* Pilbara Olive Python *(Liasis olivaceus barroni – VU),* Peregrine Falcon *(Falco peregrinus – OS), Grey Falcon (Falco hypoleucos – VU),* Long-tailed Dunnart *(Sminthopsis longicaudata - P4),* Brush-tailed mulgara *(Dasycercus blythi – P4),* Striated Grasswren *(Amytornis striatus striatus – P4),* Short-tailed Mouse *(Leggadina lakedownensis* – P4) and a potential Short Range Endemic species *Antichiropus* sp. (millipede) (MML, 2017; Bamford, 2017) to be present within the application area.

The majority of the fauna species listed above are considered likely to utilise/frequent the vegetation found within the application area. However, these species are unlikely to be depended on the vegetation as habitat, as more suitable areas persist in the local area and region. Based on available information, of the fauna species recorded, or considered likely to occur within the application area, five species warrant further discussion; The Bilby, Ghost bat, Pilbara Leaf-nosed bat, Northern Quoll and *Ctenotus nigrilineatus.*

The Bilby population in the project area is currently subject to ongoing studies being carried out by the Department of Parks and Wildlife (Bamford, 2017; DPaW, 2017c). The Department of Parks and Wildlife (DPaW, 2016) conducted a targeted bilby and mulgara survey over the Golden Eagle section of the project area, which is situated at least 5 kilometres east of the nearest section of the application area. No evidence of bilby's utilising the area were found at this location, however areas of suitable habitat were identified (DPaW, 2016).

The Bilby occurs in a range of environments including sandplains, stony plains, sand dunes, along the lower slopes of ranges and the edges of salt-lakes. Within the Nullagine area, Bilbies appear to be associated with

the margins of drainage systems and the adjacent sandy plains. The Bilby is likely to occur along the margins of draining lines and sandplains throughout the project area, with population movements and fluctuations expected over time (Bamford, 2017). Avoidance of the known and potential bilby habitat and continuation of the monitoring and research projects currently being undertaken will assist with mitigating the potential impact (DPaW, 2017c).

The Ghost Bat has been recorded from abandoned mine shafts in the project area and a roost site was recorded in 2016 within the northern extent of the project area (Bamford, 2017). Only a selection of potential roosts sites were surveyed during previous fauna surveys, therefore there is potential for additional roosts to be present (Bamford, 2017).

The Pilbara Leaf-nosed Bat (*Rhinonicteris aurantius)* is present but no roosts have been recorded (Bamford, 2017). The status of the Northern Quoll is unknown but the species is considered to occur sparsely and as a resident due to the presence of suitable habitat and records in adjacent areas (Bamford, 2017).

Granite outcrops occur in the east of the project area and support populations of the Ghost Bat, and potentially the Northern Quoll. Mine adits, scattered throughout the local area are also likely to represent significant habitat for the Ghost and Pilbara Leaf-nosed bat. Nearby drainage systems and fringing plains are widespread and likely to be important for the local Bilby population, Northern Quoll and other local fauna. A permanent waterhole occurs in Five Mile Creek (outside the application area) within a minor gorge system (Bamford, 2017). The presence of water and extensive rocky outcrops suggests this area is likely to be more important for conservation significant fauna than any areas located within the application area. The application area does not appear to contain quoll habitat, such as rocky outcrops used for denning, however consideration of potential quoll occurrence, even if transient, should be considered and appropriate management measures taken (DPaW, 2017c).

Based on existing records, it is likely that the local population of *Ctenotus nigrilineatus* occurs within or close to the *Acacia* thickets (predominately *Acacia trachycarpa*) that typically follow the drainage lines within the project area. As such, it is likely to be widespread across the project area (Bamford, 2017).

Based on available information, aerial imagery and maps supplied by the proponent, areas of extensive outcropping and other areas of suitable habitat for the Ghost Bat and Northern Quoll are located outside the application area. Although it must be noted that accurate vegetation mapping that covers the application area has not been provide and it is possible that some areas of outcropping do occur within the application area.

Some area of drainage line habitat or vegetation associated with this habitat types does occur within the application area. Potential impacts to drainage line habitat that may result from the proposed clearing may be minimised by the implementation of a watercourse management condition.

DPaW (2017c) has advised that the proposed clearing is unlikely to significantly impact on any conservation significant fauna species or habitat necessary for the continued existence of those species, however small scale impacts are likely to occur if species are present within the application area during clearing activities, ore extraction or other operational activities. The more significant areas of conservation significant fauna habitat, or potential habitat, are outside of the application area (DPaW, 2017c). Although habitat preferences of the Night Parrot (*Pezoporus occidentalis* – EN) are poorly understood, the potential occurrence of Night Parrot should be considered due to the spinifex grassland and chenopod habitat types within the proposed expansion areas (DPaW, 2017c). A sighting of this species was made near the northern edge of the Fortescue Marshes in April 2005 (approximately 80 km to the south-west of the areas surveyed during the fauna survey (DPaW, 2017c).

The proponent will implement internal management measures, as well as management measures outlined in the Significant Species Management Plan (SSMP) (S-OHSE-0021), which was developed following approval under the *Environmental Protection and Biodiversity Conservation Act 1999* in 2012, for nearby areas (MML, 2011; MML, 2017). DPaW (2017c) has advised that the SSMP is generally adequate; however the plan requires additional measures and updates to incorporate current day standards and knowledge. It is recommended that the proponent liaise with the Department of Parks and Wildlife (now known as the Department of Biodiversity Conservation and Attractions) in relation to this matter.

Given that management fauna management measures will be implemented during clearing and mining operations, and that large areas of preferred habitat for local fauna species (including species of conservation significance) occur outside the application area, significant impacts are not anticipated as a result of the proposed clearing.

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

Methodology

Bamford (2017)
DPaW (2016)
DPaW (2017c)
MML (2011)
MML (2017)

(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, no species of Threatened flora are known within a 20 kilometre radius of the application area (DPaW, 2017a; GIS Database) and no Threatened flora species have been recorded within the application area or greater project area during flora survey's (MML, 2017; Waters, 2017).

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

Methodology

DPaW (2017a)
Waters (2017)

GIS Database
- Threatened and Priority Flora List

(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 datasets, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database) and no TECs were identified within the application area during the flora survey (MML, 2017). There is only one known TEC located in the Pilbara region (Waters, 2017); the Themeda grasslands on cracking clays, which are situated more than 50 kilometres south west of the application area (GIS Database).

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

Methodology

Waters (2017)

GIS Database:
- Threatened and Priority Ecological Communities Buffers
- Threatened and Priority Ecological Communities Boundaries

(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 occurs within the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion, in which approximately 99.6% of the pre-European vegetation remains (see table below) (Government of Western Australia, 2016; GIS Database).

The vegetation within the application area has been mapped as Beard vegetation association 190 (GIS Database). As the below table illustrates, Beard vegetation association 190 is well represented, retaining at least 99% of pre-European vegetation within the State and the bioregion (Government of Western Australia, 2016). Given the amount of vegetation remaining in the local area and bioregion, the vegetation proposed to be cleared is not considered to represent a remnant within an extensively cleared area.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPaW Managed Lands
IBRA Bioregion - Pilbara	17,808,657	17,733,584	~ 99.6	Least Concern	~ 10.2
Beard veg assoc. - State					
190	169,200	169,051	~ 99.9	Least Concern	~ 0.0
Beard veg assoc. - Bioregion					
190	169,200	169,051	~ 99.9	Least Concern	~ 0.0

* Government of Western Australia (2016)
** 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 (2016)

GIS Database:
- IBRA WA (regions - subregions)
- 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

There are no major wetlands or watercourses mapped or recorded within the application area; however some areas of riparian vegetation associated with ephemeral drainage lines, intersect parts of the application area (GIS Database). Several habitat types identified within the project area (and application area) are associated with drainage lines (MML, 2017; Waters, 2017). However, ephemeral and permanent pools that are likely to be important in maintaining local diversity occur outside the application area, along the margins of the wider project area (Bamford, 2017). The proponent has committed to implementing surface water management measures to limit impacts to local drainage lines. Potential impacts to vegetation associated with drainage lines that may result from the proposed clearing may be further minimised by the implementation of a watercourse management condition.

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

Methodology

Bamford (2017)
MML (2017)
Waters (2017)

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

Proposal may be at variance to this Principle

Two land systems have been mapped over the application area. The Mosquito Land system and the River Land System (Waters, 2017; GIS Database).

The Mosquito Land System is characterised by stony plains and prominent ridges of schist and other metamorphic rocks supporting hard spinifex grasslands (Van Vreeswyk et al., 2004). Most of the system has low susceptibility to erosion except for some drainage floor units which are moderately susceptible if vegetation cover is lost (Van Vreeswyk et al. 2004). Some signs of erosoin have been noted witin the Stony saline clay plains of the Mosquito Land System, a Priority 3 Priority Ecological Community (Waters, 2017).

The River Land System is characterised by active flood plains and major rivers supporting grassy eucalypt woodlands, tussock grasslands and soft spinifex grasslands (Van Vreeswyk et al., 2004). Susceptibility to erosion is high or very high if vegetation cover is removed (Van Vreeswyk et al. 2004).

Given the scale of the proposed clearing, localised erosion may occur in areas adjaacent to drainage lines and if cleared areas are left open for extended periods. The proponent has committed to implementing surface water management measures and other erosoin control measures to minimise the potenial for erosion related issues (MML, 2017). Potential land degradation issues that may result from the proposed clearing may be further minimised by the implementation of a stage clearing condition.

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

Methodology

MML (2017)
Waters (2017)
Van Vreeswyk et al. (2004)

GIS Database:
- Landsystems

(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 is not located within or adjacent to any conservation areas (GIS Database). No conservation areas are situated within a 50 kilometre radius of the application area (GIS Database).

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

Methodology

GIS Database
- DPaW Tenure

(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

Part of the application area falls within the Nullagine Water Reserve, which is a gazetted Public Drinking Water Source Area (PDWSA) and a Country Areas Water Supply Area (CAWSA) (DoW, 2017; GIS Database). DoW (2017) has advised that provided activities are carried out in accordance with departmental advice and guidelines, the proposed clearing is unlikely to have a significant impact on the quality or quantity of groundwater.

There are no major watercourses or wetlands mapped within the application area, although a number of large creek systems (Five Mile Creek, Twenty Mile Creek and Cajuput Creek systems) are located in the vicinity. A number of minor ephemeral drainage lines also occur within or adjacent to the application area (GIS Database). The proponent has committed to surface water management measures, including the installation of sediment basins/traps (MML, 2017) to limit potential sedimentation impacts on drainage lines following rain events. Measures currently being implemented for the greater project area have proven to be effective and impacts to surface water quality are not anticipated (MML, 2017). Potential impacts to surface water quality that may result from the proposed clearing may be further minimised by the implementation of a watercourse management condition.

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

Methodology

DoW (2017)
MML (2017)

GIS Database:
- Groundwater Salinity, Satewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)
- RIWI Act, Groundwater 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

Periodic flooding is known to occur in the Pilbara following cyclonic activity. The proximity of a number of ephemeral watercourses within and adjacent to the application area poses a risk of flooding following large rainfall events and surface water flows within the application area will be affected by landform modification. These flows will be managed with diversion structures, levees, bunds, culverts and floodways to ensure that the clearing of vegetation does not exacerbate the incidence or intensity of flooding (MML, 2017).

Given the high evaporation rate of the local area (BoM, 2017) and that management measures are to be implemented, waterlogging and flooding related issues are unlikely to result from the proposed clearing.

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

Methodology

BoM (2017)
MML (2017)

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

Comments

There are two native title claims over the application area (WC1999/008 and WC1999/016) (DAA, 2017). These claims have been registered with the National Native Title Tribunal on behalf of the claimant groups. However, the mining tenements have 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*.

According to available databases, there are no registered Sites of Aboriginal Significance located in the area applied to clear (DAA, 2017). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

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

It is noted that the proposed clearing may impact on a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of the Environment and Energy for environmental impact assessment under the EPBC Act. The proponent is advised to contact the Department of the Environment and Energy for further information regarding notification and referral responsibilities under the EPBC Act.

The clearing permit application was advertised on 29 May 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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DAA (2017) Aboriginal Heritage Inquiry System, Department of Aboriginal Affairs, Perth, Western Australia < http://maps.dia.wa.gov.au> Accessed June 2017.

Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

DoW (2017) Advice received in relation to CPS 7595/1. Pilbara Landuse Planning/Approvals, Department of Water, Western Australia, June 2017.

DPaW (2017a) NatureMap, Department of Parks and Wildlife <http://naturemap.dec.wa.gov.au> Accessed June 2017.

DPaW (2017b) Flora and PEC advice received in relation to Clearing Permit Application CPS 7595/1. Department of Parks and Wildlife, Conservation and Developments Management Branch, Pilbara Region, Western Australia, June 2017.

DPaW (2017c) Fauna advice received in relation to Clearing Permit Application CPS 7595/1. Department of Parks and Wildlife, Conservation and Developments Management Branch, Pilbara Region, Western Australia, July 2017.

DPaW (2016) Golden Eagle Proposed Tailings Storage Facility Area Targeted Mulgara and Greater Bilby survey. Department of Parks and Wildlife, Perth, Western Australia.

Government of Western Australia (2016) 2016 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2016. WA Department of Environment and Conservation, Perth.

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Waters (2017) Vegetation of the MML Nullagine Tenements (version 2.0). Report prepared for Millennium Minerals Ltd by Woodgis and Plantecology Consulting, May 2017.

MML (2011) Golden Eagle Project, Significant Species Management Plan. Millennium Minerals Ltd, November 2011.

MML (2017) Golden Eagle Satellite Deposits: Native Vegetation Clearing Permit Application, Supporting Information for CPS 7595/1. Millennium Minerals Ltd, Perth, Western Australia, May 2017.

Van Vreeswyk, A.M.E., Payne, A.L., Leighton, K.A. and Hennig, P. (2004) Technical Bulletin - An Inventory and Condition Survey of the Pilbara Region, Western Australia, No. 92. Department of Agriculture, Government of Western Australia, Perth, Western Australia.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)

DBCA	Department of Biodiversity Conservation and Attractions, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DBCA and DWER)
DEE	Department of the Environment and Energy, Australian Government
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora
DoE	Department of the Environment, Australian Government (now DEE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DEE)
DWER	Department of Water and Environmental Regulation, Western Australia
EPA	Environmental Protection Authority, Western Australia (now DWER)
EP Act	*Environmental Protection Act 1986*, Western Australia
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (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	*Rights in Water and Irrigation Act 1914*, Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2017) 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.