



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 3142/2
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **MMG Golden Grove Pty Ltd (formerly known as OZ Minerals Golden Grove Pty Ltd)**

1.3. Property details

Property: Mining Lease 59/3
Mining Lease 59/90

Local Government Area: Shire of Yalgoo

Colloquial name: TSF3 Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
66.2		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 Beard Vegetation Associations have been mapped at a 1:250,000 scale for the whole of Western Australia and are useful to look at vegetation extent in a regional context. One Beard Vegetation Association is located within the application area (GIS Database):

Beard Vegetation Association 420 - Shrublands; bowgada and jam scrub (CALM, 2002; Shepherd et al., 2001).

Yilgarn Traders (2008) undertook a flora and vegetation survey (including the search for Priority Flora and Declared Rare Flora (DRF) and the mapping of vegetation associations) of the application area between the 25 November and the 2 December 2008. Mattiske Consulting Pty Ltd (Mattiske) (1996) had previously surveyed the leases associated with the Gossan Hill project area prior to the disturbance associated with mining of the deposit. The survey and mapping associated with the Mattiske investigation was at a broader scale, and the vegetation associations identified between the Mattiske (1996) and Yilgarn Traders (2008) surveys are comparable.

The survey of the application area by Yilgarn Traders (2008) identified the following vegetation associations:

Vegetation Classification: Hill Slope

Hill Slope (HS):

Open *Acacia* shrublands <5 metres with open mixed understorey >1.5 metres located along lower slopes of banded ironstone formation (BIF) ranges below rocky zones.

Vegetation Classification: Plains

Plains 1 (P1):

Open to mid-dense *Acacia* scrubland <3 metres mainly *Acacia effusifolia* with lightly scattered understorey of mixed species located on the plains. Annuals dominated by *Haloragis odontocarpa*.

Plains 8 (P8):

Open mixed shrublands <1 metre with scattered *Acacia* species <3 metres, located on a low ridge at the base of the BIF hill slope.

Plains 10 (P10):

Open to mid-dense *Acacia* shrublands <4 metres with lightly scattered mixed understorey species located on the plains.

Vegetation Classification: Ridge

Ridge (R):

Open mixed shrubland <1.5 metres dominated by *Thryptomene* heath with emergent *Acacia* species <2.5 metres located on the lower edge of the BIF hilltop vegetation association.

Vegetation Classification: Upper Plains

Upper Plains 1 (UP1):

Open to mid-dense *Acacia* shrubland <5 metres with a scattered understorey <1.5 metres located on the lower-mid sections of the hill slope.

Vegetation Classification: Rehabilitation

Rehabilitation (Reh):

Open to mid-dense *Acacia* shrubland <2 metres mainly *Acacia* species occasionally <3 metres in areas with remnant vegetation located on the plains.

As the survey was specifically targeting the application area, the vegetation associations described by the Yilgarn Traders (2008) will be used to describe the flora and vegetation within the application area.

Clearing Description MMG Golden Grove Pty Ltd (hereafter referred to as MMG Golden Grove) (formerly known as OZ Minerals Golden Grove Pty Ltd) have applied for a Purpose Permit to clear up to 66.2 hectares of native vegetation within an application area of approximately 66.2 hectares. The proposed clearing would allow the proponent to construct a tailings storage facility (TSF) and associated infrastructure. The application area is located approximately 49 kilometres south-southeast of Yalgoo.

Vegetation clearing will be conducted using mechanical means. The clearing is likely to be permanent for use during the life of the mine. As such, the majority of the cleared area will not be rehabilitated during the life of the clearing permit.

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

Comment The vegetation condition rating is derived from aerial photography and information provided from the proponent.

Clearing permit CPS 3142/1 was granted by the Department of Mines and Petroleum on 9 July 2009 and is valid from 8 August 2009 to 31 March 2011. The clearing permit authorised the clearing of 60.052 hectares of native vegetation. An application for an amendment to clearing permit CPS 3142/1 was received by the Department on 4 January 2009. The proponent has requested to be approved to clear an additional ~6 hectares outside the current permit boundary. The additional proposed clearing is not likely to have any significant environmental impacts. The duration of the permit will remain the same.

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

MMG Golden Grove propose to disturb 66.2 hectares of native vegetation within an application area of approximately 66.2 hectares. The application area is located within the Edel (YAL1) subregion of the Yalgoo Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (Shepherd, 2007; GIS Database). This region is an interzone between Southwestern Bioregions and Murchison (CALM, 2002). It is characterised by low woodlands to open woodlands of *Eucalyptus*, *Acacia* and *Callitris* on red sandy plains of the Western Yilgarn Craton and southern Carnarvon Basin (CALM, 2002). The subregion is particularly rich in ephemerals (CALM, 2002).

Yilgarn Traders (2008) conducted a flora and vegetation survey of the application area from the 25 November to the 2 December 2008. A total of 96 vascular plants were identified, with one third of these being annuals (Yilgarn Traders, 2008). No Declared Rare Flora (DRF) were present within the application area, however two populations of *Grevillea globosa* (P3) occurring within the 'Rehabilitation' vegetation association will be impacted by the proposed clearing (Yilgarn Traders, 2008). As the species was found to be widespread throughout the adjacent tenements, the clearing is unlikely to affect the conservation significance of *Grevillea globosa* (Yilgarn Traders, 2008).

Eight vegetation associations were identified during the survey, with seven occurring within the application area (Yilgarn Traders, 2008). Five of the associations were dominated by *Acacia* shrublands and these were mainly located on the plains and upper plains (Yilgarn Traders, 2008). Based on the supplied information, the vegetation was considered to be in 'good' condition (OZ Minerals, 2009a). None of the vegetation associations within the application area were considered unique to the area and had previously been recorded and mapped in nearby surveys (Yilgarn Traders, 2008).

Due to the historical disturbance associated with the application area, two weeds are known from the surrounding area; Ruby Dock (*Acetosa vesicaria*) and White Iceplant (*Mesembryanthemum nodiflorum*) (OZ Minerals, 2009a; Yilgarn Traders, 2008). In order to minimise the risk of spreading and introducing weed species into unimpacted areas, it is recommended that conditions be imposed on the permit for the purposes of weed management should the permit be granted.

Coffey Environments (2008) surveyed the potential TSF3 sites (including the application area) and determined that the fauna habitat present consists mainly of mulga woodland and did not contain the necessary components to support fauna of conservation significance (e.g., no large trees with hollows for Major Mitchell's Cockatoos (*Cacatua leadbeateri*) to raise young in and no active or extinct Malleefowl (*Leipoa ocellata*) mounds) (Coffey Environments, 2008). There was no indication that the surveyed area had ecological significance, contained conservation significant populations or important faunal assemblages (Coffey Environments, 2008). Coffey Environments (2008) concluded that the biodiversity value of the project area is not high or of great significance and that the available habitat type is replicated many times in adjacent areas.

The additional clearing for CPS 3142/2 is located adjacent to roadways, access tracks and has been previously disturbed by exploration activities (MMG Golden Grove, 2009). Given the disturbance already present, the additional proposed clearing is not likely to significantly increase the impacts on biodiversity within the local area.

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

Methodology CALM (2002).
Coffey Environments (2008).
MMG Golden Grove (2009).
OZ Minerals (2009a).
Shepherd (2007).
Yilgarn Traders (2008).
GIS Database:
- Badja 1.4m Orthomosaic - Langate 2003.
- Interim Biogeographic Regionalisation for Australia.
- Interim Biogeographic Regionalisation for Australia (subregions).

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

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

The potential sites of the TSF3 (including the application area) were surveyed by Coffey Environments (2008) from the 29 September to the 1 October 2008. Coffey Environments (2008) determined that the fauna habitat within the application area and the surrounding survey areas consisted of mostly open mulga woodland, with the density of vegetation and sparseness of the ground cover and the leaf litter varying across the site. Creek lines were determined to be generally more vegetated than the adjacent areas (Coffey Environments, 2008).

Coffey Environments (2008) determined that the application area did not contain the necessary components to support fauna of conservation significance (e.g., no large trees with hollows for Major Mitchell's Cockatoos (*Cacatua leadbeateri*) to raise young in and no active or extinct Malleefowl (*Leipoa ocellata*) mounds) (Coffey Environments, 2008). There was no indication that the surveyed area had ecological significance, contained conservation significant populations or important faunal assemblages (Coffey Environments, 2008). Coffey Environments (2008) concluded that the biodiversity value of the project area is not high or of great significance and that the available habitat type is replicated many times in adjacent areas. Yilgarn Traders (2008) concluded that none of the vegetation associations within the application area were considered unique to the area and had previously been recorded and mapped in nearby surveys.

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

Methodology Coffey Environments (2008).
Yilgarn Traders (2008).

(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 DRF species within the application area (Yilgarn Traders, 2008; GIS Database). Two populations of the DRF *Eucalyptus synandra* (Jingymia Mallee) were located approximately 52 kilometres and 56 kilometres southwest of the application area, respectively (GIS Database).

Yilgarn Traders (2008) identified three Priority Flora species within the survey area and one Priority Flora species within the application area. Two populations of *Grevillea globosa* (P3) occurring within the 'Rehabilitation' vegetation association will be impacted by the proposed clearing (Yilgarn Traders, 2008). Thirty-two individuals of *Grevillea globosa* occur within the application area and will be removed as part of clearing (Yilgarn Traders, 2008). Surveys of the surrounding tenements determined that there were in excess of 7,500 individuals of *Grevillea globosa* located within various populations, therefore the disturbance of 32 individuals would only account for approximately 0.4% of the total known population of this P3 flora species within the surrounding area only (Yilgarn Traders, 2008).

The new permit boundary for CPS 3242/2 is directly adjacent to a population of *Euryomyrtus patrickiae*.

However, MMG Golden Grove (2009) has indicated that the amended area will have no additional impacts on Priority Flora species.

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

Methodology MMG Golden Grove (2009).
Yilgarn Traders (2008).
GIS Database:
- Declared Rare and Priority Flora List.

(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 records of Threatened Ecological Communities (TECs) within the area subject to be cleared (GIS Database). The nearest known TEC, TEC 59: Koolanooka System, is located in excess of 80 kilometres southwest of the application area (GIS Database). The proposed clearing is not likely to impact on any known TEC.

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

Methodology GIS Database:
- Threatened Ecological Communities.

(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 clearing application area falls within the Yalgoo Interim Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 100% of the pre-European vegetation remains (Shepherd, 2007; GIS Database).

The vegetation within the application area is classified as:

Beard Vegetation Association 420: Shrublands; bowgada & jam scrub (Shepherd, 2007; GIS Database).

As depicted within the table below, the application area does not represent a significant remnant of vegetation in an area that has been extensively cleared (Shepherd, 2007). The proposed clearing will not reduce the extent of Beard Vegetation Association 420 below the recognised threshold level, below which species loss accelerates exponentially at an ecosystem level (EPA, 2000). Therefore the bioregional conservation status for the Yalgoo Bioregion and for the Beard Vegetation Association 420 is of 'Least Concern' (Department of Natural Resources and Environment, 2002).

While a small percentage of the vegetation types within the Yalgoo bioregion are protected within conservation reserves, the bioregion remains largely uncleared. The proposed clearing is unlikely to impact on the conservation status for Beard Vegetation Association 420 within the Yalgoo bioregion.

	Pre-European area (hectares)*	Current extent (hectares)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Yalgoo	5,057,316	5,001,943	~98.9	Least Concern	~9.8
Beard veg assoc. – State					
420	859,632	829,286	~96.5	Least Concern	~0.1
Beard veg assoc. – Bioregion					
420	621,396	621,396	~100	Least Concern	~0.0

* Shepherd (2007).

** 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).
EPA (2000).
Shepherd (2007).

GIS Database:

- Interim Biogeographic Regionalisation of Australia.
- 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

No permanent wetlands and watercourses occur within the application area (GIS Database). Minor non-perennial watercourses occur within the application area; however, these hardly ever flow as rainfall seldom exceeds evaporation (URS, 2009; GIS Database). The minor watercourses are non-perennial in nature due to the low and infrequent rainfall (URS, 2009). None of the vegetation associations identified within the application area were riparian in nature (Yilgarn Traders, 2008).

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

Methodology URS (2009).
Yilgarn Traders (2008).
GIS Database:
- Geodata, Lakes.
- Hydrography, linear.
- RIWI Act, Rivers.

(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 Department of Agriculture and Food Western Australia has mapped a variety of land systems for the Yalgoo bioregion (Payne et al., 1998). Land systems are mapped based on biophysical features such as soil and landform type, geology, geomorphology and vegetation type (Payne et al., 1998). The proposed clearing area includes three different land systems (GIS Database). A broad description of each land system is given below:

The Tallering land system is characterised by prominent ridges and hills of banded ironstone, dolerite and sedimentary rock supporting bowgada and other *Acacia* shrublands (Payne et al., 1998). Relief can be up to ten metres (Payne et al., 1998). The Tallering land system is generally not prone to erosion due to the presence of the stone mantles; however, the removal of the stone mantles may initiate erosion (Payne et al., 1998). A small proportion of the proposed clearing areas have been mapped as the Tallering land system (GIS Database).

The Violet land system is characterised by undulating stony and gravelly plains and low rises supporting mulga shrublands (Payne et al., 1998). Overall the relief above drainage lines is up to 60 metres. The Violet land system is generally not prone to erosion due to the presence of abundant mantles; however, the disturbance of the soil may initiate erosion (Payne et al., 1998). Erosion may also occur within narrow drainage lines (Payne et al., 1998). A large proportion of the proposed clearing areas have been mapped as the Violet land system (GIS Database).

The Watson land system is characterised by hills, rises and gravelly plains on sedimentary rocks supporting bowgada shrublands with non-halophytic undershrubs (Payne et al., 1998). Relief is occasionally up to about 140 metres above the adjacent areas (Payne et al., 1998). The Watson land system is generally not prone to erosion due to the presence of the stone and gravel surface mantles; however, the removal of the mantles may initiate erosion (Payne et al., 1998). A small proportion of the proposed clearing areas have been mapped as the Watson land system (GIS Database).

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

However, the proposed clearing of 66.2 hectares will allow for the construction of TSF3 and any associated infrastructure and works. As such, the majority of the clearing will be stabilised through the permanent presence of the TSF. Additionally, erosion from surface water runoff within cleared areas will be minimised as diversion channels and stilling basins will be constructed to secure the stabilisation of the TSF (OZ Minerals, 2009a).

Should the permit be granted, it is recommended that a condition be imposed requiring that cleared vegetation and topsoil be retained for rehabilitation purposes.

Methodology OZ Minerals (2009a).
Payne et al. (1998).
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 is not located within a conservation area (GIS Database). The nearest conservation area is the Weelhamby Lake Nature Reserve which is located approximately 72 kilometres southwest of the application area (GIS Database). Given the distance separating the application area and the nearest conservation area, the proposed clearing is unlikely to impact on the conservation values of the Weelhamby Lake Nature Reserve.

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

Methodology GIS Database:
- CALM Managed Lands and Waters.

(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

As MMG Golden Grove proposed to construct the TSF3 within the application area, they commissioned URS (2007; 2009) to conduct surface water and groundwater assessments of the application area.

There are no permanent wetlands or watercourses within the application area (GIS Database). Minor non-perennial watercourses occur within the application area; however, these hardly ever flow as rainfall seldom exceeds evaporation (URS, 2007; 2009; GIS Database). The rangeland land systems present within the application area were described to have a stony mantle that, once removed, may initiate soil erosion (Payne et al., 1998).

To prevent surface water contamination, surface water flowing from greenfields sites will be diverted around the TSF3 site using diversion channels and surface water from brownfields sites (likely to contain higher levels of suspended sediment and stored salts) will be diverted into stilling basins to decrease scouring and sediment loading (URS, 2009).

The application area is not located within a Public Drinking Water Source Area (GIS Database). The groundwater salinity of the application area is in the range of 1,000 - 3,000 milligrams per litre Total Dissolved Solids (TDS) (GIS Database) and is considered to be brackish. The clearing of 66.2 hectares is unlikely to increase the salinity of the groundwater and impact on any groundwater dependent ecosystems (GIS Database). Additionally, the application area is adjacent to Gossan Hill mine and Scuddles mine. Groundwater is abstracted for dewatering purposes at both mines, creating two distinct cones of depression that are a minimum of 82 metres in depth (URS, 2007). As the vegetation present is not riparian and is unlikely to rely on the groundwater as a source of water, it is unlikely that the quality of groundwater will be affected by the clearing of the application area.

The prevention of contamination and pollution of the surface water, groundwater and the surrounding environment by the TSF3 will be certified through assessment of the design, and management, maintenance and monitoring procedures (OZ Minerals, 2009b). These factors will be assessed as part of the Mining Proposal application (under the *Mining Act 1978*) and Works Approval application (under Part V of the *Environmental Protection Act 1986*) (OZ Minerals, 2009b).

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

Methodology OZ Minerals (2009b).
Payne et al. (1998).
URS (2007).
URS (2009).
GIS Database:
- Geodata, Lakes.
- Groundwater Salinity, Statewide.
- Hydrography, linear.
- Public Drinking Water Source Areas (PDWSAs).

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

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

The application area is located approximately 49 kilometres south-southeast of Yalgoo, which has a mean annual rainfall of approximately 258.5 millimetres and a mean annual evaporation of approximately 1,944 millimetres (URS, 2009).

No permanent waterbodies are located within the application area (GIS Database). Minor non-perennial

watercourses occur within the application area; however, these hardly ever flow as rainfall seldom exceeds evaporation (URS, 2009; GIS Database). Rainfall for the application area is low and infrequent, and drainage lines are non-perennial and only flow after substantial rainfall events (URS, 2009). Therefore, it is unlikely that the clearing of 66.2 hectares for permanent structures is unlikely to exacerbate or increase the incidence of flooding in the area.

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

Methodology URS (2009).
GIS Database:
- Geodata, Lakes.
- Hydrography, linear.

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

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

There are no known Aboriginal sites of significance within the application area, however there are four other sites within ten kilometres of the application area (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.

One submission was received by the Department of Mines and Petroleum for this application, however there were no objections raised with regard to the assessment of the application.

Clearing permit CPS 3142/1 was granted by the Department of Mines and Petroleum on 9 July 2009 and is valid from 8 August 2009 to 31 March 2011. The clearing permit authorised the clearing of 60.052 hectares of native vegetation. An application for an amendment to clearing permit CPS 3142/1 was received by the Department on 4 January 2009. The proponent has requested to be approved to clear an additional ~6 hectares outside the current permit boundary. The additional proposed clearing is not likely to have any significant environmental impacts. The duration of the permit will remain the same.

Methodology GIS Database:
- Aboriginal Sites of Significance.
- Native Title Claims.

4. Assessor's comments

Comment

The clearing principles have been addressed and the amended proposal is at variance to Principle (f); may be at variance to Principle (g); is not likely to be at variance to Principle (a), (b), (c), (d), (h), (i) or (j); and is not at variance to Principle (e).

Should an amended permit be granted, it is recommended that conditions be imposed on the permit for the purposes of weed management, retaining vegetation and topsoil, record keeping and permit reporting.

5. References

- CALM (2002) A biodiversity audit of Western Australia's 53 biogeographical subregions in 2002. Department of Conservation and Land Management, Western Australia.
- Coffey Environments (2008) Golden Grove fauna assessment for a proposed third tailing storage facility. Coffey Environments Pty Ltd, 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 (2000) Environmental protection of native vegetation in Western Australia. Clearing of native vegetation, with particular reference to the agricultural area. Position Statement No. 2. December 2000. Environmental Protection Authority, Western Australia.
- 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 (1996) Flora and vegetation of Golden Grove project, Murchison Zinc Company Pty Ltd. Yalgoo. Mattiske Consulting Pty Ltd, Western Australia.
- MMG Golden Grove (2009) Supporting information for amendment application CPS 3242/2.
- OZ Minerals (2009a) Application for a clearing permit (purpose permit) for proposed TSF3 development. M59/03 and M59/90. OZ Minerals Golden Grove Pty Ltd, Western Australia.
- OZ Minerals (2009b) Mining Proposal: Construction of Tailings Storage Facility 3. Tenements M59/03 and M59/90. OZ Minerals Golden Grove Pty Ltd, Western Australia.
- Payne, A.L., Van Vreeswyk, A.M.E., Pringle, H. J. R., Leighton, K.A. & Hennig, P. (1998) Technical bulletin no. 90: An

inventory and condition survey of the Sandstone-Yalgoo-Paynes Find area, Western Australia. Department of Agriculture, Western Australia.

Shepherd, D.P. (2007). Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.

URS (2007) TSF3 site selection hydrological and hydrogeological assessment. URS Australia Pty Ltd, Western Australia.

URS (2009) Golden Grove Project - TSF3 surface water characterisation study and management plan. URS Australia Pty Ltd, Western Australia.

Yilgarn Traders (2008) Golden Grove. Flora and vegetation mapping for TSF 3 footprint - site A. Yilgarn Traders, Western Australia.

6. Glossary

Acronyms:

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

Definitions:

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

- P1** **Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2** **Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3** **Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4** **Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R** **Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X** **Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

- Schedule 1** **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and

birds in danger of extinction, are declared to be fauna that is need of special protection.

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

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

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

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

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