Department of Industry and Resources

# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

**Permit application No.:** 1677/1

**Permit type:** Area Permit

### 1.2. Proponent details

**Proponent's name:** **Westonia Mines Limited**

### 1.3. Property details

**Property:** M77/88
M77/124

**Local Government Area:** Shire Of Westonia

**Colloquial name:** Mining Lease 77/124 - Westonia Gold Project

### 1.4. Application

| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
|---|---|---|---|
| 9.57 | | Mechanical Removal | Mineral Production |

## 2. Site Information

### 2.1. Existing environment and information

*2.1.1. Description of the native vegetation under application*

| Vegetation Description | Clearing Description | Vegetation Condition | Comment |
|---|---|---|---|
| The vegetation within the application area has been mapped at a 1:250000 scale as Beard Vegetation types 1057 (Mosaic: Shrublands; Medium woodland; salmon gum & gimlet/York gum & *Eucalyptus sheathiana* mallee scrub) and 536 (Medium woodland; morrel & rough fruited mallee (*E. corrugata*)) (Shepherd et al, 2001).<br><br>The vegetation within the application area was surveyed in October 2002 by Armstrong et al (2003), who identified four vegetation types:<br>(1) Mixed Eucalypt Low Forest - Dominated by *Eucalyptus longicornis*, *E. yilgarnensis*, *E. salubris* and *E. corrugata*, over Scrub dominated by *Melaleuca lanceolata*, over Low to Dwarf Scrub, with occasional patches of Open Low Grass dominated by *Austrodanthonia sp.* and *Amphipogon strictus.*<br>(2) Gimlet Low Forest - Dominated by *E. salubris* over Low to Dwarf Scrub with occasional patches of Open Low Grass dominated by *Austrostipa elegantisima*.<br>(3) Dense Thicket with Various Dominants - Dominated variously by *Allocasuarina campestris and Acacia acuminata* or *Melaleuca uncinata*, over Open Low Scrub to Open Dwarf Scrub with occasional patches of Open Low Grass and Very Open Herbs dominated by *Austrodanthonia sp*. and *Waitzia acuminata*.<br>(4) Open Low Grass - Dominated by *Austrodanthonia sp*. and *Amphipogon strictus* with emergent *E. yilgarnensis.* | Westonia Mines Ltd have applied to clear up to 9.57 hectares for the purpose of a mine cutback, upgrade of access road and construction of acontractors laydown area at the Westonia Gold Mine. The application area occurs within Crown Reserve 14983 known colloquially as 'Westonia Commons'. | Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)<br><br>to<br><br>Degraded: Structure severely disturbed, regeneration to good condition requires intensive management (Keighery, 1994). | The vegetation condition within the application area was described by Armstrong et al (2003) as being Good (Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate) to Degraded (Structure severely disturbed; regeneration to good condition requires intensive management) using the Keighery scale (Keighery, 1994). The area has been subject to mining disturbance for nearly 100 years. A declared rare flora (DRF) species, *Eremophila resinosa*, occurs within the application area (Jeanes, 2006). However, no *E. resinosa* plants will be taken by the proposed clearing (Jeanes, 2006).<br><br>A site visit by the assessing officer conducted on January 18th 2007 confirmed that whilst some of the vegetation to be cleared is in good condition, much of the vegetation to be cleared is in a degraded condition. However, the vegetation does have conservation value on a local and regional scale due to the widespread clearing for agriculture, as it provides habitat for bird and reptile species. Whilst no *E. resinosa* plants will be removed during the clearing, the assessing officer is concerned about the effects of dust on any populations of this species found adjacent to clearing for roads.<br><br>Rehabilitation efforts on existing waste rock dumps and Tailings Storage Facility (TSF) were observed by the assessing officer and the vegetation was considered to be degraded on waste rock dumps and completely degraded on the TSF. It is noted that some bird species have been observed utilising the vegetation on the waste rock dumps (Simmons, 2002). The proposed re-opening of the mine provides an opportunity to remediate previous rehabilitation efforts that have not been successful. |

## 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 at variance to this Principle**

The application area occurs within the Avon Wheatbelt Biogeographic Region (GIS database). The eastern part of the Bioregion where the application area is located is an ancient, gently undulating plain of low relief and ancient drainage. Mixed eucalypt, sheoak and jam woodlands dominate (CALM, 2002). The vegetation proposed to be cleared can be broadly described as Eucalypt woodland (Jeanes, 2006; Armstrong et al, 2002).

The bioregion has been extensively cleared for agriculture and consequently has numerous environmental issues, threatened ecological communities and species at risk. The Bioregion is located within an interface between the south-western forests and the Transitional Rainfall Zone, and its rich flora includes many endemics (CALM, 2002). Within the Bioregion there are 45 plant species that have been declared as critically endangered, 39 as endangered, 26 as vulnerable and one is extinct under Western Australian legislation (CALM, 2002). One species of critically endangered flora, *Eremophila resinosa*, occurs within the application area and immediate surrounds, and Jeanes (2006) estimates the total population of plants in the lease area to be approximately in the order of 741 plants. This is an important population for this species as other populations that occur on road verges appear to be in decline (pers. obs.).

Remnant vegetation within the Bioregion is considered to be in poor condition, with the trend expected to decline. There are 468 nature reserves, and one conservation park in the Bioregion. They range in size from less than a hectare to more than 10,000 hectares. Most reserves are small and isolated by wheatfields (CALM, 2002). The application area occurs within a significant remnant that has been subject to past mining disturbances, which together with other contiguous remnants vested with the Shire of Westonia, total approximately 2,800 hectares (GIS Database).

Extensive clearing of native vegetation within the Bioregion has led to salinity problems. Ecosystems are threatened by clearing, landscape fragmentation, salinity and changed hydrology, grazing, weed invasion and changed fire regimes (CALM, 2002). The application area does not experience salinity problems but is subject to land fragmentation and weed invasion as a result of previous disturbance and its proximity to cleared agricultural land.

More than 35 % of the region's original mammal fauna is now regionally extinct (CALM, 2002). Mammals are threatened by feral predators, vegetation clearing and fragmentation. The application area could be potential habitat for many fauna species of conservation significance (Wilcox et al, 2002).

As a result of preivous disturbance, the application area is unlikely to contain vegetation of higher biodiversity value than vegeation remaining within the Bioregion, however, it is likely that the vegetation has a higher diversity and ecological value than the cleared farmland surrounding the remnant and bush corridors on road verges in the local area. Currently, vegetation within the Shire of Westonia remains at approximately 36% of its pre-european extent (Shepherd et al, 2001). That area of the Shire located within the Intensive Land Use Zone remains at approximately 21.5% of its pre-european vegetation extent (Shepherd et al, 2001). The 2,800 hectares described above represents approximately 5% of the vegetation remaining within that part of the Shire of Westonia that falls within the Intensive Land-use Zone (ILZ). This vegetation is therefore an important remnant within the Shire and the Bioregion.

Advice has been received from the Biodiversity Coordination Section of the Department of Environment and Conservation that the application is at variance to this principle (DEC, 2007).

In order to offset the loss of vegetation, a condition will be placed on the permit requiring the Permit Holder to revegetate an area equal to or greater than 9.57 hectares using provident locally sourced seed and vegetative stock.

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

**Methodology**

Armstrong et al (2003)
CALM (2002)
DEC (2007)
Jeanes (2006)
Shepherd et al (2001)
Wilcox et al (2002)
GIS Database:
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Cadastre - DLI

**(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 may be at variance to this Principle**

A desktop search of the Western Australian Museum's (WAM) Faunabase by the assessing officer revealed the following fauna species of conservation significance which have been recorded within an 80 km radius of the application area (WAM, 2006): Malleefowl (*Leipoa ocellata*), Peregrine Falcon (*Falco peregrinus*), Shy Heathwren (*Hylacola cauta cauta*), Crested Bellbird (*Oreoica gutturalis*), Chuditch (*Dasyurus geoffroii*), Brush-tailed Phascogale (*Phascogale tapoatafa tapoatafa*), Black Footed Rock Wallaby (*Petrogale lateralis lateralis*), Numbat (*Myrmecobius fasciatus*), Woma Python (*Aspidites ramsayi*) and South West Carpet Python (*Morelia spilota imbricata*).

A search of available GIS databases reveals many records of threatened and priority fauna species within an 80 km radius of the application area, although there are no records within the application area (GIS Database).

An avian fauna assessment was conducted for Westonia Mines Ltd in Autumn 2001 and 2002 over waste rock dumps and within remnant vegetation on mining tenements M77/88 and M77/124 (Simmons, 2002). A total of 42 bird species were recorded from 10 sites, although six of these species were observed flying overhead and not perching or feeding within the survey area (Simmons, 2002). None of the avian fauna species observed were of conservation significance (Simmons, 2002). Simmons (2002) noted that despite historical disturbances and the proximity to the mine and rock dumps, some species observed in the remnant vegetation are more commonly found in vegetation that is undisturbed. The assessing officer suggests this demonstrates the importance of the remnant as fauna habitat in an area that has been largely cleared for agriculture.

A level 1 vertebrate fauna assessment was conducted over M77/88 and M77/124 between 28 - 30 October 2002 by Western Wildlife (Wilcox et al, 2002) for Westonia Mines Ltd. This involved a review of published and unpublished information on fauna in the region including the Conservation and Land Management (CALM), now Department of Environment and Conservation (DEC) Threatened Fauna Database and the WAM specimen records for Westonia, as well as a site inspection to make an assessment based on readily observable fauna, the landscape and habitats present and existing information on fauna in the region (Wilcox et al, 2002). This fauna survey adequately meets the requirements of Guidance Statement No. 56 'Guidance for the Assessment of Environmental Factors - Terrestrial Fauna for Environmental Impact Assessment in Western Australia' (EPA, 2004).

As a result of this assessment, the following vertebrate species of conservation significance were identified as potentially occuring within the application area (Wilcox et al, 2002), in addition to those identified above by the assessing officer: Salmon Gum Gecko (*Oedura reticulata*), Carnaby's White-tailed Black Cockatoo (*Calyptorhynchus latirostris*), Bush Stone Curlew (*Burhinus grallarius*), Major Mitchell's Cockatoo (*Cacatua leadbeateri*), Square-tailed Kite (*Lophoictinia isura*), Inland Western Rosella (*Platycercus ictorotis xanthogenys*), Barking Owl (*Ninox connivens*), Rufous Fieldwren (*Calamanthus campestris*), Rainbow Bee-eater (*Merops ornatus*), Red-tailed Phascogale (*Phascogale calura*).

Wilcox et al (2002) considered that the presence of any frog population within the application area would be of regional significance due to a decline in the abundance of frog species within the wheatbelt due to clearing and salinisation, however, no frog species of conservation significance were believed to exist within the application area based on known range and habitat type.

The Malleefowl (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice 2006*) is largely confined to arid and semi-arid woodlands that experience less than 430 mm of rainfall annually and are dominated by mallee eucalypts on sandy soils. They may also be found in Mulga (*Acacia aneura*), and other sclerophyllous associations (DEC Naturebase website, 2006). Whilst there is suitable habitat for the Malleefowl within M77/88 and M77/124, the species has not been recorded there, and Wilcox et al (2002) and Simmons (2002) did not report evidence of their presence following the site assessment. The lack of predator control suggests that the species is unlikely to occur within the area. The proposed clearing is not likely to impact on the conservation of this species.

The Peregrine Falcon (Schedule 4 - Fauna that is in need of special protection*, Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) and Square-tailed Kite (DEC Priority 4) have a wide home range and utilise tall trees for nesting (Wilcox et al, 2002). The application area would represent a small fraction of their range and therefore it is not likely that the proposed clearing will impact on the conservation of these species. However, if any tall trees exist within the application area, they should be considered potential habitat trees and measures should be taken to avoid clearing these if at all possible.

The Shy Heathwren (DEC Priority 4) has declined within its known range and within the wheatbelt is restricted to remnant vegetation (Garnett et al, 2000). Its preferred habitat is dense mallee eucalypt woodland such as found in the south east parts of M77/88, and it nests in shrubs, or on the ground, below dense vegetation (Garnett et al, 2000). The proposed clearing is in open mallee woodland in the north of M77/88 and M7/124 and therefore the species is not likely to occur within the application area. The proposed clearing is therefore not likely to impact on the conservation of this species.

The Crested Bellbird (DEC Priority 4) is known to inhabit the shrub-layer of eucalypt woodland, mallee, *Acacia*

shrubland, *Triodia* hummock grassland, saltbush and heath (Garnett et al, 2000). It is particularly sensitive to habitat fragmentation (Garnett et al, 2000). However, the species has not been recorded in the application area and was not observed by either Wilcox et al (2002) or Simmons (2002), and therefore it is not likely that the proposed clearing will significantly impact on the conservation of this species.

Carnaby's White-tailed Black Cockatoo (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) and Major Mitchells Cockatoo (Schedule 4 - Fauna in need of special protection, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) require hollows in large eucalypts for breeding. The application area does not contain suitable nesting hollows, which suggests that the vegetation is not significant habitat for the species. Furthermore, the plant species recorded within the application area by Armstrong et al (2003) are not likely to provide a preferred food source for either the Carnaby, which favours proteaceous plant species, or the Major Mitchell, which favours seeds of species of saltbush, wattles and native cypress pines. Therefore, it is not likely that the proposed clearing will significantly impact on the conservation of this species.

The Bush Stone Curlew (DEC Priority 4) inhabit sparsely grassed, lightly timbered, open forest or woodland (Garnett et al, 2000). In southern Australia, they persist most often where there is a well-structured litter layer and fallen timber debris (Garnett et al, 2000). The eucalypt woodland found over most of the application area and surrounds may support populations of Bush Stone Curlew. However, the species has not been recorded in the application area previously and was not observed by either Wilcox et al (2002) or Simmons (2002), and therefore it is not likely that the proposed clearing will significantly impact on the conservation of this species.

The inland subspecies of Western Rosella (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) is known to inhabit eucalypt woodland, and its persistence is associated with habitat remnants, where it nests in the hollows of eucalypts. The main food source is the seeds of casuarinas, but it also takes seeds from grass, weedy herbs and fruit (Garnett et al, 2000). The vegetation within the application area may support populations of this species. However, the species has not been recorded in the application area and was not observed by either Simmons (2002) or Wilcox et al (2002). Therefore it is not likely that the proposed clearing will significantly impact on the conservation of this species.

The Barking Owl (DEC Priority 2) occurs primarily in dry sclerophyll woodland, particularly that associated with riparian vegetation in the south-west (Garnett et al, 2000). There is no riparian vegetation within the application area and it is unlikely that the proposed clearing will significantly impact on the conservation of this species.

The Rufous Fieldwren (DEC Priority 4) lives in low, sparse heath, saltmarsh or samphire, with or without emergent trees (Garnett et al, 2000). This vegetation type is not found within the application area and it is unlikely that the proposed clearing will significantly impact on the conservation of this species.

The Rainbow Bee-eater (Migratory species under the *Environmental Protection and Biodiversity Conservation Act 1999*) is able to utilise a wide range of habitat types and nests in sandy soils. The Rainbow Bee-eater would be an occasional visitor to the application area and was observed by Simmons (2002) but would not utilise the area for nesting. It is not likely that the proposed clearing will significantly impact on the conservation of this species.

The Chuditch (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) occurs in very low numbers in the Midwest, Wheatbelt and South Coast Regions with records from Moora to the north, Yellowdine to the east and south to Hopetoun. They occupy a wide range of habitats including woodlands, dry sclerophyll (leafy) forests, riparian vegetation, beaches and deserts. Male chuditch have a home range of approximately 15 square km and females have a home range of three to four square km (DEC Naturebase website, 2006). The remnant vegetation in which the application area is located is not likely to be large enough to support a breeding pair of chuditch. Furthermore, the absence of predator control would suggest that the species no longer survives in this location. Therefore, the proposed clearing is not likely to impact the conservation of this species.

The Brush-tailed Phascogale (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) has been observed in dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover. The species is prone to local extinction in fragmented landscapes such as the central wheatbelt where the application area is located, and this is a likely scenario in this instance given the lack of predator control. The proposed clearing is not likely to significantly impact the conservation of this species.

The Red-tailed Phascogale (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) occur in Wandoo (*Eucalyptus wandoo*) and Sheoak (*Allocasuarina huegeliana*) woodland associations, with populations being most dense in the latter vegetation type (DEC, Naturebase website, 2006). They show a preference for long unburnt habitat with a continuous canopy, as well as tree hollows (DEC Naturebase website, 2006). The application area does not support this habitat type and therefore it is not likely that the proposed clearing will significantly impact on the conservation of this species.

In the wheatbelt, the Black Footed Rock Wallaby (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) is restricted to several granite outcrops, that do

not occur within the application area or adjoining vegetation. The proposed clearing will not impact on the conservation of this species.

The Numbat (Schedule 1 - Fauna that is rare or likely to become extinct, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) currently occupies Jarrah forest, open eucalypt woodland, *Banksia* woodland and tall closed shrubland (DEC Naturebase website, 2006). Such habitats usually have an abundance of termites in the soil, hollow logs and branches for shelter (DEC Naturebase website, 2006). Due to the small size of the remnant vegetation within which the application area is located and the absence of predator control, it is not likely that the Numbat occurs within the application area. The proposed clearing will not impact on the conservation of this species.

The South West Carpet Python (Schedule 4 - Fauna that is in need of special protection, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) utilises a wide range of habitats. It can be found in eucalypt woodland throughout the wheatbelt at low densities due to absence of predator control (DEC Naturebase website, 2006). It is possible that the species occurs within the application area and Wilcox et al (2002) identifies the rocky piles surrounding the old mining areas as suitable habitat. Furthermore, remnants such as Crown Reserve 14983, where the application area is located, are often important habitat for the species. Whilst the loss of habitat will not impact upon the overall conservation of this species, if the species is present within the application area, clearing may have an impact on a local scale.

The Woma Python (Schedule 4 - Fauna that is in need of special protection, *Wildlife Conservation (Specially Protected Fauna) Notice, 2006*) occurs in the arid zones of Western Australia, favouring open myrtaceous heath on sandplains, and dunefields dominated by spinifex (*Triodia spp*.) (DEC Naturebase website, 2006). This habitat does not occur in the application area and therefore the proposed clearing will not impact on the conservation of this species.

The Salmon Gum Gecko whilst not gazetted as rare or priority listed by the DEC, is known to be a habitat specialist, and exposed to severe habitat fragmentation in the Western Australian wheatbelt. The species is restricted to smooth barked eucalypt remants only, therefore, the probability of extinction for a given population is related to the amount of suitable habitat in the remnant (Sarre et al, 1995). The poor dispersal ability of this species between remnants means that the possibility of recolonisation of a remnant following an extinction event is unlikely. As a result, the occupancy rate of *O. reticulata* in remnant woodland is likely to decline (Sarre, 1995). Wilcox et al (2002) suggests that the species is almost definitely present within the application area and therefore the proposed clearing may impact on the conservation of this species on a local scale.

The Biodiversity Coordination Section of the Department of Environment and Conservation concur that the proposed clearing may be at variance to this principle (DEC, 2007).

Based on the above, and given the application area is within a small remnant that may provide significant habitat for both the South West Carpet Python and the Salmon Gum Gecko, as well as for other fauna in general, the proposed clearing may be at variance to this principle.

**Methodology**

DEC Naturebase website (2006)
DEC (2007)
EPA (2004a)
Garnett et al (2000)
Sarre (1995)
Sarre et al (1995)
Simmons (2002)
WAM (2006)
Wilcox et al (2006)
GIS Database:
- Threatened Fauna – CALM 30/9/05

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

**Comments**

**Proposal may be at variance to this Principle**

A search of available GIS database - Declared Rare and Priority Flora List - CALM 01/07/05, identified the following rare or priority flora species within a 50 km radius of the application area: *Eremophila resinosa* (R), *Eucalyptus crucis ssp. crucis* (R), *Eremophila viscida* (R), *Eremophila virens* (R), *Acacia lobulata* (R), *Myriophyllum lapidicola* (R), *Acacia sclerophylla ssp. teretiuscula* (R), *Gastrolobium diabolophyllum* (R), *Eucalyptus subangusta ssp virescens* (P1), *Eremophila complanata* (P2), *Acacia lirellata ssp compressa* (P2), *Myriophyllum petraeum* (P4). Only *Eremophila resinosa* is known to occur within Crown Reserve 14983 within which the application area is located (GIS Database).

On 22nd and 23rd October 2002 Paul Armstrong and Associates, accompanied by Joan Osborne of Curtin University, were commissioned to conduct a field survey over the two mining tenements M77/88 & M77/124, to describe the vegetation and flora of the proposed mining area in the context of published regional descriptions of landform and associated vegetation complexes. The condition and conservation values of the area was

assessed and mapped, with particular attention given to documenting the occurrence and distribution of flora recognised to have conservation significance (Armstrong et al, 2003). Prior to the field survey, a search of databases was conducted to create a list of conservation significant flora species that may occur in the local area. In addition, species lists from past vegetation surveys of the Westonia area were reviewed (Armstrong et al, 2003). The survey and subsequent report adequately meets the requirements of Guidance Statement 51 - Guidance for the Assessment of Environmental Factors - Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia. Report by the EPA under the Environmental Protection Act 1986 (EPA, 2004b).

Armstrong et al (2003) identified 68 species from within the survey area and a further 57 species are known to occur within the area based on database and bibliography searches. Of these, one conservation significant species, *Eremophila resinosa*, was identified (Armstrong, 2003). Armstrong (2003) also identified three weed species (*Avena fatua*, *Carrichtera annua* and *Centaurea melitensis*). Four vegetation map units were identified, being Mixed Eucalypt Low Forest; Gimlet Low Forest; Dense Thicket with Various Dominants; and Open Low Grass (Armstrong et al, 2003).

Two populations of *E. resinosa* were recorded within the survey area, with a total of 76 plants over the two populations being recorded (Armstrong et al, 2003). It was noted that *E. resinosa* plants were located in areas of relatively more recent disturbance (Armstrong et al, 2003).

It was noted that species diversity was lower than expected for that area and time of year, and that very few species were in flower, making identification difficult. This is most likely due to a lack of rain during the winter months. However, previous surveys over the two tenements and surrounds were used to supplement the species list (Armstrong et al, 2003).

In November 2002 and April 2003, follow up visits to the area surveyed increased the known number of *E. resinosa* specimens to 441 (Knight Piesold, 2003). In January 2006, the population was surveyed by Outback Ecology, whereupon the population was increased to 741 individuals (Jeanes, 2006). Only two of these specimens are located within the application area (Jeanes, 2006).

Westonia Mines Ltd commissioned Knight Piesold Ltd to create a Management Plan for the Declared Rare Flora, *Eremophila resinosa* (Knight Piesold, 2003). The management plan will be implemented in conjunction with Westonia Mines Ltd's Environmental Management Plan for the overall operation. The principle tool for management will be to avoid removing any *E. resinosa* plants but other measures include protection from saline water use, drainage, weeds and fire (Knight Piesold, 2003).

With this in mind, Westonia Mines Ltd have committed to avoiding the removal of the two specimens that occur within the application area (contractors laydown area) and will build structures such as offices and workshops around the plants, which will be fenced off (Jeanes, 2006). Part of the application area (access road) has been moved to avoid a larger sub-population which will be fenced to avoid disturbance (Jeanes, 2006).

Westonia Mines Ltd's Environmental Management Plan also has measures to safeguard the *E. resinosa* population including restricting access, tagging specimens in situ, limiting clearing, staff induction and education, roads and pipelines to be bunded to retain saline water, weed and fire management and monitoring of populations (Knight Piesold, 2003).

Westonia Mines have also worked with the Botanic Gardens and Parks Authority (Kings Park) to establish a translocation program utilising material from 15 plants that were authorised for removal. This programme has successfully established 560 plants adjacent to the mine and town (Jeanes, 2006).

Following a site inpsection, the assessing officer has concerns with the effects of dust on a population of *E. resinosa* that occurs very close to the proposed access road upgrade. Without adequate dust suppression, this population may suffer from suffocation by dust. Furthermore, the use of saline water in dust suppression has the potential to adversely affect *E. resinosa* and other vegetation.

The Biodiversity Coordination Section of the Department of Environment and Conservation concur that the proposed clearing may be at variance to this principle (DEC, 2007).

A condition has been placed on the clearing permit that will require the permit holder to undertake dust suppression on access roads within the area cleared. A further condition will be placed on the permit requiring the permit holder to bund the road adjacent to *E. resinosa* populations to prevent saline water draining into the surrounding environment, and to direct run-off into drainage sumps. An additional condition will require the permit holder to monitor all populations of *E. resinosa* within mining tenements M77/88 and M77/124 to observe for signs of stress due to dust suffocation, or as a result of saline water being used for dust suppression purposes.

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

**Methodology** Armstrong et al (2003)
DEC (2007)

EPA (2004b)
Knight Piesold (2003)
Jeanes (2006)
GIS Database:
- Declared Rare and Priority Flora List - CALM 01/07/05

**(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**

A search of available databases reveals that there are no Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest TEC is located approximately 80 km south of the application area and is identified as Tall emergent *Eucalyptus salmonophloia* over *Allocasuarina huegeliana* tall closed forest over *Acacia acuminata* mid high isolated trees over *Alyxia buxifolia* tall sparse shrubland over *Pteridium esculentum* very tall closed fernland over various sparse forbland. This community was not described as occuring within the application area by Armstrong (2003).

A vegetation survey over the application area (Armstrong et al, 2003) did not identify any vegetation associations or communities that could be considered to be threatened ecological communities or ecological communities at risk as identified in 'Bioregional Summary of the 2002 Biodiversity Audit of Western Australia' (CALM, 2002).

The Biodiversity Coordination Section of the Department of Environment and Conservation concur that the proposed clearing is not likely to be at variance to this principle (DEC, 2007).

Given the above, it is not likely that the proposal is at variance to this principle.

**Methodology**

Armstrong et al (2003)
CALM (2002)
DEC (2007)
GIS:
- Threatened Ecological Communities – CALM

**(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 at variance to this Principle**

| | Pre-European area (ha) | Current extent (ha) | Remaining | Conservation Status | Pre-european ha in IUCN Class I-IV Reserves (and current ha) |
|---|---|---|---|---|---|
| IBRA Bioregion – Avon Wheatbelt | 9517117* | 1468711* | 15.4* | Vulnerable** | 1.6 (7.6)* |
| IBRA Subregion – Wheatbelt 1 | 6524182* | 1212881* | 18.6* | Vulnerable** | 1.6 (6.6)* |
| Shire of Westonia | 329601*** | 118326*** | 35.8*** | Depleted** | n/a |
| Beard veg assoc. (bioregion) | | | | | |
| 536 | 11171* | 3946* | 35.3* | Depleted** | 11.6 (32.7)* |
| 1057 | 145313* | 13588* | 9.4* | Endangered** | 2 (20.4)* |

* Shepherd et al. (2001a) updated 2005
** Department of Natural Resources and Environment (2002)
*** Shepherd et al (2001)

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

Explanation:

At a regional level, the Avon Wheatbelt IBRA Bioregion remains at approximately 15.4% of its pre-european vegetation extent. 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 proposed clearing area falls within the Shire of Westonia, which remains at approximately 35.8% of its pre-european vegetation extent (Shepherd et al, 2001a). This reflects the Shire's boundary which partly falls outside the Intensive Land-use Zone (ILZ) and remains uncleared. According to the 'Bioregional Conservation Status of Ecological Vegetation Classes' (Department of Natural Resources and Environment, 2002), this value gives the Shire a conservation status of 'Depleted'. It should be noted that the majority of the Shire falls within the ILZ and that this portion within the ILZ remains at 21.5% of its pre-european vegetation extent (Shepherd et al 2001).

Within the Bioregion, vegetation associations 536 and 1057, as described by Beard and located within the application area remain at approximately 35.3% and 9.4% of their pre-european vegetation extent respectively (Shepherd et al, 2001a). According to the 'Bioregional Conservation Status of Ecological Vegetation Classes' (Department of Natural Resources and Environment, 2002), these values give the vegetation types a conservation status of 'Depleted' and 'Endangered' respectively. This figure remains the same when considering the vegetation types on a sub-regional level. However, both vegetation types currently have more than 20% of their current extent in conservation reserves, which adequately meets the 15% benchmark for representation in conservation reserves (JANIS Forests Criteria, 1997).

The percentage of vegetation within conservation reserves within both the IBRA Bioregion and IBRA sub-region has increased four-fold since european settlement, again, reflecting the widescale clearing that has taken place throughout the bioregion.

Crown Reserve 14983, within which the application area is located, along with all other adjoining Crown Reserves together total approximately 2,800 hectares which represents almost 5% of the vegetation remaining within that part of the Shire that falls within the intensive land use zone. The assessing officer considers this 2,800 hectares to be a significant remnant within the Bioregion, as it may provide for the movement of genetic information in more mobile species such as some birds and reptiles between the application area and any one of several conservation reserves within a 2-10 km radius.

A public submission was received that raised concerns with the cumulative effects of past and current mining operations on the vegetation within the remnant, and the lack of rehabilitation by past operators. Whilst it is acknowledged that the proposed clearing will result in the permanent loss of some vegetation as a result of the mine cutback, the new proposal by Westonia Mines presents an opportunity for the historic disturbance by past operators to be rehabilitated to DoIR standards.

Given the above, the proposed clearing is at variance to this principle.

**Methodology**

Department of Natural Resources and Environment (2002)
JANIS (1997)
Shepherd et al (2001a) updated 2005
Shepherd et al (2001b)

**(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 not at variance to this Principle**

According to available databases, no watercourses or wetlands occur within the application area, although a minor non-perennial watercourse occurs immediately to the east of the application area (GIS Database). This is unlikely to experience water flows except under the most extreme rainfall events.

None of the vegetation mapping units described by Armstrong et al (2003) are indicative of riparian or wetland vegetation.

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

**Methodology**

Armstrong et al (2003)
GIS Database: Hydrography, Linear - DoE 1/2/04

**(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 gilgais: chief soils seem to be hard alkaline red soils in intimate and complex association 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 during normal rainfall events is low. During a site visit to the application area, the assessing officer did not observe any significant soil erosion even in areas that had been disturbed.

Information has been received from Outback Ecology (Jeanes, 2006) that ground water levels are 27-35 m below the surface and this could be expected to fall even lower following mine dewatering. Consequently, the removal of 9.57 ha of vegetation is not likely to lead to waterlogging or salinisation.

Several weed species were identified by Armstrong et al (2003) within the application area and surrounds. This is not unusual given the remnants size, history of land use and proximity to farmland. It is not expected that the proposed clearing will significantly increase the abundance of weed species within the application area. During a site visit the assessing officer noted many weeds within disturbed areas but few weeds in areas that remained undisturbed. The management of weed species will need to be considered during operation and mine closure.

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

**Methodology**

Armstrong et al (2003)
Jeanes (2006)
Schoknecht (2002)
GIS Database:
- Soils, Statewide - DA 11/99

**(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 occurs within 10km of several DEC managed conservation reserves (GIS Database) including Sanford Rocks Nature Reserve and Carrabin Nature Reserve and is located within Crown Reserve 14983, which is considered by the assessing officer to be a significant remnant of native vegetation within the Shire of Westonia. During a site visit by the assessing officer it was noted that adequate vegetation remains within roadside corridors to provide ecological linkage for more mobile avian fauna species. However it is not considered that the proposed clearing will impact upon this ecological linkage.

The proposed clearing will not impact on the conservation of the reserves that occur within 10km of the application area.

The Biodiversity Coordination Section of the Department of Environment and Conservation concur that the proposed clearing is not likely to be at variance to this principle (DEC, 2007).

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

**Methodology**

DEC (2007)
GIS Database:
- CALM Managed Lands and Waters - CALM 1/7/05

**(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**

The application area occurs within the Yilgarn subcatchment of the Swan Avon catchment (GIS database). The subcatchment is a relatively flat, low relief region with a series of lake formations distributed evenly throughout (Middleman et al, 2005). These lakes trap a large proportion of the runoff, with runoff averaging <0.3 mm/year (Middleman et al, 2005). This catchment is not within a Public Drinking Water Source Area (GIS Database). Run-off from within the application area is therefore likely to be low and any run-off that does occur will most likely be retained within the subcatchment.

The proposed clearing does not occur within or near a watercourse or wetland, and therefore sedimentation and turbidity of waterbodies is not likely.

Water table levels within the application area are between 27-35 m below ground level and groundwater salinity is measured at 25,000 mg/L Total Dissolved Solids (Jeanes, 2006), which is considered saline and not potable. The removal of 9.57 hectares is not likely to cause the quality of groundwater to deteriorate further.

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

**Methodology** Middleman et al (2005)
Jeanes (2006)
GIS databases:
- Hydrographic Catchments - Catchments - DOE 23/3/05
- Hydrography, linear - DOE 1/2/04
- Public Drinking Water Source Areas (PDWSAs) - DOE 07/02/06

### (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 receives approximately 328.4 mm of rainfall per year (BOM, 2006). Most rainfall occurs in the winter months, with June and July receiving the most rainfall (BOM, 2006). Rainfall during the summer months is low, but is usually associated with tropical low pressure systems and can be brief but heavy (pers. obs.).

Annual evaporation rates are approximately 2600 mm/year. Whilst average rainfall in January is 19 mm (BOM, 2007), evaporation during January is 420 mm (Luke et al, 1987). Even during the wettest month of June, average rainfall is 50.1 mm (BOM, 2007), yet evaporation is 70 mm (Luke et al, 1987). This suggests that run-off is likely to be low, particularly during summer months, and flooding of the application area is also unlikely.

The likelihood of the removal of 9.57 hectares of vegetation leading to an increase in flood height or duration is therefore low.

Rainfall runoff is likely to occur as broad, shallow sheet-flow across the site, although the ground topography is likely to promote some channelling of surface water (Jeanes, 2006). Water is currently diverted from open pits and processing plant sites by bunding (Jeanes, 2006).

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

**Methodology** BOM (2007)
Luke et al (1987)
Jeanes (2006)

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

**Comments**

A Mining Proposal has been submitted to the Department of Industry and Resources for approval.

The abstraction of groundwater from the pit during exploration and minng operations is covered under Ground Water License GWL 156328, expiring February 2015 (Jeanes, 2006).

There are no known Aboriginal sites of significance located within the application area or within 2km of the application area (DIA, 2007). 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.

There are is one Native Title Claim over the area under application; WC99_029 (GIS database). This claim has been registered with the National Native Title Tribunal. However, the mining tenements have been granted, and the clearing is for a purpose consistent with the tenement type, therefore the granting of a clearing permit is not a future act under the *Native Title Act, 1993*.

A public submission was received in relation to this application. The submission called for no native vegetation to be cleared and was concerned with the cumulative effects of clearing within the mining tenements over the history of the mine site. The asssessing officer has taken the submission into account and finds that whilst the application area contributes to a significant remnant of native vegetation and that rehabilitation efforts by past operators of the mine have not been completely satisfactory, the re-opening of the mine presents an opportunity for past rehabilitation efforts to be corrected such that there will be a benefit for the conservation of flora and fauna species. Furthermore, Westonia Mines intends to revegetate an area surrounding a new Tailings Storage Facility (TSF) to be built on cleared agricultural land within M77/124. This presents an opportunity to create new habitat within Westonia Mines Ltd tenements and may offset the loss of 9.57 hectares of vegetation.

**Methodology** DIA (2006)
Jeanes (2006)
GIS Database:
- Native Title Claims - DLI 7/11/05

## 4. Assessor's recommendations

| Purpose | Method | Applied area (ha)/ trees | Comment / recommendation |
|---|---|---|---|
| Mineral Production | Mechanical Removal | 9.57 | The proposal has been assessed against the clearing principles and the proposal has been found to be not at variance to principle f, not likely to be at variance to principles d, g, h, i and j, may be at variance to principles b and c and is at variance to principle a and e.<br><br>The assessing officer recommends the permit be granted subject to the following conditions.<br><br>1. The Permit Holder shall record the following for each instance of clearing:<br>a) the location where the clearing occurred, expressed as grid coordinates using the Geocentric Datum of Australia 1994 coordinate system;<br>b) the size of the area cleared in hectares;<br>c) the method of clearing;<br>d) the purpose of clearing; and,<br>e) the area revegetated in hectares.<br><br>2. The Permit Holder shall provide an Annual Clearing Report to the Director, Environment, Department of Industry and Resources by 31 July each year for the life of the permit, demonstrating adherence to all the conditions of this permit, and setting out the records required under condition 1 of this permit in relation to clearing carried out between 1st January and 31st December the previous year. This report can be included as an addendum to the Annual Environmental Report submitted to DoIR.<br><br>3. The Permit Holder must stockpile all topsoil and native vegetation cleared under this permit for use in rehabilitation.<br><br>4. The Permit Holder shall employ dust suppression measures on all roads within Mining Lease M77/88 and Mining Lease M77/124. The Permit holder shall ensure that water used in dust suppression does not spray or drift onto adjacent native vegetation.<br><br>5. The Permit Holder shall construct water retention bunds on each side of all roads within M77/88 and M77/124 to ensure that saline water does not seep or spill into adjacent native vegetation. Run off from roads shall be directed into drainage sumps.<br><br>6. The Permit Holder shall revegetate an area surrounding a Tailings Storage Facility on Mining Lease M77/110, equal to or greater than 9.57 ha, using locally sourced native seeds and seedlings according to a Mining Proposal approved by the Department of Industry and Resources (DoIR) entitled 'Westonia Gold Mine, Mining Leases M77/88, M77/110, M77/124 and L77/18 – Mining Proposal for the Edna May Cutback at Westonia Gold Mine - Final' or DoIR approved update.<br><br>7. The permit holder shall monitor populations of *Eremophila resinosa* located within M77/88 and M77/124 according to the following:<br>a) Weekly inspection of salt water pipelines;<br>b) Monthly review of the condition of *E. resinosa* within the tenements to determine any impacts of mining;<br>c) Monthly review of mining operations for the following month and potential to impact *E. resinosa*;<br>d) Monthly inspection of bunds, sumps and drains and fencing associated with the management of *E. resinosa*; and,<br>e) Annual recording of plant numbers and location, density, cover and health.<br><br>Should signs of plant stress be observed, the Permit Holder shall notify the Native Vegetation Assessment Branch of the Department of Industry and Resources.<br><br>**Definitions**<br><br>In this permit:<br><br>**Annual Environmental Report** means a report produced as a requirement of tenement conditions unde *Mining Act 1978.*<br><br>**Dust suppression measures** means the spraying of water over road surfaces to suppress the release of dust particles.<br><br>**Water retention bund** means a continuous windrow of soil designed to prevent run off from discharging into the surrounding environment. |

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## 6. Glossary

### Acronyms:

| | |
|---|---|
| **BoM** | Bureau of Meteorology, Australian Government. |
| **CALM** | Department of Conservation and Land Management, Western Australia. |
| **DAFWA** | Department of Agriculture and Food, Western Australia. |
| **DA** | Department of Agriculture, Western Australia. |
| **DEC** | Department of Environment and Conservation |
| **DEH** | Department of Environment and Heritage (federal based in Canberra) previously Environment Australia |
| **DEP** | Department of Environment Protection (now DoE), Western Australia. |
| **DIA** | Department of Indigenous Affairs |
| **DLI** | Department of Land Information, Western Australia. |

| | |
|---|---|
| **DoE** | Department of Environment, Western Australia. |
| **DoIR** | Department of Industry and Resources, Western Australia. |
| **DOLA** | Department of Land Administration, Western Australia. |
| **DoW** | Department of Water |
| **EP Act** | Environment Protection Act 1986, Western Australia. |
| **EPBC Act** | Environment Protection and Biodiversity Conservation Act 1999 (Federal Act) |
| **GIS** | Geographical Information System. |
| **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** | Rights in Water and Irrigation Act 1914, Western Australia. |
| **s.17** | Section 17 of the Environment Protection Act 1986, Western Australia. |
| **TECs** | Threatened Ecological Communities. |

## 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.