Government of **Western Australia**
Department of **Mines and Petroleum**

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5675/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Phoenix Gold Limited**

1.3. Property details

Property: Mining Lease 16/22
Mining Lease 16/24
Mining Lease 16/40
Mining Lease 16/140
Mining Lease 16/152
Mining Lease 16/179
Mining Lease 16/189
Mining Lease 16/195
Mining Lease 16/198
Mining Lease 16/526
General Purpose Lease 16/18
Local Government Area: Shire of Coolgardie
Colloquial name: Castle Hill

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 22 August 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):

468: Medium woodland; salmon gum & goldfields blackbutt.

A flora and vegetation survey was undertaken over the majority of the application area by Botanica Consulting (Botanica) on 6 and 7 November 2012 (Botanica, 2013). A portion in the south of the application area (approximately 40 hectares) was not covered by Botanica but has been covered by a previous flora survey by Jims Seeds, Weeds and Trees in December 2004. Botanica identified the following eight vegetation communities within the application area:

1. Scrub of *Acacia* sp. narrow phyllode over low scrub of *Eremophila alternifolia*.

2. Low woodland of *E. campaspe* and *E. salmonophloia* over low scrub of *Atriplex nummularia, Eremophila dempsteri* and dwarf scrub of *Atriplex vesicaria*.

3. Open low woodland of *E. campaspe* over low scrub of *Eremophila demspteri* and dwarf scrub of *Atriplex vesicaria*.

4. Low woodland of *E. clelandii* over scrub of *Acacia* sp. narrow phyllode and low scrub of *Acacia erinacea, Atriplex vesicaria* and *Eremophila pulstata*.

5. Low woodland of *E. campaspe* over low scrub of *Eremophila scoparia* and dwarf scrub of *Atriplex vesicaria*.

6. Very open shrub mallee of *E. griffithsii* over low scrub of *Dodonaea lobulata* and *Eremophila scoparia* over dwarf scrub of *Scaevola spinescens*.

7. Scrub of *Allocasuarina acutivalvis/Casuarina pauper* over low scrub of *Philtotheca brucei* and dwarf scrub of *Prostanthera grylloana*.

8. Low woodland of *E. ravida* over low scrub of *Atriplex nummularia*/*Eremophila scoparia* over dwarf scrub of *Atriplex vesicaria*.

Jims Seeds, Weeds and Trees (2004) identified the following three vegetation communities in the portion of the application area not covered by Botanica (2013):

9. Granite Sand Flats: Granite sand flats consist of flat stretching plains of coarse red granite sand. The vegetation is mildly dense and consists of ground hugging shrubs as well as taxa exceeding 2 metres in height including *Acacia acuminata* and *Allocasuarina pauper*. *Acacia acuminata* was the dominant species. Understorey shrubs included: *Dodonea lobulata*, *Eremophila willsii*, *Maireana sedifolia*, *M. triptera* and *Olearia muelleri*.

10. Basalt Hills: This vegetation unit comprised of hills, with an exposed surface of basalt rock, standing up to 30 metres in elevation with rock face inclines ranging from 5 degrees to 30 degrees. Many Eucalypt trees were dominant within this unit including *E. Campaspe*, *E. celastroides*, *E. clelandii*, *E. oleosa*, *E. salmonophloia* and *E. transcontinentalis*. Saltbush and bluebush species including *Atriplex nummularia*, and *Maireana sedifolia*, were among the understorey taxa.

11. Salmon Gum Broad Valleys: The dominant species within this unit was *Eucalyptus salmonophloia*. Understorey plants included *Atriplex nummularia*, *Eremophila scoparia*, *Maireana sedifolia* and *Ptilotus obovatus*. Larger shrubs over two metres in height included *Acacia acuminata*, *A. tetragonophylla* and *Allocasuarina pauper*.

Clearing Description

Phoenix Gold Limited (Phoenix) has applied to clear 379.5 hectares within an application area of approximately 586 hectares (GIS Database). The application area is located approximately 35 kilometres north, north west of Coolgardie (GIS Database).

The purpose of the application is to develop the Castle Hill area as part of the Castle Hill Project (Stage 1). The proposed clearing will be undertaken for an open pit, integrated waste landform (a tailings storage facility encased in waste rock), mill, run of mine pad, administration infrastructure, laydown area, workshop, pond, waste rock landform, heap leach, haul roads and low grade stockpiles and landfill facility.

Vegetation Condition

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

To

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

Comment

Vegetation condition was determined by Botanica (2013). A review of aerial imagery indicates vegetation in the portion of the application area not covered by Botanica (2013) is likely to be in a similar condition.

3. Assessment of application against clearing principles

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is located within the Eastern Goldfield subregion of the Coolgardie Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). This subregion is characterised by gently undulating plains interrupted in the west with low hills and a series of large playa lakes in the western half (CALM, 2002). The vegetation is dominated by Mallees, *Acacia* thickets and shrub-heaths on sandplains, diverse Eucalyptus woodlands occur around salt lakes, on ranges, and in valleys, and dwarf shrublands of samphire around salt lakes (CALM, 2002).

Eight vegetation communities were identified by Botanica in the application area (Botanica, 2013). A small portion of the application area was not covered by Botanica's survey, however, this was surveyed by Jims Seeds, Weeds and Trees in December 2004. This survey identified three vegetation communities in the portion of the application area not surveyed by Botanica (Jims Seeds, Weeds and Trees, 2004). Vegetation was generally found to be in a 'very good' condition (Botanica, 2013). Historical mining and prospecting disturbance was observed with approximately 24 hectares previously cleared for mining (Botanica, 2013).

A total of 84 flora species (including sub-species and variants) from 45 genera and 23 families were recorded by Botanica (2013) (survey area is approximately 767.5 hectares). According to Botanica (2013), the survey recorded diverse flora that are not restricted to the survey area and occur across this and other regions. One weed species, Maltese Cockspur *(Centaurea melitensis*) was identified within the survey area. Jims Seeds, Weeds and Trees (2004) recorded 83 flora species from 42 genera and 29 families in the survey area. This included the five weed species Onion Weed (*Asphodelus fistulosus*), Hyptis (*Hyptis suaveolens*), Ward's Weed (*Carrichtera annua*), *Anagallis arvensis* and Thorny Solanum (*Solanum hoplopetalum*). Potential impacts from weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

Available databases show no known Threatened or Priority Flora or Priority Ecological Communities (PECs) or Threatened Ecological Communities (TECs) have been recorded within the application area (GIS Database). No Threatened or Priority Flora or PECs or TECs were recorded by Botanica (2013). No Threatened or Priority Flora were recorded by Jims Seeds, Weeds and Trees (2004).

A Level 1 vertebrate fauna survey by Greg Harewood (Harewood) on 7 January 2013 identified a total of 22 native fauna species and one introduced species (Harewood, 2013b). According to Harewood (2013b), the

fauna habitats present are common and widespread in the wider area and the faunal assemblage identified as potentially present is unlikely to be different to that found in similar habitats elsewhere in the region. Harewood (2013b) adds that the survey area does not have what is considered to be a high level of biological diversity.

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

Methodology

Botanica (2013)
CALM (2002)
Harewood (2013b)
Jims Seeds, Weeds and Trees (2004)
GIS Database:
- IBRA WA (Regions – Sub Regions)
- 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

A Level 1 vertebrate fauna survey was undertaken over the majority of the application area by Greg Harewood (Harewood). This included a desktop study and a site reconnaissance survey on 7 January 2013 (Harewood, 2013b). Broad fauna habitat types were based on vegetation communities identified during Botanica's flora and vegetation survey. According to Harewood (2013b), the fauna habitats present are common and widespread in the wider area and are therefore not of high ecological significance. The potential faunal assemblage identified is also considered unlikely to be different to that found in similar habitats elsewhere in the region (Harewood, 2013b).

Opportunistic observations made during the site reconnaissance survey recorded a total of 22 native fauna species and one introduced species (Harewood, 2013b). One conservation significant species, the Rainbow Bee-eater (*Merops ornatus*) (Marine; Migratory under *EPBC Act*; Schedule 3), was observed. This species is unlikely to be significantly impacted by the proposed clearing as it is highly mobile and able to use a range of habitat types. Harewood (2013b) also considered the Peregrine Falcon (*Falco peregrinus*) (Vulnerable; Schedule 4), Australian Bustard (*Ardeotis australis*) (Priority 4) and Central Long-eared Bat (*Nyctophilus major*) as possibly utilising the application area. These species are relatively wide ranging and/or will persist in adjoining unaffected areas (Harewood, 2013b).

A search of the online website Naturemap also shows Malleefowl (*Leipoa ocellata*) (Vulnerable; Schedule 1) has been recorded within seven kilometres of the approximate centre point of the application area (DEC, 2013). This occurrence was recorded on 10 November 2009 in tall shrubland. The Malleefowl occurs in semi-arid and arid zones of temperate Australia, where it occupies shrublands and low woodlands that are dominated by mallee vegetation (DSEWPAC, 2013). Harewood (2013b) states this species may occur occasionally as transient individuals but does not list it as a potential species within the survey area. However, given the Malleefowl has been recorded within seven kilometres, there is the possibility that the application area supports the Malleefowl. Potential impacts to the Malleefowl as a result of the proposed clearing may be minimised by the implementation of a fauna management condition.

A desktop invertebrate assessment was also conducted by Harewood over the majority of the application area (Harewood, 2013a). The likelihood of short range endemics (SRE) was assessed as a low probability based on the lack of previous records in the area and the apparent lack of typical habitats that often contain SRE species (Harewood, 2013a). The survey area also contains no obvious species isolators and lacks geological units such as calcrete, alluvium (very limited in extent, likely to be thin) and banded ironstone that have a high probability of harbouring SRE taxa in the Goldfields region. Harewood (2013a) also noted that similar terrestrial habitats are widespread in the area so if present it is unlikely that any species are restricted to the survey area.

Stygofauna and troglofauna were also assessed as having a low probability of occurrence within the survey area. The geology is not considered favourable and there are no obvious restrictions to dispersal (Harewood, 2013a). Harewood (2013a) adds that subterranean geological units are widespread in the area.

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

Methodology

DEC (2013)
DSEWPAC (2013)
Harewood (2013a)
Harewood (2013b)

(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 Threatened Flora species within the application area (GIS Database).

Flora and vegetation surveys by Botanica (2013) and Jims Seeds, Weeds and Trees (2004) did not identify any Threatened Flora species within the survey area.

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

Methodology Botanica (2013)
Jims Seeds, Weeds and Trees (2004)
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 290 kilometres north, north west of the application area (GIS Database).

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

Methodology 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 is located within the Coolgardie Interim Biogeographical Regionalisation for Australia (IBRA) bioregion (GIS Database). Approximately 97.96% of the pre-European vegetation remains within the Coolgardie bioregion (Government of Western Australia, 2013).

The vegetation of the application area has been mapped as Beard vegetation association 468 (GIS Database). Over 98% of this Beard vegetation association remains at both a state and 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. A review of aerial imagery also shows that vegetation within the application area is not a remnant within the local area (GIS Database).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Extent in DEC Managed Lands %*
IBRA Bioregion - Coolgardie	12,912,204	12,648,491	~97.96	Least Concern	~15.84
Beard vegetation associations - State					
468	592,022	583,903	~98.63	Least Concern	~23.15
Beard vegetation associations - Bioregion					
468	583,358	575,361	~98.63	Least Concern	~22.72

* 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)
- Kalgoorlie 50cm Orthomosaic - Landgate 2006
- Pre-European Vegetation

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

Comments **Proposal is at variance to this Principle**
There are no permanent wetlands or watercourses within the application area, however, there are several minor, non perennial watercourses that cross into the application area (GIS Database). Available databases show that numerous minor drainage lines occur in the local area (GIS Database). According to Phoenix (2013), much of the planned landforms and mining related infrastructure lie between two branches of a mapped

paleochannel and are outside any distinct natural drainage or paleodrainage lines.

Botanica (2013) did not find any vegetation growing in association with a watercourse or wetland. Phoenix (2013) state that a surface water assessment is currently underway to map out distinct drainage flows and to engineer surface water diversion channels and bunding around features intercepting any surface flows. Potential impacts to 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

Botanica (2013)
Phoenix (2013)
GIS Database:
- Hydrography, linear

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

Comments

Proposal may be at variance to this Principle

The application area lies within the Coolgardie bioregion (GIS Database), on Yilgarn Craton's 'Eastern Goldfields Terrains' (CALM, 2002). Landforms of the Coolgardie bioregion include granite rocky outcrops, low greenstone hills, laterite uplands and broad plains (Bastin, G., and the ACRIS Management Committee, 2008). According to Phoenix (2013), the soils of the area are shallow sands (on sand plains) and duplex brown calcareous earths (clay loams over clay subsoils). The majority of the application area is relatively flat (Phoenix, 2013) and the area experiences a low annual rainfall with Coolgardie recording an annual average rainfall of 270.3 millimetres (BoM, 2013).

The Department of Agriculture of Western Australia (DAWA) (now Department of Agriculture and Food) has provided advice on underlying clearing permit CPS 462/2. This permit covers most of the application area, therefore, the advice provided by DAWA is considered applicable. According to the decision report for CPS 462/2, DAWA (2005) (cited in DEC, 2006) considered the ironstone flats and broad salmon gum valley vegetation communties identified by Jims Seeds, Weeds and Trees (2004) as slightly prone to erosion if the vegetation or drainage is disturbed. Both these vegetation communities have been mapped within the application area (Jims Seeds, Weeds and Trees, 2004). Based on this and given the size of the proposed clearing (379.5 hectares) there is the potential for land degradation to occur. Potential impacts from erosion may be minimised by the implementation of a watercourse management condition and a staged clearing condition.

According to Phoenix (2013), groundwater within the Castle Hill project is sparse and drilling to date has not encountered any significant groundwater. Additionally, the average annual evaporation rate is over ten times the average annual rainfall, so recharge to the groundwater would be expected to be minimal (BoM, 2013; GIS Database). Based on this and the lack of significant groundwater encountered, there is a low likelihood of raised saline water tables occurring as a result of the proposed clearing.

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

Methodology

Bastin, G., and the ACRIS Management Committee (2008)
BoM (2013)
CALM (2002)
DEC (2006)
Jims Seeds, Weeds and Trees (2004)
Phoenix (2013)
GIS Database:
- Evaporation Isopleths
- IBRA WA (Regions - Sub Regions)

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

Comments

Proposal is not likely to be at variance to this Principle

The application area does not lie within any conservation areas or Department of Parks and Wildlife (DPAW) (formerly the Department of Environment and Conservation) managed lands (GIS Database). The nearest conservation area is the former Credo pastoral lease located approximately 20 kilometres north west of the application area (GIS Database). This former lease is proposed for conservation and managed by DPAW. Based on the distance between the application area and the former pastoral lease, the proposed clearing is not likely to impact the environmental values of any conservation area.

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

Methodology

GIS Database:
- 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 (GIS Database). There are no permanent waterbodies or watercourses within the application area, however, there are several minor non perennial watercourses within the application area (GIS Database). Clearing in the vicinity of these is likely to result in localised erosion and sedimentation, particularly following heavy seasonal rainfall. Potential impacts to the surface water quality as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition and a watercourse management condition.

The climate of the area is arid to semi-arid with 200 to 300 millimetres of rainfall that usually occurs in winter but sometimes occurs in summer (CALM, 2002). The application area receives an average annual rainfall of approximately 300 millimetres with an average annual evaporation rate of 2,800 millimetres (GIS Database). Any surface flows are therefore likely to be short lived.

According to available databases, groundwater salinity within the application area is between 14,000 and 35,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be saline. Given the high TDS and absence of significant groundwater encountered, 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

CALM (2002)
GIS Database:
- Evaporation Isopleths
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)
- Rainfall, Mean Annual

(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 Raeside-Ponton catchment which covers a total area of approximately 11,589,533 hectares (GIS Database). Vegetation statistics indicate that approximately 98% of the pre-European vegetation extent remains within the Coolgardie Interim Biogeographic Regionalisation for Australia (IBRA) region (Government of Western Australia, 2013). The proposed clearing of up to 379.5 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 Coolgardie region remains largely uncleared (Government of Western Australia, 2013), the proposed clearing is not likely to impact on the drainage characteristics of the Raeside-Ponton catchment area. The proposed clearing is therefore unlikely to increase the potential of flooding on a catchment scale.

Coolgardie climate statistics indicate that rainfall in the region is often sporadic (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 379.5 hectares within an application area of approximately 586 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 (GIS Database) 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)
- Kalgoorlie 50cm Orthomosaic - Landgate 2006
- Topographic Contours, Statewide

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

Comments

There is one native title claim over the area under application: WC10/14 (GIS Database). This claim has been filed at the federal court on behalf of the claimant group. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

According to available databases, there are no registered Aboriginal Sites of Significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment Regulation (formerly 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 22 July 2013 by the Department of Mines and Petroleum (DMP) inviting submissions from the public. The clearing permit application was readvertised on 12 August 2013 following the addition of General Purpose Lease 16/18 to the clearing permit application and a decrease in the amount applied to clear from 450 hectares to 379.5 hectares. No submissions were received during either advertisement periods.

Methodology

GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims – Filed at the Federal Court

4. References

Bastin, G., and the ACRIS Management Committee (2008) Rangelands 2008 - Taking the Pulse; Coolgardie Bioregion. Published on behalf of the Australian Collaborative Rangeland Information System (ACRIS) Management Committee by the National Land and Water Resources Audit, Canberra.

BoM (2013) Climate Statistics for Australian Locations. A Search for Climate Statistics for Coolgardie, Australian Government Bureau of Meteorology, viewed 14 August 2013, <http://www.bom.gov.au/climate/averages/tables/cw_012018.shtml>.

Botanica (2013) Level 2 Flora & Vegetation Survey for the Castle Hill Project Tenement: P16/1961, P16/2419, P16/2426, P16/2428, M16/22, M16/24, M16/40, M16/43, M16/152, M16/179, M16/189, M16/195, M16/198 & M16/526. Unpublished report prepared by Botanica Consulting for Phoenix Gold Limited dated January 2013.

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management.

DEC (2006) Clearing Permit Decision Report for CPS 462/2. Prepared by the Department of Environment and Conservation, 3 March 2006.

DEC (2013) NatureMap - Mapping Western Australia Biodiversity, Department of Environment and Conservation. http://naturemap.dec.wa.gov.au/default.aspx, viewed 30 July 2013.

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

DSEWPAC (2013) *Leipoa ocellata — Malleefowl*. URL: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=934, viewed 5 August 2013. Department of Sustainability, Environment, Water, Population and Communities.

Government of Western Australia (2013) 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2012. WA Department of Environment and Conservation, Perth.

Harewood (2013a) Desktop Invertebrate Assessment of the Castle Hill, Red Dam and Kintore Project Areas. Unpublished report prepared by Greg Harewood for Phoenix Gold Limited dated April 2013.

Harewood (2013b) Terrestrial Fauna Assessment (Level 1) of Castle Hill Project Area. Unpublished report prepared by Greg Harewood for Phoenix Gold Limited dated February 2013.

Jims Seeds, Weeds and Trees (2004) Flora Survey for Cazaly Resources of the Kunanalling Project. Unpublished report prepared by Jims Seeds, Weeds and Trees Pty Ltd for Cazaly Resources dated December 2004.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Phoenix (2013) Supporting Information for Clearing Permit Application Castle Hill - Stage 1. Unpublished report prepared by Phoenix Gold Limited dated August 2013.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia

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

Definitions:

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

P1 **Priority One - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

P2 **Priority Two - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

P3 **Priority Three - Poorly Known taxa**: taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.

P4 **Priority Four – Rare taxa**: taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.

R **Declared Rare Flora – Extant taxa** *(= Threatened Flora = Endangered + Vulnerable)*: taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

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

Schedule 1 **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.

Schedule 2 **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.

Schedule 3 **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.

Schedule 4 **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

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

P1 **Priority One: Taxa with few, poorly known populations on threatened lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P2 **Priority Two: Taxa with few, poorly known populations on conservation lands**: Taxa which are known

from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P3 **Priority Three: Taxa with several, poorly known populations, some on conservation lands**: Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P4 **Priority Four: Taxa in need of monitoring**: Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

P5 **Priority Five: Taxa in need of monitoring**: Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

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

EX **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.

EX(W) **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CR **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

EN **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.