



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 5335/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: **Barrick (Granny Smith) Pty Limited**

### 1.3. Property details

Property:  
Mining Lease 38/18  
Mining Lease 38/161  
Mining Lease 38/162  
Mining Lease 38/191  
Mining Lease 38/205  
Mining Lease 38/253  
Mining Lease 38/389  
Mining Lease 38/440  
Mining Lease 38/525  
Mining Lease 38/532  
Mining Lease 38/1145  
Miscellaneous Licence 38/144  
Miscellaneous Licence 38/146  
Miscellaneous Licence 39/31  
Local Government Area: Shire of Laverton  
Colloquial name: Granny Smith Open Pit Project

### 1.4. Application

|                    |           |                    |  |
|--------------------|-----------|--------------------|--|
| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of:                              |
| 420                |           | Mechanical Removal | Mineral Production and Associated Infrastructure |

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 30 May 2013

## 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):

18: Low woodland; mulga (*Acacia aneura*).

The majority of the application area has been surveyed as part of two larger Level 2 flora and vegetation surveys conducted by Keith Lindbeck and Associates (KLA), Paul Armstrong and Associates and PEK Enviro Environmental Consulting Services (PEK). The Level 2 survey conducted by KLA and Paul Armstrong and Associates was undertaken from 25 to 31 October 2010 and 16 to 19 May 2011. The October 2010 survey was conducted by KLA and Paul Armstrong and Associates (KLA, 2011) and the May 2011 survey was conducted by Paul Armstrong and Associates and Native Vegetation Solutions (NVS) (KLA, 2012a). Reports were prepared by KLA. The Level 2 survey conducted by PEK was undertaken between 22 October and 1 November 2012 (PEK, 2012). The following 13 vegetation communities were identified within the application area during the October 2010 and May 2011 surveys (KLA, 2012b):

#### **Mulga low open forest (Mof)**

##### 1. Mof on flats (Mof\_f)

*Acacia aneura* (s.l.) low open forest over *Acacia tetragonophylla* (*Acacia burkittii*, *Acacia rigidula*) scattered shrubs to tall open shrubland over scattered mixed shrubs and herbs on flats.

##### 2. Mof in drainage (Mof\_d)

*Acacia aneura* (s.l.) low open forest over *Acacia tetragonophylla* scattered mixed shrubs to low open shrubland over *\*Lysimachea arvensis*, *\*Cenchrus ciliaris* open herbland/grassland in major drainage lines.

#### **Mulga woodland (Mw)**

##### 3. Mw on flats (Mw\_f)

*Acacia aneura* (s.l.) low open woodland/low woodland over scattered mixed shrubs and herbs on flats.

4. Mw in minor drainage (Mw\_d)

*Acacia aneura* (s.l.), *Acacia burkittii* low woodland/tall shrubland over *Acacia tetragonophylla* open shrubland over scattered mixed shrubs and herbs in minor drainage lines.

#### **Mulga shrubland (Msh)**

5. Msh on flats (Msh\_f)

*Acacia aneura* (s.l.) (*Acacia tetragonophylla*, *Acacia rigidula*) shrubland to tall open shrubland over *Maireana* spp., *Eremophila* spp. shrubland to scattered shrubs over scattered mixed low shrubs and herbs on flats.

6. Msh on slopes (Msh\_s)

*Acacia aneura* (s.l.) shrubland to open shrubland over *Maireana triptera* shrubland with mixed low shrubs and herbs on lower slopes of the range of hills.

7. Msh in drainage (Msh\_d)

*Acacia aneura* (s.l.) shrubland to tall open scrub over *Acacia tetragonophylla* shrubland over scattered mixed shrubs and herbs in major and minor drainage lines.

8. Msh drainage special (Msh\_ds)

*Acacia aneura* (s.l.), with *Acacia tetragonophylla* tall shrubland/ low woodland over *Nicotiana rosulata*, *Rhodanthe stricta*, *Goodenia occidentalis*, *Centipeda crateriformis* herbland in minor drainage line.

9. Msh miscellaneous (Msh\_m)

*Acacia aneura* (s.l.) tall shrubland over *Ptilotus obovatus* low open shrubland over scattered low shrubs and herbs on low rise.

10. Rocky ridges (Msh\_rr)

*Phyllanthus baeckeoides* (Priority 3) may be present. *Acacia aneura* (s.l.) tall shrubland over scattered low shrubs and herbs on rocky ridges with banded ironstone formation.

#### **Mulga not dominant**

11. Site: 11 (m)

*Maireana platycarpa* low open shrubland over scattered low shrubs and herbs on floodplain.

12. Site: 39 (hp)

*Hakea preissii* scattered shrubs over *Lawrencia squamata* low open shrubland over scattered mixed low shrubs and herbs on flats.

13. Site 52 (ah)

*Acacia heteroneura* var. *jutsonii* with *Acacia aneura* woodland over mixed low shrubs on the mid to upper hillsides.

For areas not covered by the October 2010 survey and the May 2011 survey the following 14 vegetation groups were identified within the application area (PEK, 2012):

#### **Banded ironstone hill summit – *Acacia quadrimarginea* over mixed shrubs**

14. BIHSuAQ1 - Sparse, low to dwarf *Acacia* shrubs (often *Acacia quadrimarginea*) over very sparse miniature to micro shrubs (often *Philotheca brucei* subsp. *brucei*) and very sparse medium tussock grass (often *Thyridolepis ?multiculmis*).

#### **Banded ironstone hill slopes – Mulga over mixed shrubs**

15. BIHSIM1 - Sparse to very sparse, low *Acacia* shrub mallee (often *Acacia ?incurvaneura* and *Acacia ?pteraneura*) over very sparse, dwarf *Senna* shrubs (often *Senna artemisioides* subsp. *X sturtii* and *Senna artemisioides* subsp. *helmsii*) over miniature to micro shrubs (often *Ptilotus schwartzii*) on banded ironstone hill slopes.

16. BIHSIM2 - Very sparse, low *Acacia* trees and shrub mallee (often *Acacia ?pteraneura*) over very sparse, dwarf *Acacia quadrimarginea* shrubs over very sparse miniature shrubs (often *Ptilotus schwartzii*) on banded ironstone hill slopes.

17. BIHSIM3 - Sparse, low *Acacia* shrub mallee (often *Acacia ?incurvaneura* and *Acacia ?caesaneura*) over very sparse dwarf shrubs (often *Acacia ?incurvaneura*) over sparse miniature to micro shrubs (often *Ptilotus obovatus*, *Sclerolaena eriacantha* and *Maireana triptera*) on banded ironstone hill slopes.

#### **Greenstone rises and hill slopes – Mulga over mixed shrubs and grasses**

18. GHSloM1 - Sparse to very sparse, low, *Acacia* trees and shrub mallee (often *Acacia ?aneura* or *Acacia ?pteraneura*) over sparse dwarf shrubs (often *Acacia burkittii*, *Dodonaea lobulata*, *Senna artemisioides* subsp. *filifolia* or *Eremophila oldfieldii* subsp. *angustifolia*) over very sparse miniature to micro shrubs (often *Dodonaea lobulata* or *Maireana triptera*) over very sparse low tussock grasses (often *Enneapogon caeruleus* or *Aristida contorta*) on greenstone rises and hill slopes.

#### **Washplain mulga – Mulga over mixed shrubs and grasses**

19. WM2 - Mid dense to very sparse, low to dwarf *Acacia* trees (often *Acacia ?aneura*, *A. ?incurvaneura* and *A. ?pteraneura*), over very sparse, dwarf *Acacia* shrubs (often *Acacia ?aneura*, *A. ?pteraneura*, *A. ?incurvaneura*, *A. ramulosa* var. *ramulosa*, *A. tetragonophylla* and *A. craspedocarpa*), over sparse to very sparse, miniature to micro shrubs (often *Maireana triptera*, *Eremophila margarethae*, *Senna artemisioides* subsp. *X artemisioides* and *Eremophila forrestii* subsp. *forrestii*) over low to medium tussock grasses (often *Tripogon loliiformis*, *Thyridolepis ?multiculmis* and *Aristida contorta*) on washplains.

20. WM3 - Sparse to very sparse, low to dwarf *Acacia* trees and shrub mallee (often *Acacia incurvaneura* or *A. pteraneura*) over very sparse dwarf shrubs (often *Acacia tetragonophylla*, *Eremophila scoparia*, *E. platycalyx* and *Scaevola spinescens*) over miniature to micro shrubs (often *Maireana triptera*, *Sclerolaena cuneata* and *Sclerolaena eurotioides*) on washplains.

21. WM4 - Sparse to very sparse, low to sometimes medium *Acacia* trees and shrub mallee (often *Acacia ?caesaneura*, *A. ?pteraneura* and *A. ?aptaneura*) with very sparse, low, *Hakea preissii* trees over sparse to very sparse, dwarf *Acacia* shrubs (often *A. tetragonophylla*, *A. craspedocarpa* and *A. ramulosa* var. *ramulosa*) over sparse miniature to micro shrubs (often *Maireana triptera*) over sparse low tussock grasses (often *Enneapogon caerulescens* and *Aristida contorta*) along washplains adjacent to drainage lines. This group included scattered patches of *Casuarina pauper* in the upper stratum some areas.

**Washplain – *Hakea preissii* over mixed chenopod shrubs**

22. WHP1 - Very sparse, low to dwarf, *Hakea preissii* shrubs sometimes with *Eremophila scoparia* over sparse miniature shrubs (often *Cratystylis subspinescens* and *Senna artemisioides* subsp. *x artemisioides*) over sparse to very sparse micro shrubs (often *Maireana triptera*, *Sclerolaena* spp. and *Atriplex* spp) on washplain.

**Washplain altered drainage – Mulga over mixed shrubs**

23. WADM1 - Very sparse, low *Acacia* shrub mallee (often *Acacia ?aneura*) over very sparse, dwarf *Acacia* shrubs (often *Acacia ?incurvaneura*) over sparse miniature to micro shrubs (often *Maireana triptera*, *Atriplex codonocarpa* and *Sclerolaena eurotioides*) on washplain affected by TSF diversion drainage.

**Drainage lines – Mulga or rarely *Eucalyptus* over mixed shrubs and grasses**

24. DLM1 - Sparse to very sparse, low *Acacia* trees and shrubs (often *Acacia burkittii*, *A. ?aneura*, *A. ?incurvaneura* and *A. ?aptaneura*) over mid dense to sparse, dwarf shrubs (often *Acacia burkittii*, *A. tetragonophylla* and *Eremophila scoparia*), over sparse to very sparse, miniature to micro shrubs (often *Ptilotus obovatus*, *Senna artemisioides* subsp. *x artemisioides* and *Maireana pyramidata*) along incised drainage lines.

25. DLM2 - Mid dense to sparse, medium to low *Acacia* trees and shrub mallee (often *Acacia craspedocarpa*, *A. craspedocarpa* (hybrid), *A. ?pteraneura* and *A. ?incurvaneura*) over sparse to very sparse, dwarf to miniature shrubs (often *Acacia tetragonophylla* and *Acacia craspedocarpa*) over mid dense to very sparse shrubs (often *Sida calyxhymenia*, *Ptilotus obovatus* and *Eremophila metallicorum*) and tussock grasses (often *Thyridolepis ?multiculmis* and *Tripogon loliiformis*) along unincised drainage lines.

26. DLM3 - Sparse to very sparse, low *Acacia* trees and shrub mallee (often *Acacia ?aneura*, *A. ?incurvaneura*, *A. ?pteraneura* and *A. ramulosa* var. *ramulosa*) over sparse to very sparse, dwarf to miniature shrubs (often *Senna artemisioides* subsp. *filifolia* and *Acacia burkittii*) over sparse to very sparse, miniature to micro shrubs (often *Maireana triptera*, *Sida calyxhymenia* and *Ptilotus obovatus*) over sparse to very sparse low tussock grasses (often *Enneapogon caerulescens* and *Aristida contorta*) along minor greenstone drainage lines.

**Broad drainage and flats – Very sparse to isolated Mulga and *Hakea preissii* over mixed often chenopod shrubs**

27. BDM1 - Very sparse to isolated, low to dwarf, *Acacia* (often *Acacia ?pteraneura*) and *Hakea preissii* trees and shrubs over sparse, dwarf to miniature shrubs (often *Maireana pyramidata*, *Lawrenciac squamata* and *Atriplex* spp.) along broad drainage lines and flats.

**Clearing Description**

Barrick (Granny Smith) Pty Limited (Barrick) has applied to clear 420 hectares within an application area of approximately 1,586.5 hectares (GIS Database). The application area is located approximately 20 kilometres south of Laverton (GIS Database).

The purpose of the application is to recommence mining at the Granny Smith, Goanna and Windich deposits (Granny Smith Open Pit Project). This will involve cutback of the Granny Smith, Goanna and Windich open pits; expansion of the waste dump, tailings storage facility (Cell 4), run of mine (ROM) pad, low grade stockpiles and accommodation village; diversion of Windich Creek; construction of a mine office complex, bulk explosives batching plant, heavy vehicle workshop complex, bulk fuel storage facility, temporary concrete batching plant and haul and access roads; relocation of power lines and pipelines and exploration core yard; and upgrade of the existing power station and Granny Smith mine processing plant (KLA, 2012b). Clearing will be by mechanical means. Vegetation will be stockpiled for use in rehabilitation.

**Vegetation Condition**

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

To

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

**Comment**

Vegetation condition was assessed during the October 2010, May 2011 and October/November 2012 flora and vegetation surveys. The overall condition of vegetation in the October 2010 and May 2011 surveys was determined to be 'good to very good' (KLA, 2012b).

The October 2010 flora survey was conducted following below average rainfall, therefore, few ephemerals were recorded and annuals were largely absent (KLA, 2011). However, there was unusually high February rainfall prior to the May 2011 survey which resulted in greater than usual autumn annual growth (KLA, 2012a). The October/November 2012 survey also recorded relatively few ephemerals and annuals due to low rainfall between April and November 2012 (PEK, 2012).

Localised flooding occurred during the Level 2 fauna survey and was identified as a limitation of the survey. In particular trapping and nocturnal searches were significantly disrupted for three days due to the flooding and lower ambient temperatures for the remaining survey period (Terrestrial Ecosystems, 2011b). DEC (2012) notes the extreme rainfall would appear to have severely affected the efficacy of the survey program and the survey should be deemed to have been compromised for both vertebrate and invertebrate fauna. However, according to Terrestrial Ecosystems (2011b), this is compensated for by the available regional fauna survey data. Terrestrial Ecosystems also conducted a subsequent Level 1 fauna survey over the majority of the application area not included in the Level 2 fauna survey.

According to KLA (2011), there has been extensive disturbance by grazing, mining and exploration activities and

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

Twenty seven vegetation communities were identified within the application area (KLA, 2012b; PEK, 2012). KLA (2012b) identified 13 vegetation communities associated with flats, minor and major drainage lines, lower slopes, low rise, rocky ridges with banded ironstone formation (BIF), floodplain and mid to upper hillsides. PEK (2012) identified 14 vegetation groups associated with banded ironstone hill summit, banded ironstone hill slopes, greenstone rises and hill slopes, washplains, drainage lines and broad drainage and flats. Barrick (2013) describes the areas of BIF within the application area as ironstone ridges. The application area is located adjacent to the existing Granny Smith mine site and has been disturbed by grazing, mining and exploration activities (KLA, 2012b). Overall, vegetation condition was found to be in a 'good' to 'very good' condition (KLA, 2012b).

No Threatened Ecological Communities have been recorded within the application area (GIS Database; KLA, 2012b). According to available databases, a small portion of the application area (approximately 55 hectares) intersects the buffer of the Priority 3 Mount Jumbo Range Vegetation Complex Priority Ecological Community (PEC) (GIS Database). According to DEC (2012), there is no mapping or detailed information available for the vegetation units that make up the Mt Jumbo BIF. Although areas of BIF were identified during the vegetation surveys, none of the vegetation communities associated with these were considered to be PECs (KLA, 2012b; PEK, 2012).

According to DEC (2012), BIF is frequently associated with highly restricted vegetation units and sometimes restricted flora species. PEK (2012) considered the banded ironstone hill summit and banded ironstone hill slopes vegetation groups to be broadly consistent with the 'greenstone hill acacia shrublands' and 'stony ironstone mulga shrublands' site types described in Pringle et al. (1994). According to PEK (2012), both these site types are apparently relatively common in various land systems including the Bevon, Brooking, Laverton, Leonora and Teutonic land systems. The Bevon, Brooking and Laverton land systems occur within the application area, however, the Brooking and Laverton land systems comprise only a small portion of the application area (GIS Database). The Bevon land system is described as irregular low ironstone hills (Pringle et al., 1994) and is mapped over the majority of the ironstone ridges within the application area. Based on information from regional vegetation statistics and Pringle et al. (1994), PEK (2012) considered the vegetation groups to be generally common throughout the eastern goldfields region.

Further to the information provided in the PEK survey, Barrick (2013) has undertaken discussions with the survey botanists regarding the uniqueness of the vegetation associated with the ironstone ridges. Barrick (2013) advises that there is no spatial difference between flora assemblages of the top, slope and scree of the ironstone ridge directly west of the tailings storage facility (TSF) and that the landscape, rock type and vegetation across these portions of the ridge are similar. Barrick (2013) adds that inspection of the other ironstone ridges in the application area reflect this same lithology and flora assemblage. Barrick (2013) will, where practicable, minimise impacts to the ironstone ridges. However, the western edge of the ironstone ridge directly west of the TSF will be impacted as the ridge will form part of the TSF embankment lift. Other areas may also be impacted as some infrastructure such as the waste dump cannot be overly changed or modified due to engineering and footprint requirements. Based on the above, it is unlikely vegetation within the application area comprises a higher level of biodiversity than surrounding vegetation.

The October 2010 survey recorded a total of 145 species from 74 genera and 39 families (KLA, 2011). The May 2011 survey recorded a total of 201 species from 101 genera and 43 families (KLA, 2012a). The October/November 2012 survey recorded a total of 160 species from 63 genera and 30 families from quadrat sampling and a further 20 species from 13 genera and 9 families from opportunistic sampling (PEK, 2012).

Eighteen introduced species were recorded in and around the survey area, the majority of which were associated with drainage lines (KLA, 2011; PEK, 2012). According to KLA (2011) and PEK (2012), none of these species are 'Declared Plants' for the Laverton area under the *Agriculture and Related Resources Act 1976*. Potential impacts from weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

No Threatened Flora species have been recorded within the survey area (GIS Database; KLA, 2012b; PEK, 2012). One Priority 3 flora species, *Phyllanthus baeckeoides*, was recorded within the application area. The species was recorded from one location on a BIF ridge immediately west of the existing TSF with an estimated population of 125 plants (KLA, 2012b). This population will require removal to expand the existing TSF. In order to determine the local and regional impact on this species, a targeted survey within 50 kilometres of the application area was conducted in August 2012. According to KLA (2012b), a search of local and regional BIF ridges resulted in a population being identified on a BIF ridge approximately 25 km to the east with over 5,000 individuals estimated within the population. Based on this estimate, the population within the application area represents less than 2.5% of the regional population. DEC (2012) has advised the population within the application area has some significance as it is a discrete occurrence, however, this population is within the known range of the species and two populations occur some 20 kilometres away. Based on this, DEC (2012) considered it unlikely the population has high significance for the regional conservation of this species as it does not extend the range of the species, nor is it likely to be of unique genetic value.

The October 2010 and May 2011 flora surveys also recorded four species with a range extension (KLA, 2012b). These are *Dichopogon fimbriatus*, *Euphorbia boophthona*, *Cleome viscosa* and *Eriachne aristidea*. KLA (2012a) noted that although of conservation significance, these were relatively widespread within the areas inspected. With the exception of *Eriachne aristidea* these were mostly recorded on mulga flats. *Eriachne aristidea* was mostly recorded adjacent to drainage lines (KLA, 2012b). These habitats are common in the local area.

DEC (2012) advised that the collections of *Cleome viscosa* and *Eriachne aristidea* represent significant range extensions and that the collection of *Dichopogon fimbriatus* may represent a significant range extension. According to DEC (2012), *Cleome viscosa* and *Eriachne aristidea* are widespread to the north of the application area, however, based on their habitat type and wide distribution it is not surprising these species are located in the area. These two species were recorded both within and outside of the proposed disturbance footprint and application area (KLA, 2011; KLA, 2012a). *Dichopogon fimbriatus* is well outside the species known range and the occurrence in the application area may be a new *Dichopogon* species found in more arid areas (DEC, 2012). This species was recorded at nine locations with a maximum of six within the proposed disturbance footprint and one located outside the application area (KLA, 2011). Barrick (2013) has advised that all specimens have been vouched with the Western Australian Herbarium. Given suitable habitat is common in the local area these species are likely to occur more widely outside the application area. The proposed clearing is therefore unlikely to have a significant impact on these three species (DEC, 2012). DEC (2012) notes that *Euphorbia boophthona* may be a range extension, however, the occurrence is located on the southern side of its range and is not considered a significant range extension.

A Level 2 fauna survey over most of the application area recorded a total of 97 fauna species comprising 21 reptile, four amphibian, 60 bird and 12 mammal species (Terrestrial Ecosystems, 2011b). A Level 1 fauna survey has also been conducted over part of the application area (Terrestrial Ecosystems, 2012). Four broad habitat types were identified in the combined survey areas. According to KLA (2012b), the application area comprises open mulga woodlands typical of the Goldfields with no outstanding or unique features or habitats, and the vertebrate fauna assemblage captured is typical of this location.

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

**Methodology** Barrick (2013)  
DEC (2012)  
KLA (2011)  
KLA (2012a)  
KLA (2012b)  
PEK (2012)  
Pringle et al. (1994)  
Terrestrial Ecosystems (2011b)  
Terrestrial Ecosystems (2012)  
GIS Database:  
- Rangeland Land System Mapping  
- Threatened and Priority Flora  
- Threatened Ecological Sites Buffered

**(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.**

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

Two fauna surveys have been conducted in the application area. A Level 2 fauna risk assessment was conducted over most of the application area by Terrestrial Ecosystems between 6 and 12 January 2011 (Terrestrial Ecosystems, 2011b). A subsequent Level 1 fauna survey covered the majority of the application area not included in the Level 2 fauna survey. This was undertaken by Terrestrial Ecosystems between 15 and 17 October 2012 (Terrestrial Ecosystems, 2012). A preliminary investigation of short range endemics (SREs) was also undertaken as part of the Level 2 fauna survey (Terrestrial Ecosystems, 2011a).

Four broad fauna habitat types were identified during the fauna surveys. These include varying densities of open mulga woodland over low shrubs and with sparse ground cover; sparsely distributed trees over low shrubs on a stony substrate; ephemeral creeks and drainage lines that generally support a higher density of fringing vegetation; and highly disturbed areas (Terrestrial Ecosystems, 2011b; Terrestrial Ecosystems, 2012). Terrestrial Ecosystems (2011b, 2012) found vegetation to be sparse with a lack of low shrubs, ground cover, sandy substrate and leaf litter. According to Terrestrial Ecosystems (2012), the fauna habitat present in the project area is similar to that in the many square kilometres of adjacent habitat.

A total of 97 fauna species comprising 21 reptile, four amphibian, 60 bird and 12 mammal species were recorded during the Level 2 fauna survey (Terrestrial Ecosystems, 2011b). Terrestrial Ecosystems (2011b) noted the trapped fauna assemblage was typical of what would be expected in an open mulga woodland in the Goldfields, with the exception of the conservation significant species the Long-tailed Dunnart (*Sminthopsis longicaudata*) (Priority 4) and the high number of Kultarr (*Antechinomys laniger*) captured (17 captured compared to an expected number of one or two individuals). The reason for the high number of Kultarr is not known, however, this species is widespread in Western Australia and given habitat in the application area is

similar to surrounding areas it is likely this species occurs in similar abundance in the surrounding area. No Malleefowl (*Leipoa ocellata*) (Vulnerable; Schedule 1) nests or tracks were observed and given the openness of the vegetation and lack of suitable habitat, Terrestrial Ecosystems (2011b) considered it unlikely this species occurs in the application area.

Three Long-tailed Dunnarts were captured within the application area in open mulga woodland during the Level 2 fauna survey. This is considered unusual as this species has been captured in rugged rocky landscapes that support a low open woodland or shrubland of *Acacias* (especially mulga) with an understory of spinifex hummocks, and (occasionally) also perennial grasses and cassias (Terrestrial Ecosystems, 2011b). The application area is also located at the southern extent of its range, although, it has been sighted further south with the closest record approximately 55 kilometres to the south east (DEC, 2012). A targeted survey was subsequently undertaken between 5 and 16 April 2011 to determine whether this species is relatively abundant over a large area or the project area supports a small isolated population. One individual was captured outside the application area. According to Terrestrial Ecosystems (2011c), there was no obvious difference or attribute associated with the habitat in which these dunnarts were caught that would differentiate these areas from other areas within and beyond the proposed impact area. The capture of four individuals in a variety of locations indicates that there is a low density population in the general area. Their presence in flat, open mulga woodland with a limited understory of vegetation would indicate how little is known about this species, however, the recorded locations and the available literature suggests that this species is widely distributed and in low abundance across much of the arid and semi-arid areas of Western Australia (Terrestrial Ecosystems, 2011c). Given the availability of similar fauna habitat in surrounding areas, and the high probability that Long-tailed Dunnarts found in the survey areas are in similar abundance in the adjacent areas, it is unlikely that the proposed clearing will significantly impact on this species (Terrestrial Ecosystems, 2011c). This is consistent with DEC advice which states 'while of some local relevance, the impact on the species will not be significant to its conservation' (DEC, 2012).

The application area is also likely to support the Australian Bustard, Rainbow Bee-eater and several other conservation significant species (Terrestrial Ecosystems, 2011b). However, based on factors such as species mobility, core or preferred habitat requirements and the availability of similar habitat in surrounding areas, these species are unlikely to be significantly impacted by the proposed clearing.

Three potential SRE species were recorded within the application area in open mulga woodland with little understory of shrubs or leaf litter (Terrestrial Ecosystems, 2011a). This included two spider species (Aganippe 'MYG220' and Kwonkan 'MYG219') and one scorpion species (Uradacus 'GD'). These were sent to the Western Australian Museum for identification and found to be the only known specimens of these species. This is likely due to the fact that almost all of the adjacent area has not been searched or surveyed for SRE species (Terrestrial Ecosystems, 2011a). Barrick (2013) has advised that the locations of these species cannot be avoided and that relocation is not feasible. Where potential SRE species are only known from proposed impact areas, the Environmental Protection Authority (EPA) recommends a risk based approach and the use of habitat as a surrogate for inferring distributional boundaries (EPA, 2009). The EPA (2009) notes that if similar vegetation units are contiguous and broadly distributed outside of the proposed impact area then the likelihood of SREs being confined to the impact area is reduced. According to Terrestrial Ecosystems (2011a), the adjacent area of mulga woodland is extensive and it is highly probable that these species are present in the adjacent areas in similar densities to that in the survey area. Based on this it is unlikely the species are restricted to the proposed disturbance footprint and that the application area comprises significant habitat for these species.

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

**Methodology** Barrick (2013)  
DEC (2012)  
EPA (2009)  
Terrestrial Ecosystems (2011a)  
Terrestrial Ecosystems (2011b)  
Terrestrial Ecosystems (2011c)  
Terrestrial Ecosystems (2012)

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

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

According to available databases, there are no records of Threatened Flora within the application area (GIS Database). No Threatened Flora was recorded during the October 2010, May 2011 and October/November 2012 vegetation surveys (KLA, 2012b; PEK, 2012).

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

**Methodology** KLA (2012b)  
PEK (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 230 kilometres west, north west of the application area (GIS Database).

No TECs were recorded during the October 2010, May 2011 and October/November 2012 vegetation surveys (KLA, 2012b; PEK, 2012).

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

**Methodology** KLA (2012b)  
PEK (2012)  
GIS Database:  
- Threatened Ecological Sites Buffered

**(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.**

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

The application area falls within the Murchison Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 99.7% of the pre-European vegetation remains (see table) (GIS Database, Government of Western Australia, 2013).

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

18: Low woodland; mulga (*Acacia aneura*).

Approximately 99.8% of Beard vegetation association 18 remains at a state level and approximately 99.7% remains at a bioregional level (Government of Western Australia, 2013). Therefore the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared.

|                              | Pre-European area (ha)* | Current extent (ha)* | Remaining %* | Conservation Status** | Pre-European % in DEC Managed Lands |
|------------------------------|-------------------------|----------------------|--------------|-----------------------|-------------------------------------|
| IBRA Bioregion – Murchison   | 28,120,587              | 28,044,823           | ~99.73       | Least Concern         | ~7.7                                |
| Beard veg assoc. – State     |                         |                      |              |                       |                                     |
| 18                           | 19,892,305              | 19,843,727           | ~99.76       | Least Concern         | ~6.3                                |
| Beard veg assoc. – Bioregion |                         |                      |              |                       |                                     |
| 18                           | 12,403,172              | 12,363,252           | ~99.68       | Least Concern         | ~5.0                                |

\* Government of Western Australia (2013)

\*\* Department of Natural Resources and Environment (2002)

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

**Methodology** Department of Natural Resources and Environment (2002)  
Government of Western Australia (2013)  
GIS Database:  
- IBRA WA (Regions – Sub Regions)  
- Pre-European Vegetation

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

**Comments Proposal is at variance to this Principle**

Several minor, non-perennial watercourses intersect the application area (GIS Database). It is expected that these would only flow after heavy seasonal rainfall (KLA, 2012b). Available databases show these flow towards Lake Carey, a large salt playa located approximately two kilometres to the south west of the application area (GIS Database).

Vegetation mapping within the application area indicates eight vegetation communities grow in association with drainage lines. The October 2010/May 2011 Level 2 flora and vegetation surveys identified mulga forest

growing in association with major drainage lines, mulga woodland/shrubland growing in association with minor drainage lines and mulga shrubland growing in association with major and minor drainage lines (KLA, 2012a). The October/November 2012 Level 2 flora and vegetation survey identified four vegetation groups associated with incised drainage lines, unincised drainage lines, minor greenstone drainage lines and broad drainage lines and flats (PEK, 2012).

One of the major drainage lines is known as Windich Creek, an ephemeral drainage line located along the eastern boundary of the existing mine site (KLA, 2012b). This creek is relatively unconfined, with broad channels approximately 30 metres wide and two metres deep. According to KLA (2012b), the natural watercourse of Windich Creek has been altered by the existing Granny Smith mine site, with flows now diverted around the mine site. It has also been modified by allowing partial flow from the creek into Windich pit for fresh water harvesting from 1999 to 2011 (KLA, 2012b).

The Granny Smith Open Pit Project will involve clearing of vegetation growing along Windich Creek to allow for the expansion of the waste rock dump. This expansion will involve diversion of the creek around the proposed waste dump. The proposed diversion includes excavation of a short stretch of diverted channel on the northeast side of the proposed waste dump (KLA, 2012b). An approximate 1.5 kilometre long diversion bund will also be constructed to the east of the diverted channel to deflect the flood footprint towards the existing channel downstream of the site (KLA, 2012b).

Potential impacts to riparian vegetation and watercourses within the application area may be minimised by the implementation of a watercourse management condition.

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

**Methodology** KLA (2012a)  
KLA (2012b)  
PEK (2012)  
GIS Database:  
- Geodata, Lakes  
- Hydrography, linear

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

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

The application area has been mapped as occurring on the following land systems (GIS Database; Pringle et al., 1994):

- Bevon land system: Irregular low ironstone hills with stony lower slopes supporting mulga shrublands. Minor areas with texture contrast soils on breakaway footslopes and narrow drainage tracts are susceptible to soil erosion.
- Brooking land system: Prominent ridges of banded iron formation, supporting mulga shrublands; occasional minor halophytic communities in the south east. Disturbance or removal of stone mantles may initiate soil erosion.
- Jundee land system: Hardpan plains with ironstone gravel mantles, supporting mulga shrublands. Gravel mantles provide effective protection against soil erosion.
- Laverton land system: Greenstone hills and ridges with acacia shrublands. Stone mantles protect most of this land system against soil erosion. Narrow drainage tracts are mildly susceptible to water erosion.
- Monitor land system: Distributary alluvial fans and wash plains, supporting mulga- chenopod shrublands. Alluvial fans, drainage tracts and hardpan plains are highly susceptible to soil erosion.
- Steer land system: Gravelly alluvial plains with halophytic shrublands. Unprotected areas on alluvial plains and drainage floors are susceptible to water erosion.
- Wilson land system: Large creeks with extensive distributary fans, supporting mulga and halophytic shrublands. The drainage tracts, alluvial fans and hardpan plains are extensively eroded.

The descriptions above indicate some areas are susceptible to soil erosion, particularly where protective mantles and drainage zones and alluvial fans are disturbed or cleared. Potential impacts from erosion may be minimised by the implementation of a watercourse management condition and a staged clearing condition.

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

**Methodology** Pringle et al. (1994)  
GIS Database:  
- Rangeland Land System Mapping

**(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.**

**Comments 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 (DEC) managed lands (GIS Database). The nearest conservation reserve is an un-named nature



reserve located approximately 110 kilometres south west of the application area (GIS Database). Based on the distance between the application area and the un-named 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 are several minor, non-perennial watercourses that intersect the application area (GIS Database). One of these is known as Windich Creek, described as a major drainage line during the October 2010 and May 2011 flora and vegetation surveys (KLA, 2011; KLA, 2012a). It is expected that these watercourses would only flow after heavy seasonal rainfall (KLA, 2012b). The clearing of vegetation associated with these drainage lines is likely to result in localised erosion and sedimentation, particularly following heavy seasonal rainfall. Furthermore, the proposed diversion of Windich Creek is likely to alter surface water flows and may therefore impact on surface water quality. Potential impacts to the surface water quality within Windich Creek and other drainage lines may be minimised by the implementation of a watercourse management condition. The implementation of a staged clearing condition may also help minimise impacts from erosion within the application area.

The application area is located within a region described as semi-arid (KLA, 2012b). The annual average rainfall for Laverton (approximately 20 kilometres north of the application area) is 233.6 millimetres and the average annual evaporation rate for the application area is between 3,200 and 3,400 millimetres (BoM, 2013; GIS Database). Based on these averages, any surface water within the application area is likely to only remain for short periods following significant rainfall events.

Groundwater occurs in fractured rock aquifers in the vicinity of the existing open pits (KLA, 2012b). According to KLA (2012b), current groundwater levels around the abandoned pits are influenced by infiltration of hypersaline groundwater from the pit lakes and have recovered to pre-mining groundwater levels of about 400 to 408 metres reduced level (RL). Given the influence of the pit lakes and depth to groundwater, the proposed clearing is not likely to cause salinity levels within the application area to alter.

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

**Methodology** BoM (2013)  
KLA (2011)  
KLA (2012a)  
KLA (2012b)  
GIS Database:  
- Evaporation Isopleths  
- 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 situated within the Lake Carey catchment which covers a total area of approximately 11,378,213 hectares (GIS Database). Vegetation statistics indicate that approximately 100% of the pre-European vegetation extent remains within the Murchison Interim Biogeographic Regionalisation for Australia (IBRA) region (Government of Western Australia, 2013). The proposed clearing of up to 420 hectares of native vegetation constitutes only a very small proportion of the size of this catchment which remains largely uncleared (GIS Database; Government of Western Australia, 2013). Vegetation is considered an important ground cover as it slows surface water flows, and enables rainwater to infiltrate the soil to depths where it can be utilised by vegetation. Given that the Murchison, as well as the surrounding regions, remain largely uncleared (Government of Western Australia, 2013), the proposed clearing is not likely to impact on the drainage characteristics of the Lake Carey catchment area. The proposed clearing is therefore unlikely to increase the potential of flooding on a catchment scale.

Laverton climate statistics indicate that rainfall in the region is sporadic and is not confined to certain seasons or months (BoM, 2013). The application area is not located in a region that is subject to regular or significant rainfall events. Given the low rainfall to high evaporation ratio of the application area and considering the infrequency of significant rainfall events in the region (BoM, 2013; GIS Database), it would be expected that any normal rainfall would quickly evaporate or infiltrate the soil. The proposed clearing of 420 hectares within an application area of approximately 1,586.5 hectares is unlikely to cause or exacerbate flooding during normal rainfall events. Any localised flooding is only likely to occur as a result of any infrequent significant rainfall

events. However, the generally flat topography that characterises the majority of the application area and surrounding landscape may assist to evenly diffuse any surface water that may result following significant rainfall events.

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

**Methodology** BoM (2013)  
Government of Western Australia (2013)  
GIS Database:  
- Evaporation Isopleths  
- Hydrographic Catchments – Catchments  
- IBRA WA (Regions – Sub Regions)

#### 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 three 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.

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 12 November 2012 by the Department of Mines and Petroleum inviting submissions from the public. There were no submissions received.

**Methodology** 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

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- EPA (2009) Guidance for the Assessment of Environmental Factors (in accordance with the Environmental Protection Act 1986) Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia No. 20. Environmental Protection Authority May 2009.
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- KLA (2011) Barrick Asia Pacific Granny Deeps Project Flora and Vegetation Survey Spring 2010. Unpublished report prepared by Keith Lindbeck and Associates Environmental Management Consultants for Barrick Australia Pacific dated March 2011.
- KLA (2012a) Barrick (Granny Smith) Pty Ltd and Barrick (GSM) Ltd Granny Smith Open Pit Project Flora and Vegetation Survey Addendum 1 Autumn 2011 Survey. Unpublished report prepared by Keith Lindbeck and Associates Environmental Management Consultants for Barrick Australia Pacific dated April 2012.
- KLA (2012b) Barrick (Granny Smith) Pty Limited and Barrick (GSM) Ltd Granny Smith Open Pit Project Supporting Document for Clearing Permit Application L39/31, L38/96, L38/144, L38/146, L38/147, L38/209, M38/18, M38/161, M38/162, M38/191, M38/205, M38/253, M38/389, M38/440, M38/525, M38/532 and M38/1145. Unpublished report prepared by Keith Lindbeck and Associates Environmental Management Consultants for Barrick (Granny Smith) Pty Limited and Barrick (GSM) Ltd dated October 2012.
- PEK (2012) Barrick (Granny Smith) Pty Limited and Barrick (GSM) Ltd Granny Smith Gold Mine Level 2 Vegetation and Flora Survey. Unpublished report prepared by PEK enviro Environmental Consulting Services for Keith Lindbeck and Associates dated December 2012.

- Pringle, H.J.R, Van Vreeswyk, A.M.E. and Gilligan, S.A. (1994) An inventory and condition survey of rangelands in the north-eastern Goldfields, Western Australia, Technical Bulletin No. 87., Department of Agriculture, South Perth, Western Australia.
- Terrestrial Ecosystems (2011a) Investigation of Short-Range Endemic Invertebrates for the Granny Deeps Project Area. Unpublished report prepared by Terrestrial Ecosystems for Barrick Gold of Australia dated March 2011.
- Terrestrial Ecosystems (2011b) Level 2 Fauna Risk Assessment for the Granny Deeps Project Area. Unpublished report prepared by Terrestrial Ecosystems for Barrick Gold Corporation dated May 2011.
- Terrestrial Ecosystems (2011c) Targeted Survey for Long-tailed Dunnarts for the Granny Deeps Project Area. Unpublished report prepared by Terrestrial Ecosystems for Barrick Gold of Australia dated June 2011.
- Terrestrial Ecosystems (2012) Level 1 Vertebrate Fauna Risk Assessment for the Proposed Mining Areas around the Granny Open Pit Project Area. Unpublished report prepared by Terrestrial Ecosystems for Barrick (Australia Pacific) Ltd dated December 2012.

## 5. Glossary

### Acronyms:

|                 |   |
|-----------------|---|
| <b>BoM</b>      | Bureau of Meteorology, Australian Government  |
| <b>CALM</b>     | Department of Conservation and Land Management (now DEC), Western Australia   |
| <b>DAFWA</b>    | Department of Agriculture and Food, Western Australia   |
| <b>DEC</b>      | Department of Environment and Conservation, Western Australia   |
| <b>DEH</b>      | Department of Environment and Heritage (federal based in Canberra) previously Environment Australia                       |
| <b>DEP</b>      | Department of Environment Protection (now DEC), Western Australia   |
| <b>DIA</b>      | Department of Indigenous Affairs  |
| <b>DLI</b>      | Department of Land Information, Western Australia   |
| <b>DMP</b>      | Department of Mines and Petroleum, Western Australia  |
| <b>DoE</b>      | Department of Environment (now DEC), Western Australia  |
| <b>DoIR</b>     | Department of Industry and Resources (now DMP), Western Australia   |
| <b>DOLA</b>     | Department of Land Administration, Western Australia  |
| <b>DoW</b>      | Department of Water   |
| <b>EP Act</b>   | Environmental Protection Act 1986, Western Australia  |
| <b>EPBC Act</b> | Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)   |
| <b>GIS</b>      | Geographical Information System   |
| <b>ha</b>       | Hectare (10,000 square metres)  |
| <b>IBRA</b>     | Interim Biogeographic Regionalisation for Australia   |
| <b>IUCN</b>     | International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union |
| <b>RIWI Act</b> | Rights in Water and Irrigation Act 1914, Western Australia  |
| <b>s.17</b>     | Section 17 of the Environment Protection Act 1986, Western Australia  |
| <b>TEC</b>      | 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.