



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4959/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Edna May Operations Pty Ltd

1.3. Property details

Property: Mining Lease 77/88
Mining Lease 77/124
Local Government Area: Shire of Westonia
Colloquial name: Edna May Gold Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 7 June 2012

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 and are useful to look at vegetation in a regional context. The following Beard vegetation association is located within the application area (GIS Database):

536: Medium woodland; morrell & rough fruited mallee (*Eucalyptus corrugata*).

A flora and vegetation survey was conducted over Mining Leases 77/88 and 77/124 by Paul Armstrong and Associates and Curtin University of Technology (Curtin University) (Armstrong, 2003). The field survey was conducted on 22 and 23 October 2002 and identified four vegetation units within the mining leases. MBS Environmental (MBS, 2012a) reports that three of the vegetation units occur within the application area and are described as follows:

1. Mixed Eucalypt Low Forest: Upper stratum (10-15 metres) of *Eucalyptus longicornis*, *E. yilgarnensis*, *E. salubris*, and *E. corrugata*. Second stratum (2-4 metres) dominated by *Melaleuca lanceolata*, including *Senna* sp, *Acacia* sp, *Eremophila* sp, and *Dodonaea* sp. over low open scrub (to 0.5 metres) including *Atriplex* sp, *Olearia* sp, *Scaevola* sp and *Maireana* sp.

2. Gimlet Low Forest: Upper stratum (10-12 metres) of *E. salubris*, understory (0.5-2 metres) of *Acacia* sp, *Eremophila* sp, *Maireana* sp and *Melaleuca lanceolata*. Over low grasses (to 0.5 metres) including

Clearing Description

Edna May Operations Pty Ltd (EMO) has applied to clear 20 hectares within an application area of approximately 20 hectares (GIS Database). The application area is located approximately 900 metres north, north east of Westonia (GIS Database).

The purpose of the application is for implementing a cutback to an existing operating open pit gold mine and associated changes to haul roads, historic waste rock landforms and temporary topsoil stockpiles. Clearing will be by bulldozer. Vegetation and topsoil will be stockpiled for rehabilitation (MBS, 2012a).

Vegetation Condition

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994)

To

Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994).

Comment

Vegetation condition is based on aerial photography and the vegetation survey which reported vegetation condition as good to disturbed (Armstrong, 2003).

Approximately 15 of the 20 hectares applied to clear is partially rehabilitated pre-disturbed land including historic waste rock dumps. The remaining five hectares is native vegetation (MBS, 2012a).

Mining has occurred on an intermittent basis since 1911 and recently recommenced in 2009/2010. The existing disturbed footprint for EMO is 365 hectares (MBS, 2012a). Eucalypt woodland in the lease areas also appear to have been selectively logged in the past (Bamford Consulting Ecologists, 2002).

The vegetation survey was conducted following dry summer and winter periods resulting in a lower richness of ephemeral species being recorded. Very few plants were also in flower increasing difficulty in identification. However, earlier inspections have been conducted by Curtin University and when species lists are combined, the list is considered adequate for the location (Armstrong, 2003).

The application area is located within the Westonia Town Common Reserve (Reserve 14983). A flora and fauna survey was conducted in this Reserve over a 24 hour period by the World

Austrostipa sp, and *Ptilotus* sp.

3. Dense Thicket with Various Dominants:
Upper stratum (2-4 metres) of
Allocasuarina sp, *Acacia acuminata* and
Melaleuca uncinata. Understory (0.2-1
metres) of *Acacia* sp, *Melaleuca* sp,
Eremophila sp, *Grevillea* sp. Over low
grasses, groundcovers and herbs (to 0.3
metres) including *Austrostipa* sp, *Dianella*
sp, and *Waitzia acuminata*.

Wildlife Fund (WWF) on 15 and 16
September 2007 and is referred to as
the Westonia BioBlitz (McLellan, 2008).
This survey provided a biodiversity
'snapshot' of the Reserve.

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 application area is located within the Avon Wheatbelt Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 18.2% of the pre-European vegetation remains (GIS Database, Government of Western Australia, 2011). According to Armstrong (2003), Eucalyptus woodland is the dominant native vegetation cover in the region, with *Eucalyptus salubris* (gimlet), *E. salmonophila* (salmon gum) and *E. longicornis* (morrell) the common tree and mallee species. The application area and Edna May Gold Project (Edna May) are located within the Westonia Town Common Reserve (the Reserve), a remnant of native vegetation within the largely cleared Avon Wheatbelt bioregion. This Reserve is located within a remnant approximately 4,000 hectares in size, which principally consists of gimlet, red morrell and salmon gum woodlands (McLellan, 2008). According to McLellan (2008), the Reserve is large, in relatively good condition (some areas appear to be virtually undisturbed), protected from livestock grazing by perimeter fencing and very rich in biological diversity. It is also considered regionally important as it contains one of the largest 'reserved' red morrell woodlands within the intensive land use zone (McLellan, 2008).

Approximately 15 hectares of the application area is partially rehabilitated pre-disturbed land including historic waste dumps (MBS, 2012a). The remaining five hectares of native vegetation occurs in two areas, one being approximately 1.17 hectares within the mining footprint and the other approximately 3.83 hectares occurring as a strip adjacent to the open pit (maximum width of approximately 100 metres) (GIS Database). These areas are considered to be generally in a good condition and contain three of the four vegetation units identified in the October 2002 vegetation survey (MBS, 2012a). This includes three hectares of Mixed Eucalypt Low Forest, 1.2 hectares of Gimlet Low Forest and 0.8 hectares of Dense Thicket with Various Dominants (MBS, 2012a). The Gimlet Low Forest was noted as having regional value (MBS, 2012a). According to MBS (2012a), the land systems and vegetation are widely represented; however, due to agricultural clearing remain as isolated islands of bushland.

A total of 68 plant species were recorded during the vegetation survey (Armstrong, 2003). When combined with earlier Curtin University inspections, a total of 125 plant species have been recorded at Edna May (Armstrong, 2003). Three weed species were recorded including Wards Weed (*Carrichtera annua*), Maltese Cockspur (*Centaurea melitensis*) and Wild Oats (*Avena fatua*). The Westonia Bioblitz recorded 225 plants and 18 fungi and lichens within the Reserve with a further 60 species of plants recorded during previous flora surveys by WWF or Curtin University (McLellan, 2008). The Bioblitz also recorded 28 weed species, including the Common Prickly Pear (*Opuntia stricta*), a Declared Plant in Western Australia for all local government areas north of the 26th Parallel (McLellan, 2008). Potential impacts from weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

No Priority Flora or Threatened or Priority Ecological Communities have been recorded within the application area (GIS Database; MBS, 2012a). Several populations of the Threatened Flora species, *Eremophila resinosa*, occur at Edna May, including a subpopulation within the application area. According to available databases, Priority 3 Flora species, *Acacia ancistrophylla* var. *perarcuata*, has been recorded approximately 630 metres south east of the application area (GIS Database, DEC, 2012). This taxa is known from 23 records, most of which occur within the Avon Wheatbelt bioregion (Western Australia Herbarium, 2012), and was not recorded during the vegetation survey or the Westonia Bioblitz. The proposed clearing will reduce the vegetation buffer between the population and main mining footprint by approximately 100 metres. However, given an existing road and other disturbance exists in the buffer area, the proposed clearing is unlikely to pose any significant additional environmental impacts to this population.

A fauna survey of the mining lease was conducted between 28 and 30 October 2002 by Bamford Consulting Ecologists (Bamford). This survey found that a total of 208 fauna species have the potential to occur or have been recorded within the Edna May area, including eight frog, 57 reptile, 117 bird and 26 mammal (of which five are introduced) species (Bamford, 2002). The Westonia Bioblitz recorded 5 reptile and amphibian, 51 bird, 44 invertebrate and 9 mammal species in the Reserve (McLellan, 2008). MBS (2012a) notes that fauna habitats of the project area are relatively common and widely represented in the region, however, are often isolated in remnant islands of bushland in various states of health, often dependent on the size (the vast majority being less than 20 hectares in area) and surrounding land uses of the remnant.

Although located within a remnant of native vegetation containing high biological diversity, the application area is unlikely to comprise a similar level of biological diversity given it has been mostly pre-disturbed and is adjacent to or in close proximity to existing mining operations.

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

Methodology Armstrong (2003)
Bamford (2002)
DEC (2012)
Government of Western Australia (2011)
MBS (2012a)
McLellan (2008)
Western Australia Herbarium (2012)
GIS Database:
- IBRA WA (Regions – Sub Regions)
- Threatened and Priority Flora List
- 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

The fauna survey identified four primary habitat types in the mining lease area including tall open woodland, low mallee woodland, mixed mulga shrubland and revegetated areas (MBS, 2012a). No significant or unusual habitat such as caves, wetlands or permanent pools occur within the application area (MBS, 2012a). The Reserve in which the application area is located has high habitat and conservation value due to its size, vegetation condition, diversity of plant communities and presence of mature eucalypt stands (McLellan, 2008). The Westonia Bioblitz also noted the presence of nesting and breeding habitat for birds including active breeding hollows in some of the older, larger trees (McLellan, 2008). MBS (2012a) states that the application area comprises mostly disturbed, cleared or partially rehabilitated area with low habitat value and adds that fauna are likely to reside in undisturbed bush areas surrounding the mining operation rather than disturbed areas close to the open pit.

The October 2002 fauna survey recorded the conservation significant species, Rainbow Bee-eater (*Merops ornatus*) (Marine; Migratory under *EPBC Act*, Schedule 3) (Bamford, 2002). Within the Reserve, the Westonia Bioblitz recorded the Peregrine Falcon (*Falco peregrinus*) (Schedule 4) and Tree-stem Trapdoor Spider (*Aganippe castellum*) (Priority 4) (McLellan, 2008). The Peregrine Falcon and Rainbow Bee-eater have widespread distributions and are mobile species that are able to utilise surrounding habitat. MBS (2012a) considered the Tree-stem Trapdoor Spider as having a low likelihood of occurring within the application area as there is less than 0.8 hectares of suitable habitat (i.e. dense thicket plant community) available. Several other conservation significant species may also occur within the application area, however, the proposed clearing is not expected to have a significant impact on these species given the availability of similar, higher quality vegetation in the surrounding remnant.

The Little Long-tailed Dunnart (*Sminthopsis doichura*) was also recorded during the Westonia Bioblitz and occurs in dry sclerophyll forest, semi arid woodland, mallee and heath (MBS, 2012a). Although not gazetted as Threatened or Priority listed by the Department of Environment and Conservation it was considered an important discovery as it was thought to be locally extinct in many patches of remnants throughout sections of the intensive land use zone (McLellan, 2008). Another species not formally listed but considered conservation significant is the Reticulated Velvet Gecko (*Oedura reticulata*). Bamford (2002) considered this species as almost definitely occurring within the eucalypt woodlands of the mining lease area and state that it has suffered a massive population decline due to clearing of eucalypt woodlands in the wheatbelt. The proposed clearing may therefore, have local impacts on these species.

The Westonia Bioblitz also recorded a high proportion of bird species that are declining or remnant dependent (32 species or 63% of species recorded) (McLellan, 2008). This indicates the Reserve has high conservation value for birds.

The application area is part of a remnant that provides significant habitat for local fauna. However, the habitat value of the application area has been reduced by mining impacts and higher quality habitat exists in the surrounding remnant.

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

Methodology Bamford (2002)
MBS (2012a)
McLellan (2008)

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

Comments Proposal is at variance to this Principle

The Threatened Flora species, *Eremophila resinosa*, was recorded in the October 2002 vegetation survey (Armstrong, 2003). This species is a spreading shrub 0.4 to 0.8 metres tall with a diameter to 1 metre and has

pale blue to purple or white flowers which mostly appear in October to November but have also been recorded in April (Outback Ecology, 2007). *Eremophila resinosa* is mainly known from the Shire of Westonia (contains 15 of the 26 known populations) and occurs on soil types from sandy loams to loams and clays in open mallee woodland with a mixed *Acacia* scrub understorey (DEC, 2008). Observations from Edna May indicate it prefers disturbed areas and can grow along road verges and survive drought conditions (Outback Ecology, 2007).

The October 2002 vegetation survey and targeted surveys conducted in November 2002, April 2003 and January 2006 identified six populations (Populations A to F) within and surrounding the mine site (MBS, 2012a). Annual surveys of the known populations have been undertaken since 2006. Currently 635 *Eremophila resinosa* plants occur in these populations (MBS, 2012a). The subpopulation known as the 'south east subpopulation' of Population B occurs within the western most part of the application area and consists of 310 individuals. A search by the Site Environmental Coordinator did not identify any other individuals within the application area (MBS, 2012c). The proposed clearing will result in the permanent removal of this subpopulation (i.e. 310 *Eremophila resinosa* plants) (MBS, 2012a). This subpopulation occurs in approximately 1.17 hectares of partially disturbed native vegetation that is bounded by waste rock dumps (some of which are partially rehabilitated), haul and access roads and the Edna May pit (MBS, 2012a). This subpopulation is being impacted on by mining operations (dust and sediment from the nearby pit, haul road and laydown areas) and recent surveying shows its condition is declining (MBS, 2012a). According to MBS (2012b), expert advice from the Botanic Gardens and Parks Authority (BGPA) indicates the best option for the long-term survival of this population is establishment of a new translocation site with seed collected from the plants and from the topsoil seedbank. The remainder of the populations have remained stable and in good condition (MBS, 2012b).

Since recommencement of mining in 2009, 210 *Eremophila resinosa* plants have been removed (MBS, 2012b). A translocation programme was set up in 2004 in conjunction with the now BGPA and involved utilising material from removed *Eremophila resinosa* plants. This translocation has been successful with the population surviving and producing new recruits indicating it is becoming self sustaining (MBS, 2012a). The current cultivated population, as at November 2011, is approximately 3,270 plants, including 794 seedlings (MBS, 2012a). To mitigate the removal of the 310 *Eremophila resinosa* plants, EMO proposes to spread vegetative material and topsoil from a two metre radius around each plant in a fenced and reticulated translocation area located adjacent to the existing translocation site (MBS, 2012a). Seeds from these plants were collected by BGPA in February 2012, with a total of 2.5 million seeds collected and stored at BGPA (MBS, 2012b). Additional management strategies include maintaining a seed bank for cultivated stock and rehabilitation areas and funding for student research into the biology and ecology of *Eremophila resinosa* (MBS, 2012a). This species is also managed through the Westonia Gold Mine Threatened Flora Management Plan (July, 2007).

A Permit to Take *Eremophila resinosa* was issued by the Department of Environment and Conservation on 8 May 2012 for the purpose of translocation. This permit allows the taking of 310 *Eremophila resinosa* plants and the surrounding soil stored seed for use in the translocation extension site and includes an annual reporting condition on the status of the translocation extension site.

Based on the above it is likely that the permanent removal of 310 *Eremophila resinosa* plants can be offset by the establishment of a new translocation site. This will be regulated by DEC through the Permit to Take.

Available databases also show that Threatened Flora species, *Boronia adamsiana*, has been recorded approximately three kilometres south of the application area (GIS Database). This species was not recorded during previous site surveys and the Westonia Bioblitz and has not been identified within an adjacent clearing permit area. According to MBS (2012c), numerous specialists have searched the proposed clearing area (including BGPA) and this species was not recorded. *Boronia adamsiana* occurs in yellow sand/loam over laterite in heath or scrub heath with records showing it mainly occurs in sands (SEWPAC, 2008; Western Australia Herbarium, 2012). The majority of the application area is eucalypt woodland with 0.8 hectares of dense thicket (MBS, 2012a). Soils within the lease areas have also been described as red loam and red clayey-loam (Bamford, 2002). Given the lack of suitable habitat and its absence during surveys, it is considered unlikely that this species would occur within the application area.

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

Methodology Armstrong (2003)
Bamford (2002)
DEC (2008)
MBS (2012a)
MBS (2012b)
MBS (2012c)
Outback Ecology (2007)
SEWPAC (2008)
Western Australia Herbarium (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 approximately 180 kilometres south west of the application area (GIS Database).

No TECs were recorded during the vegetation survey (MBS, 2012a).

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

Methodology MBS (2012a)
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 may be at variance to this Principle

The application area falls within the Avon Wheatbelt Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 18.2% of the pre-European vegetation remains (see table) (GIS Database, Government of Western Australia, 2011). According to the 'Bioregional Conservation Status of Ecological Vegetation Classes' (Department of Natural Resources and Environment, 2002), this value gives the region a Conservation Status of 'Vulnerable'.

The vegetation of the application area has been mapped as the following Beard vegetation association (GIS Database):

536: Medium woodland; morrell & rough fruited mallee (*Eucalyptus corrugata*).

Approximately 43.36% of this Beard vegetation association remains at a state level and approximately 35.32% remains at a bioregional level (Government of Western Australia, 2011). This is above the 30% threshold level recommended in the National Objectives Targets for Biodiversity Conservation below which, species loss appears to accelerate exponentially at an ecosystem level (EPA, 2000).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves (and post clearing %)
IBRA bioregion – Avon Wheatbelt	9,517,110	1,732,027	~18.20	Vulnerable	~1.80 (~7.23)
IBRA Subregion - Avon Wheatbelt P1	6,524,180	1,322,408	~20.27	Vulnerable	~1.87 (~6.74)
Local Government – Westonia	331,942	117,219	~35.31	Depleted	~ 8.10 (~22.30)
Beard vegetation associations - State					
536	13,178	5,714	~43.36	Depleted	~9.82 (~22.59)
Beard vegetation associations - Bioregion					
536	11,171	3,946	~35.32	Depleted	~11.58 (~32.71)
Beard vegetation associations - Subregion					
536	11,171	3,946	~35.32	Depleted	~11.58 (~32.71)

* Government of Western Australia (2011)

** Department of Natural Resources and Environment (2002)

Options to select from: Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment 2002)	
Presumed extinct	Probably no longer present in the bioregion
Endangered*	<10% of pre-European extent remains
Vulnerable*	10-30% of pre-European extent exists
Depleted*	>30% and up to 50% of pre-European extent exists
Least concern	>50% pre-European extent exists and subject to little or no degradation over a majority of this area
* or a combination of depletion, loss of quality, current threats and rarity gives a comparable status	

The application area is part of a remnant of native vegetation in an area that has been extensively cleared, mostly for agricultural purposes. This remnant is approximately 4,000 hectares in size and has been identified as regionally and biologically significant due to its large size, good condition and contains one of the largest 'reserved' red morrell woodlands within the intensive land use zone (McLellan, 2008). The application area is located in the central area of the remnant within and adjacent to the mine footprint.

The proposed clearing includes five hectares of native vegetation and 15 hectares of partially rehabilitated pre-disturbed land. This represents approximately 0.5% of the 4,000 hectare remnant and approximately 0.12% when excluding the partially rehabilitated area (MBS, 2012a). The five hectares of native vegetation is also likely to have been impacted to some degree by the surrounding mining operations. Based on this, the application area is not likely to be as significant as other areas of higher quality vegetation within the remnant and whilst some vegetation of the remnant will be removed, the proposed clearing is not anticipated to have significant impacts on this remnant.

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

Methodology Department of Natural Resources and Environment (2002)
EPA (2000)
Government of Western Australia (2011)
McLellan (2008)
MBS (2012a)
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 may be at variance to this Principle

Available databases show there are no watercourses within the application area (GIS Database). However, according to MBS (2012a) there is one small ephemeral drainage line within the proposed pit cutback footprint which will be impacted by the proposed clearing. This may be associated with a minor non-perennial watercourse which databases show as occurring approximately 100 metres north east of the application area (GIS Database). This watercourse is dry for most of the year with surface runoff occurring only during and immediately following significant rainfall events (MBS, 2012a).

Vegetation within the application area has not been identified as riparian or growing in association with a watercourse (Armstrong, 2003; MBS, 2012a). Several management measures are proposed to minimise potential impacts to surface water flows including engineering of roads and infrastructure to allow natural surface drainage flows (MBS, 2012a). Based on the above, the proposed clearing is not likely to have a significant impact on watercourses within the area

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

Methodology Armstrong (2003)
MBS (2012a)
GIS Database:
- Hydrography, linear
- Rivers

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

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

According to available databases, the soil type within the application area is described as undulating plains with some low Gilgai's: chief soils seem to be hard alkaline red soils in intimate and complex associations with calcareous earths (GIS Database). These soil types are said to be slowly permeable and have low wind erodability (Schoknecht, 2002). Therefore, the likelihood of erosion occurring during normal rainfall events is low.

Available databases show there is a low probability of acid sulphate soils occurring within the application area (CSIRO, 2012).

The application area has an annual evaporation rate of over 7 times the average annual rainfall (BoM, 2012; GIS Database). Groundwater depth within the application area is approximately 28 to 40 metres below the surface and is influenced by existing and ongoing dewatering requirements (MBS, 2012a). As a result, any increase in groundwater levels from the proposed clearing is likely to be minimal, thereby reducing the likelihood of raised saline water tables.

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

Methodology BoM (2012)
CSIRO (2012)
MBS (2012a)
Schoknect (2002)
GIS Database:
- Evaporation Isopleths
- Soils, 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 Environment and Conservation managed lands (GIS Database). The nearest conservation area is the Sandford Rocks Nature Reserve, located approximately six kilometres north east of the application area (GIS Database). Based on the distance between the application area and Sandford Rocks Nature Reserve, 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:
- DEC 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**
According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). There are no permanent waterbodies or watercourses within the application area, however, there is one small ephemeral drainage line that occurs within the application area (GIS Database; MBS, 2012a). This is dry for most of the year with surface runoff occurring only during and immediately following significant rainfall events (MBS, 2012a).

Rainfall in the area largely occurs during the winter months with some rainfall coming from occasional summer thunderstorms brought about by decaying tropical cyclones from the north of the state (McLellan, 2008). The annual average rainfall for Merredin is 325.3 millimetres and the average annual evaporation rate for the application area is approximately 2,400 - 2,600 millimetres (BoM, 2012; GIS Database). Based on this, surface water is likely to evaporate quickly with surface sheet flow and higher sediment levels predominantly occurring during larger rainfall events. Therefore, during normal rainfall events, the proposed clearing would not likely lead to an increase in sedimentation of watercourses within the application area.

According to available databases, groundwater salinity within the application area is between 14,000 and 35,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be saline. Given the high TDS and depth to groundwater (28 to 40 metres below the surface), the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

MBS (2012a) states that ongoing water quality monitoring downstream of previous clearing on the mine site has not identified any impact on ground or surface water.

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

Methodology BoM (2012)
MBS (2012a)
McLellan (2008)
GIS Database:
- Evaporation Isopleths
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)

(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 Swan Avon Yilgarn catchment area (GIS Database). Given the size of the area to be cleared (20 hectares) in relation to the size of the catchment area (5,836,045 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

The application area experiences a Mediterranean climate with some semi-arid climatic characteristics (McLellan, 2008). It receives an annual average rainfall of approximately 325.3 millimetres, most of which falls during the winter months (BoM, 2012). Given the size of the proposed clearing and the low average annual rainfall, it is considered unlikely that the proposed clearing will cause or exacerbate the incidence or intensity of flooding.

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

Methodology BoM (2012)
McLellan (2008)
GIS Database:
- Hydrographic Catchments – Catchments

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

Comments

There are no native title claims over the area under application (GIS Database). 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*.

According to available databases, there are no registered Aboriginal Sites of Significance within the application area (GIS Database). 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 proponent has referred the Edna May Pit Cutback to the Department of Sustainability, Environment, Water, Population and Communities (SEWPAC; MBS, 2012b). SEWPAC is currently determining whether the removal of 310 *Eremophila resinosa* plants is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999*.

It is the proponent's responsibility to liaise with the Department of Environment and Conservation 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 9 April 2012 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received requesting the proponent consult with the Traditional Owners of the area regarding heritage issues and monitors be present when vegetation clearing is conducted. This request has been passed on to the applicant, however there is no scope to enforce this through the clearing permit process.

Methodology MBS (2012b)
GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims – Determined by the Federal Court
- Native Title Claims – Filed at the Federal Court
- Native Title Claims – Registered with the NNTT

4. References

- Armstrong (2003) Floral Components for a Notice of Intent, Westonia Gold Mine (M77/88 and M77/124). Unpublished report prepared for Westonia Mines Limited dated 16 January 2003.
- Bamford (2002) Vertebrate Fauna of the Westonia Mine Lease. Unpublished report prepared for Knight Piesold Consulting dated 10 December 2002.
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5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
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
RIWI Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa** (= *Threatened Flora* = *Endangered* + *Vulnerable*): taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the

Environment, after recommendation by the State's Endangered Flora Consultative Committee.

- X Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

- Schedule 1 Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2 Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3 Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4 Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna*. Department of Conservation and Land Management, Como, Western Australia} :-

- P1 Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2 Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3 Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4 Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5 Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999*)

- EX Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W) Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.