



## 1. Application details

### 1.1. Permit application details

Permit application No.: 1678/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Oxiana Golden Grove Pty Ltd

### 1.3. Property details

Property: M59/3  
M59/90  
Local Government Area: Shire of Yalgoo  
Colloquial name: Golden Grove

### 1.4. Application

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

## 2. Site Information

### 2.1. Existing environment and information

#### 2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
<p>The proposed clearing areas have been broadly mapped at a scale of 1:250000 as: Beard Vegetation Association 420: Shrublands; bowgada &amp; jam scrub (GIS Database).</p> <p>Mattiske Consulting Pty Ltd conducted a vegetation survey of the Golden Grove site in October 1996. Vegetation was mapped at a scale of 1:10,000. Based on this survey, the proposed clearing areas can be described as follows:</p> <p>Area A: Open low woodland or tall shrubland of mixed <i>Acacia</i> species dominated by <i>Acacia ramulosa</i> and <i>Acacia sabina</i> over scattered shrubs and dense annual species dominated by mixed Asteraceae species and <i>Austrostipa trichophylla</i> in sandy loam. A site visit by the assessing officer (DoIR) was conducted on 19 February 2007. No annual species were observed during this visit due to the time of the year and the dry climatic conditions at Golden Grove. The site visit confirmed the presence of exploration gridlines throughout Area A. Vegetation structure was noted to be open.</p> <p>Area B, C &amp; D: Open low woodland of <i>Acacia ramulosa</i> or occasionally <i>Acacia aneura</i> var. <i>aneura</i> and <i>Acacia craspedocarpa</i> with an understorey dominated by shrubs of <i>Eremophila forrestii</i> and <i>Eremophila margarethae</i> with <i>Ptilotus obovatus</i> and annuals <i>Velleia rosea</i> and <i>Podolepis lessonii</i> on a yellow sandy loam. No annual species were observed by the assessing officer during the site visit on 19 February 2007 due to the time of year and dry climatic conditions at Golden Grove. The site visit confirmed the presence of exploration gridlines throughout Areas B, C and D. Vegetation was noted to be open in all 3 areas, particularly Area D which is located immediately adjacent to tailings storage facility one. Area D has been heavily disturbed and contains old drill sumps and a cleared area used to stockpile lime for bioremediation of the nearby evaporation ponds.</p>	<p>This clearing permit application is for a purpose permit to clear up to 47 hectares of native vegetation at the Oxiana Golden Grove minesite; approximately 54km south east of Yalgoo. The proposed clearing includes 4 separate areas (Area A - 14.3 ha, Area B - 13.3 ha, Area C - 10.5 ha and Area D - 9.2 ha). Clearing will allow the proponent to establish four borrow pits which will be used for the extraction of gravel. Such gravel is required for the expansion of the Oxiana Golden Grove mine site, and will be used in the upgrade of the village, airport taxi way and apron, and the upgrade of various warehouses and workshops (Oxiana Golden Grove Pty Ltd, 2006).</p>	<p>Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)</p> <p>to</p> <p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)</p>	<p>In order to minimise vegetation clearing, the proponent has selected four previously disturbed areas for this clearing permit application. All four proposed clearing areas are located close to existing operations and infrastructure, thereby eliminating the need to construct new access tracks to extract the gravel resource.</p> <p>Exploration gridlines are present throughout all four proposed clearance areas, and numerous goats were seen during the site visit. Two goat traps are present on the Oxiana Golden Grove leases in an attempt to control goat populations, however their effectiveness is limited. Goats are having a detrimental impact upon vegetation across the mining leases at Golden Grove, which are located on the Badja and Muralgarra pastoral stations (GIS Database).</p>

### 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 areas applied to clear are within the Yalgoo Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). The Yalgoo bioregion is an interzone between the South-western and Murchison bioregions, and whilst it is rich and diverse in both flora and fauna, most species are wide ranging and typically occur in one or more adjoining bioregions (CALM, 2002). Pastoralism is the dominant land use in the Yalgoo, comprising approximately 76% of the total land area (CALM, 2002). However, mining also has an increasing interest in the bioregion (CALM, 2002). The proposed clearing is within the Oxiana Golden Grove mine site, located approximately 54km south east of the Yalgoo townsite (GIS Database).

The vegetation of the application areas includes *Acacia* woodlands and shrublands that are well represented throughout Western Australia (Shepherd et al, 2001). The proposed clearing areas are within the Badja and Muralgarra pastoral stations (GIS Database), and as such the vegetation displays clear evidence of livestock grazing. Numerous goats were observed in and surrounding the areas applied to clear during a site visit to Golden Grove by the assessing officer (DoIR) on 19 February 2007. The presence of goats in the proposed clearing areas has significantly impacted upon the condition of the vegetation. Other disturbances such as historic mineral exploration drill lines and drill pads are evident in the areas applied to clear and have diminished the habitat values for indigenous fauna species.

One Priority 3 species, *Grevillea globosa*, occurs within proposed clearing area 'D'. This species is known from the Yalgoo and Avon Wheatbelt bioregions (WA Herbarium, 2007) and shows a preference for disturbed sites (Yilgarn Traders, 2006). The proposed clearing will remove approximately 150-200 plants of *Grevillea globosa*, however this is unlikely to impact upon the local or regional biodiversity given that an estimated 12,700 - 14,700 individuals of this species are known from the Golden Grove and Gindalbie mining leases (Yilgarn Traders, 2006).

Given that the proposed clearing areas are within an existing mine site and pastoral station, it is unlikely that they contain a higher level of floral or faunal diversity than any other area in the Yalgoo bioregion.

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

##### Methodology

GIS Database:  
- Badja 1.4M Orthomosaic - DLI 2003 (Image).  
- IBRA - EA - 18/10/00.  
- Pastoral Leases - DOLA 10/01.  
CALM (2002).  
Shepherd et al (2001).  
WA Herbarium (2007).  
Yilgarn Traders (2006).

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

##### Comments

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

Bamford Consulting Ecologists (2007) undertook a level 1 fauna assessment of the Gossan Hill Project area on 30 August 2006, in accordance with the Environmental Protection Authority (EPA) Position Statement No. 56: 'Guidance for the Assessment of Environmental Factors - terrestrial fauna for Environmental Impact Assessment in Western Australia' (EPA, 2004). Gossan Hill is located approximately 2.5 - 5km south-south east of the proposed clearance areas, and given that no formal fauna surveys have been conducted for these areas the Gossan Hill fauna survey will be used for this fauna assessment.

Based on habitat preferences and known distributions, the following conservation significant species may be expected to occur in the proposed clearing areas: Malleefowl (*Leipoa ocellata*), Carpet Python (*Morelia spilota imbricata*), Peregrine Falcon (*Falco peregrinus*), Australian Bustard (*Ardeotis australis*), Bush Stone-curlew (*Burhinus grallarius*), Major Mitchell's Cockatoo (*Cacatua leadbeateri*), Fork-tailed Swift (*Apus pacificus*), Rainbow Bee-eater (*Merops ornatus*), Shy Heathwren (*Hylacola cauta whitlocki*) and Slender-billed Thornbill (*Acanthiza iridalei iredalei*).

The Malleefowl (listed as Vulnerable under the *EPBC Act* 1999 and Schedule 1 'Fauna that is rare or likely to become extinct', *Wildlife Conservation (Specialy Protected Fauna) Notice* 2006) is not likely to be impacted by the proposed clearing. According to Bamford Consulting Ecologists (2007) this species is possibly locally extinct, and no mounds were found in the vicinity of Gossan Hill during the site inspection. Given that the proposed clearing areas have been disturbed by mineral exploration activities and are currently frequented by goats, they are unlikely to be representative of significant Malleefowl habitat.

The Carpet Python (listed as Schedule 4 'Other specially protected fauna' under the *WA Wildlife Conservation Act* 1950) is known to inhabit undisturbed bushland and rocky outcrops in the south-west of Western Australia (Bamford Consulting Ecologists, 2007). Given that the proposed clearing areas have been previously disturbed

and do not support rocky habitats, this species is unlikely to occur.

The Peregrine Falcon (listed as Schedule 4 'Other specially protected fauna' under the *WA Wildlife Conservation Act 1950*) is dependent upon cliffs, gorges, tall trees or tall man made structures for nesting (Bamford Consulting Ecologists, 2007). None of these requirements are present in the clearing permit application areas, and therefore the proposed clearing is unlikely to impact upon the Peregrine Falcon.

The Australian Bustard, listed as Priority 4 by the Department of Environment and Conservation (DEC), is a nomadic species which typically moves in response to rainfall (Pizzey & Knight, 1997). This species is known to inhabit grassland and woodland habitats throughout much of Australia. The Australian Bustard could possibly occur in the clearing permit application areas, however the loss of 47 hectares of disturbed vegetation within an existing mine site is unlikely to be significant.

The Bush Stone-curlew (listed as Priority 4 by the DEC) is a sedentary species known to inhabit woodland areas, often adjacent to watercourses (Pizzey & Knight, 1997). There is a possibility that the Bush Stone-curlew could occur in the application areas, however Bamford Consulting Ecologists (2007) reports that this species may be regionally extinct. It is unlikely that the disturbed areas under application are representative of significant habitat for the Bush Stone-curlew.

Major Mitchell's Cockatoo (listed as Schedule 4 'Other specially protected fauna' under the *WA Wildlife Conservation Act 1950*) could potentially occur in the areas applied to clear, however no suitably sized *Eucalyptus* trees are present to provide significant habitats for breeding. The proposed clearing activities are therefore not likely to be detrimental to this species.

The Fork-tailed Swift (listed as Migratory under the *EPBC Act 1999*) is largely an aerial species and is therefore unlikely to be impacted by any clearing activities (Bamford Consulting Ecologists, 2007).

The Rainbow Bee-eater (listed as Migratory under the *EPBC Act 1999*) may potentially visit the clearing permit application areas in early spring as part of its southward migration (Bamford Consulting Ecologists, 2007). Given that the Rainbow Bee-eater is a migratory species with suitable habitat throughout most of Australia, the loss of 47 hectares of disturbed vegetation within an existing mine site is unlikely to be significant.

The Shy Heathwren (listed as Priority 4 by the DEC) inhabits mallee, native pine and heath vegetation containing *Banksia* or *Leptospermum* species (Bamford Consulting Ecologists, 2007). The Shy Heathwren prefers dense vegetation, and given that the areas applied to clear contain more open vegetation they are unlikely to be representative of significant habitat for the Shy Heathwren.

The Slender-billed Thornbill (listed as Vulnerable under the *EPBC Act 1999*) inhabits Chenopod shrublands, samphire, low heath, saltmarshes, mangrove vegetation, Mulga and other Acacias (Pizzey & Knight, 1997). This species is uncommon, and is both sedentary and nomadic in nature (Pizzey & Knight, 1997). Whilst the Slender-billed Thornbill could potentially occur in the Mulga and *Acacia* vegetation of the areas applied to clear, there is no evidence to suggest that these areas represent significant habitat given the abundance of Mulga and *Acacia* vegetation in other parts of Western Australia.

The proposed clearing areas consist of *Acacia* woodlands and shrublands that are well represented on a local and regional scale (GIS Database; Shepherd et al, 2001). All four areas proposed to clear have suffered disturbance from previous mineral exploration activities, particularly 'Area D', which was noted during the site visit by the assessing officer on 19 February 2007 to be the most degraded of the four sites. Numerous feral goats (*Capra hircus*) were observed throughout the Golden Grove minesite during the site visit, including within the clearing permit application areas. These animals have had noticeable adverse impacts which include grazing the native vegetation and creating tracks. Evidence of the red fox (*Vulpes vulpes*) and the rabbit (*Oryctolagus cuniculus*) has also been recorded in the general area (Bamford Consulting Ecologists, 2007), and therefore these introduced species can also be expected to occur in the clearing permit application areas. All of the above mentioned disturbances have diminished the habitat values of the areas proposed to be cleared. It is unlikely that these areas are representative of significant habitat for any fauna species indigenous to Western Australia.

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

**Methodology** Bamford Consulting Ecologists (2007).  
Pizzey & Knight (1997).

**(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**

There are no known records of Declared Rare Flora (DRF) species within the proposed clearing areas, or in the vicinity of the Golden Grove mine site (GIS Database). Mattiske Consulting Pty Ltd did not locate any DRF species during flora surveys at Golden Grove in October 1996 or October 1997 (Mattiske Consulting Pty Ltd, 1996; 1997).

The Priority 3 species *Grevillea globosa* is located within proposed clearing Area D (Oxiana Golden Grove Pty Ltd, 2006). *Grevillea globosa* is a dome shaped shrub up to 3 metres high and 5 metres wide (Mattiske Consulting Pty Ltd, 1997). According to Olde & Marriott (1995) as cited in Mattiske Consulting Pty Ltd (1997), *Grevillea globosa* grows in Mulga shrubland in red loam or mallee woodland in yellow, lateritic sand. This species is known from the Yalgoo and Avon Wheatbelt bioregions (WA Herbarium, 2007). Flora surveys across the Golden Grove site suggest that *G. globosa* shows a preference for disturbed sites. This species has colonised the batters of tailings storage facility one (TSF1), old drill pad sites, exploration gridlines and on recently established road swales along Gindalbie road (Yilgarn Traders, 2006). Some of these areas, including the batters of TSF1, are outside of the preferred habitat for this species. *G. globosa* has colonised on all sides of TSF1 since topsoil was respread here in 1997. This suggests that rehabilitation of this species using topsoil may be an effective measure.

There are 13 known populations of *G. globosa* within the area bounded by the Oxiana Golden Grove and Gindalbie mining leases, with an estimated total number of 12,700 - 14,700 individual plants (Yilgarn Traders, 2006). The proposed clearing will remove an estimated 150 - 200 plants of *G. globosa* from Area D. This represents less than 2% of the local species population. The conservation status of this species is unlikely to be significantly impacted by the proposed clearing given the extent of remaining populations in the local area. Furthermore, topsoil taken from Area D will be retained, and there is a possibility that individuals of *G. globosa* will re-establish when this topsoil is respread during rehabilitation programs, as was the case on the batters of TSF1.

No other Priority flora species occur within the proposed clearing areas (Oxiana Golden Grove Pty Ltd, 2006; GIS Database). The Priority 1 species *Micromyrtus sp. Warriedar* is present on Gossan Hill, approximately 2.5 km southeast of proposed clearing area 'A' (GIS Database). This species is known to inhabit granite hills (WA Herbarium, 2007), and given that this habitat type is absent from the proposed clearance areas it is not likely to occur. *M. sp. Warriedar* is unlikely to be impacted by the proposed clearing.

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

**Methodology** GIS Database:  
 - Badja 1.4M Orthomosaic - DLI 2003 (Image).  
 - Declared Rare and Priority Flora List - CALM 01/07/05.  
 Mattiske Consulting Pty Ltd (1996).  
 Mattiske Consulting Pty Ltd (1997).  
 Oxiana Golden Grove Pty Ltd (2006).  
 WA Herbarium (2007).  
 Yilgarn Traders (2006).

**(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**  
 There are no known Threatened Ecological Communities (TEC's) within the proposed clearing areas (GIS Database). The nearest known TEC is approximately 83km south west of the proposed clearance areas (GIS Database).

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

**Methodology** GIS Database - Threatened Ecological Communities - CALM 12/04/05.

**(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 areas applied to clear are within the Interim Biogeographic Regionalisation for Australia (IBRA) Yalgoo bioregion (GIS Database). According to Shepherd et al (2001) there is approximately 99% of the pre-European vegetation remaining in this bioregion. The vegetation of the application areas is classified as Beard Vegetation Association 420 (GIS Database). Whilst only 0.1% of this vegetation type is protected in reserves (Shepherd et al, 2001), Beard Vegetation Association 420 is not under immediate threat as approximately 96.47% remains (Shepherd et al, 2001). The areas proposed to clear do not represent significant remnants of vegetation in the wider regional area. The proposed clearing will not reduce the extent of Beard Vegetation Association 420 below current recognised threshold levels, below which species loss increases significantly.

	Pre-European Area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% in IUCN Class I-IV Reserves*
IBRA Bioregion - Yalgoo	5,057,673	5,007,353	~99%	Least concern	~9.9%
Shire of Yalgoo	No information available				
Beard Vegetation Associations -					
-420	859,654	829,300	~96.47%	Least concern	~0.1%

\* Shepherd et al. (2001)

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

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

**Methodology** GIS Database:  
- IBRA - EA - 18/10/00.  
- Pre-European Vegetation - DA 01/01.  
Department of Natural Resources and Environment (2002).  
Shepherd et al (2001).

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

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

There are no permanent watercourses or wetlands in close proximity to the areas applied to clear (GIS Database). An ephemeral drainage line is present immediately east of 'Area A' (GIS Database). During times of rainfall, overland flows converge on this drainage line (Oxiana Golden Grove Pty Ltd, 2007a). This drainage line is more of a dampland area than a watercourse, and as such it is not associated with any prolonged flows (Oxiana Golden Grove Pty Ltd, 2007a).

The vegetation applied to clear is not growing in any watercourses or wetlands, and is unlikely to be acting as a buffer for any wetland areas. As such, no wetland communities are likely to be impacted by the proposed clearance activity.

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

**Methodology** GIS Database:  
- Hydrography, linear - DOE 01/02/04.  
- Lakes 1M - GA 01/06/00.  
Oxiana Golden Grove Pty Ltd (2007a).

**(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**

According to the Department of Agriculture and Food Western Australia (DAFWA) the proposed clearing areas are located within the Violet land system, which is characterised by undulating stony and gravelly plains and low rises supporting Mulga (DAFWA, 2007). The proposed clearing areas are likely to be moderately susceptible to erosion if cleared (DAFWA, 2007). Native vegetation down gradient from the proposed clearing areas may also be adversely affected if the natural sheet flow regime is altered (DAFWA, 2007). It is therefore concluded that the proposed clearing may be at variance with this principle for soil erosion and native vegetation decline (DAFWA, 2007).

To reduce the likelihood of accelerated soil erosion and alteration of the natural sheet flow regime resulting from the proposed clearing, the proponent will implement the following measures:

- All clearing will be conducted along the contour where possible;
- Spur drains will be constructed to capture surface water run off from the cleared areas;
- Clearing will be undertaken in a staged approach to minimise the area exposed to wind and water erosion;
- Appropriate dust control measures will be implemented during and after clearing where required. This will include the use of a water truck to suppress dust;
- Cleared vegetation will be stockpiled to the edge of the disturbance areas for later use in rehabilitation; and
- Topsoil will be stockpiled to the edge of the disturbance areas for later use in rehabilitation (Oxiana Golden Grove Pty Ltd, 2007b).

The following conditions will be placed on the clearing permit to minimise erosion and alterations to natural flow regimes associated with the proposed clearing:

- The Permit Holder shall implement erosion control measures to minimise potential erosion within the areas approved to clear, and adjacent areas; and
- The Permit Holder shall retain the vegetative material and topsoil removed by clearing in accordance with this Permit, for use in rehabilitation.

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

**Methodology** DAFWA (2007).  
Oxiana Golden Grove Pty Ltd (2007b).

**(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**  
There are no conservation areas within a 50km radius of the proposed clearing areas (GIS Database). The nearest conservation area is an unnamed timber reserve, located approximately 57km to the south west (GIS Database). The proposed clearing areas are not likely to act as significant remnants, buffers, or ecological linkages to any conservation area given that they have been historically disturbed by mining activities and the surrounding landscape has not been extensively cleared.

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

**Methodology** GIS Database- CALM Managed Lands and Waters - CALM 01/07/05.

**(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.**

**Comments** **Proposal is not likely to be at variance to this Principle**  
There are no permanent surface water features in the proposed clearing areas (GIS Database). Surface water may flow through the areas under application during times of intense rainfall in the form of sheetflow and overland flow (Oxiana Golden Grove Pty Ltd, 2007a). There is a minimal risk of surface flows transporting suspended sediment material from bare and cleared areas to natural watercourses further downstream. In order to minimise this risk, Oxiana Golden Grove Pty Ltd (2007a) will implement the following management strategies:

- Clearing will be conducted in a staged approach to minimise the area exposed to surface water flows;
- Spur drains will be constructed to capture surface water run off from the cleared areas; and
- Sumps will be constructed to allow water to drain to one corner of the borrow pits.

The proposed clearing is unlikely to cause a decline in surface water quality on or off site.

The approximate groundwater depth of the application areas is 50 - 100m (Oxiana Golden Grove Pty Ltd, 2007a). It is therefore expected that the proposed vegetation clearing will not have any significant impacts upon groundwater levels or quality.

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

**Methodology** GIS Database - Hydrography, linear - DOE 01/02/04.  
Oxiana Golden Grove Pty Ltd (2007a).

**(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 average annual rainfall at Golden Grove is 260mm (Oxiana Golden Grove Pty Ltd, 2007a). Average annual evaporation is approximately 3,750mm (Oxiana Golden Grove Pty Ltd, 2007a). It is therefore expected that there would be little surface water flow during normal seasonal rains. There are no permanent or seasonal watercourses in the vicinity of the application areas (GIS Database), and the clearing of 47 hectares of vegetation within the YarraMonger Catchment (4,182,397 hectares) is unlikely to increase the incidence or intensity of flooding (GIS Database).

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

**Methodology** GIS Database:  
- Hydrographic Catchments - Catchments - DOE 23/3/05.  
- Hydrography, linear - DOE 01/02/04.  
Oxiana Golden Grove Pty Ltd (2007a).

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

### Comments

There are no Native Title Claims over the areas under application (GIS Database).

There are no known sites of Aboriginal Significance within the areas applied to clear (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of 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.

### Methodology

- GIS Database:  
- Aboriginal Sites of Significance - DIA 04/07/02.  
- Native Title Claims - DLI 19/12/04.

## 4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Production	Mechanical Removal	47	Grant	<p>The clearing principles have been addressed and the proposed clearing may be at variance to principle (g), is not likely to be at variance to principle (a), (b), (c), (d), (f), (h), (i) or (j), and is not at variance to principle (e). The assessing officer recommends that the clearing permit be granted, subject to the following conditions:</p> <ol style="list-style-type: none"><li>The Permit Holder shall record the following for each instance of clearing:<ol style="list-style-type: none"><li>the location of where the clearing occurred, expressed as grid coordinates using the Australian Map Grid 1984 coordinate system;</li><li>the size of the area cleared in hectares;</li><li>the dates on which the area was cleared;</li><li>the area rehabilitated in hectares;</li><li>the method of clearing;</li><li>the purpose of clearing.</li></ol></li><li>The Permit Holder shall provide a report to the Director, Environment, Department of Industry and Resources by 1 April each year for the life of the permit setting out the records required under condition 1 of this permit in relation to clearing carried out between 1 January and 31 December of the previous year. This report can be included as an addendum to the Annual Environmental Report.</li><li>The Permit Holder shall implement erosion control measures to minimise potential erosion within the areas approved to clear, and adjacent areas.</li><li>The Permit Holder shall retain the vegetative material and topsoil removed by clearing in accordance with this Permit, for use in rehabilitation.</li></ol> <p><b>Explanatory Note:</b></p> <p>In this permit Annual Environmental Report means a report produced as a requirement of tenement conditions under the <i>Mining Act 1978</i>.</p>

## 5. References

- Bamford Consulting Ecologists (2007) *Oxiana Golden Grove: Gossan Hill; assessment of fauna values*. Prepared for Enesar Consulting Pty Ltd. 5 January 2007.
- DAFWA (2007) *Land degradation assessment report*. Advice to Assessing Officer, Native Vegetation Assessment Branch, Department of Industry and Resources (DoIR), received 16 March 2007. Office of the Commissioner of Soil and Land Conservation, Department of Agriculture and Food Western Australia.
- 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.
- EPA (2004) *Guidance for the Assessment of Environmental Factors - terrestrial fauna for Environmental Impact Assessment in Western Australia*. Report by the EPA under the Environmental Protection Act 1986. No 56 WA.
- Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

- Mattiske Consulting Pty Ltd (1996) *Flora and Vegetation of Golden Grove Project, Murchison Zinc Company Pty Ltd*. Prepared for John Consulting Services, December 1996.
- Mattiske Consulting Pty Ltd (1997) *Review of Priority Flora Species on Golden Grove Operational Areas*. Prepared for Normandy Golden Grove Operations Pty Ltd, October 1997.
- Oxiana Golden Grove Pty Ltd (2006) *Purpose Permit (C2) Application for 50 hectares on M59/3 and M59/90*. Letter of correspondence sent to DoIR – Native Vegetation Assessment Branch, 15 December 2006.
- Oxiana Golden Grove Pty Ltd (2007a) *Advice to Assessing Officer*, Native Vegetation Assessment Branch, Department of Industry and Resources (DoIR), received 19 February 2007. Environmental Department, Oxiana Golden Grove Pty Ltd.
- Oxiana Golden Grove Pty Ltd (2007b) *Advice to Assessing Officer*, Native Vegetation Assessment Branch, Department of Industry and Resources (DoIR), received 1 March 2007. Environmental Department, Oxiana Golden Grove Pty Ltd.
- Pizzey, G & Knight, F (1997) *The Graham Pizzey and Frank Knight Field Guide to the Birds of Australia*, Angus and Robertson, Sydney Australia.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Western Australian Herbarium (2007). Florabase - *The Western Australian Flora*. Department of Environment and Conservation. <http://florabase.calm.wa.gov.au/>
- Yilgarn Traders (2006) *Impact Assessment of Grevillea globosa*. Unpublished report.

## 6. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government.
<b>CALM</b>	Department of Conservation and Land Management, Western Australia.
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia.
<b>DA</b>	Department of Agriculture, Western Australia.
<b>DEC</b>	Department of Environment and Conservation
<b>DEH</b>	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
<b>DEP</b>	Department of Environment Protection (now DoE), Western Australia.
<b>DIA</b>	Department of Indigenous Affairs
<b>DLI</b>	Department of Land Information, Western Australia.
<b>DoE</b>	Department of Environment, Western Australia.
<b>DoIR</b>	Department of Industry and Resources, Western Australia.
<b>DOLA</b>	Department of Land Administration, Western Australia.
<b>DoW</b>	Department of Water
<b>EP Act</b>	Environment 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>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</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>TECs</b>	Threatened Ecological Communities.

### Definitions:

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

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



need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

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

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

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

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

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

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