



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5284/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Minjar Gold Pty Ltd

1.3. Property details

Property: Mining Lease 59/420
Mining Lease 59/497
Miscellaneous Licence 59/61
Colloquial name: Minjar Gold Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 27 December 2012

2. Background

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):

420: Shrublands; bowgada and jam scrub.

Animal Plant Mineral (APM) conducted a Level 2 flora and vegetation assessment over the application area from 7 to 18 November 2011 (APM, 2011). The assessment was undertaken as part of a larger flora and vegetation assessment over five project areas including Austin, Windinne Well, Silverstone, Bugeye and Highland Chief. Vegetation mapping was sourced from three previous Matiske Consulting Pty Ltd (Matiske) surveys which covered the majority of the application area and were undertaken in 2009. This mapping was verified by APM (2011) and extended to include the entire application area. According to APM (2012b), the following nine vegetation communities occur within the application area.

Eucalypt Woodlands

1. E3: Low Woodland to Low Open Woodland of *Eucalyptus loxophleba* subsp. *supralaevis* over *Eremophila pantonii*, *Acacia burkittii*, *Exocarpos aphyllus*, *Senna artemisioides* subsp. *fillifolia* and *Eremophila* spp. over *Maireana triptera*, *Rhagodia drummondii*, *Ptilotus obovatus* and chenopods on orange-brown sandy loam on flats.

2. E4: Low Open Woodland of *Eucalyptus loxophleba* subsp. *supralaevis* with *Eucalyptus striatocalyx* over *Eremophila pantonii*, *Exocarpos aphyllus* over *Tecticornia doleiformis*, *Maireana triptera*, *Maireana ?georgei*, chenopods and annuals on white-brown clay loam on flats.

Acacia Shrublands

3. A11: Tall shrubland of *Acacia ramulosa* var. *ramulosa* with *Acacia tetragonophylla* and *Acacia burkittii* over *Scaevola spinescens*, *Senna* sp. Austin and mixed low shrubs over *Ptilotus obovatus*, *Cheilanthes adiantoides* and annuals on orange sandy loam with rock cover on flats.

4. A12: Shrubland of *Acacia ?kalgoorliensis* with *Eremophila oppositifolia* subsp. *angustifolia*, *Exocarpos aphyllus* and *Hakea preissii* over *Tecticornia doleiformis* with *Scaevola spinescens*, *Rhagodia drummondii*, *Frankenia ?setosa* and *Atriplex bunburyana* on orange-brown sandy loam with rock cover on flats.

5. A13: Tall shrubland of *Acacia ramulosa* var. *ramulosa* with *Acacia burkittii*, *Acacia tetragonophylla* and *Acacia acuminata* over *Ptilotus obovatus*, mixed low shrubs and annuals on orange brown sandy loams on flats and slopes.

6. A14: Tall shrubland of *Acacia ramulosa* var. *ramulosa* with *Acacia burkittii*, *Allocasuarina acutivalvis* subsp. *prinsepiana*, *Acacia sibina* and *Acacia ayersiana* over *Hibbertia arcuata* and mixed low shrubs on brown orange sandy loam with laterite pebbles on slopes.

Shrublands

7. S5: Shrubland of *Dodonaea inaequifolia*, *Thryptomene costata*, *Acacia tetragonaphylla* and *Hybanthus floribundus* subsp. *curvifolius* with occasional emergent *Allocasuarina dielsiana* on brown orange sandy loam granite outcropping on slopes.

8. S6: Shrubland of *Aluta aspera* subsp. *hesperia* and *Drummondita fulva* (P3) with *Eremophila latrobei* subsp. *latrobei* with emergent *Allocasuarina acutivalvis* subsp. *prinsepiana*, *Acacia ramulosa* var. *ramulosa*, *Grevillea obliquistigma* subsp. *obliquistigma* and *Acacia burkittii* on light brown sandy loam with laterite pebbles on laterite breakaways and ridges.

9. S7: Tall open shrubland of *Melaleuca lateriflora* subsp. *lateriflora* and *Acacia burkittii* with *Eremophila oppositifolia* subsp. *angustifolia*, *Eremophila oldfieldii* subsp. *oldfieldii* and mixed shrubs over *Scaevola spinescens* and mixed low shrubs on light brown sandy loam with rock cover at the base of a laterite breakaway.

Clearing Description

Minjar Gold Pty Ltd has applied to clear 32 hectares within an application area of approximately 76 hectares (GIS Database). The application area is located approximately 76 kilometres south, south east of Yalgoo (GIS Database).

The purpose of the application is to redevelop the Bugeye mine which includes pit expansion, enlarging the waste rock dump and construction of a temporary run of mine pad (APM, 2012b). Clearing will be by mechanical means. Vegetation and topsoil will be stockpiled for use in rehabilitation (APM, 2012b).

Vegetation Condition

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

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

Comment

The application area has been the subject of previous mining operations with historic pits, waste rock dumps and roads present in the application area (APM, 2012b). Drill lines are also present and 22.8 hectares of the application area has been previously cleared (APM, 2012b).

APM (2012b) also notes impacts from historic grazing and current grazing by feral goats.

A Level 1 fauna survey was also conducted in association with the 2009 Mattiske flora and vegetation surveys of the Bugeye project area. This was undertaken by Aquila Wildlife Fieldwork with site reconnaissance undertaken in July 2009.

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 Talling subregion of the Yalgoo Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). At a broad scale, vegetation can be described as 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).

Several vegetation surveys have previously been conducted over the application area and Minjar Gold tenements. APM (2011) reviewed these and utilised the most recent survey undertaken by Mattiske (2009a) over the Bugeye project area. Based on the APM (2011) and Mattiske (2009a) surveys nine vegetation communities were identified.

The Mattiske survey recorded a total of 36 families, 53 genera and 93 species within the Bugeye survey area (Mattiske, 2009a). A total of 11 invasive weed species have been identified during previous surveys (APM, 2012b). Potential impacts from weeds as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

No Threatened Flora or Threatened Ecological Communities have been recorded within the application area (GIS Database; APM, 2012a, 2012b).

The application area is located within the Priority 1 Minjar vegetation complexes (banded ironstone formation (BIF)) Priority Ecological Communities (PECs) and is approximately 5 kilometres from the Priority 1 Warriedar Hill/Pinyalling vegetation complexes (BIF) PEC. These PECs consist of vegetation units associated with BIF and BIF outwash geology of the BIF range and often include endemic vegetation units (DEC, 2012a). Advice from DEC (2012a) has highlighted that vegetation communities S12 and A22 identified by Mattiske (2009b) in a level 2 flora survey conducted over the Windinne Well area (7 kilometres north of the application area) have similarities to Markey and Dillon's (2008) floristic community types which are associated with the PECs on outcrops of BIF. However, surveys conducted by Mattiske (2009a) and APM (2011) did not identify these vegetation communities within the application area.

Three Priority 3 Flora species were recorded within the application area during the current survey by APM (2011): *Mircomyrtus trudgei*, *Drummondita fulva* and *Grevillea scabrada*. *Persoonia pentasticha* (Priority 3) was also recorded during a survey conducted by Mattiske (2009a) but was not identified within the application area by APM (2011).

Population sizes of *Mircomyrtus trudgenii* and *Drummondita fulva* were estimated at 420+ and 222+ individuals within the 124 hectare survey area (APM, 2011). Approximately 16.7% and 23.4% of the total populations identified within the survey area will be impacted by the proposed clearing (APM 2012b). *Persoonia pentasticha* has been recorded at the Minjar Gold Silverstone site (5 kilometres north) with an estimated population of 237+ individuals (APM, 2011). Only two individual *Grevillea scabrida* were found in the survey area which will both be impacted. However, Matiske (2009a) identified six populations of this species which contain between 34 - 70 individuals during the 2009 survey.

The application area has been subject to previous disturbance with 22.8 hectares being previously cleared (APM, 2012b). Although the application area contains some regionally restricted flora species, it is unlikely to represent significant habitat for these species and the proposed clearing is unlikely to have a significant impact on their conservation status.

According to APM (2012b), database searches identified eight mammal, 114 bird, three amphibian and 34 reptile species that have been recorded within a 40 kilometre radius of the Bugeye area (middle of the Minjar prospects). APM (2012b) notes there are four broad fauna habitat types within the application area including *Eucalyptus* woodlands, *Callitris* woodlands, *Acacia* shrublands and Mixed shrublands. Given the surrounding area is largely uncleared and the historical mining disturbance, it is unlikely the application area comprises a higher level of faunal diversity than surrounding areas.

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

Methodology APM (2011)
APM (2012a)
APM (2012b)
CALM (2002)
DEC (2012a)
Matiske (2009a)
Matiske (2009b)
GIS Database:
- 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 is not likely to be at variance to this Principle

APM (2012b) identified four broad fauna habitat types within the application area including *Eucalyptus* woodlands, *Callitris* woodlands, *Acacia* shrublands and Mixed shrublands.

According to APM (2012b), database searches identified eight mammal, 114 bird, three amphibian and 34 reptile species that have been recorded within a 40 kilometre radius of the Bugeye area (middle of the Minjar prospects). Of these 11 species were identified as conservation significant. The desktop assessment revealed that targeted fieldwork was required for two of these species including the Malleefowl (*Leipoa ocellata*) (Vulnerable; Schedule 1) and Western Spiny-tailed Skink (*Egernia stokesii badia*) (Endangered; Schedule 1). The remainder of the conservation significant species may utilise the application area, however, based on factors such as species mobility, core or preferred habitat requirements and the availability of similar habitat in surrounding areas, these species are unlikely to be significantly impacted by the proposed clearing.

The Malleefowl occupies semi-arid to arid shrublands and low woodlands dominated by mallee and associated habitats, such as broombush (*Melaleuca uncinata*) and native pine (*Callitris* spp.) scrub (Frith 1962a, b; Marchant & Higgins 1993; Benshemish 1999; Garnett & Crowley 2000) (cited in APM, 2012b). According to APM (2012a, 2012b), there are large areas of suitable Malleefowl habitat within the Minjar tenements and the species appears to be common with regular sightings of birds by staff and survey teams. A targeted Malleefowl search identified six historic mounds with one historic mound located 80 metres outside the proposed clearing area. Historic mounds (20 to 100 years old) are considered severely weathered and unable to be reused due to loss of structural integrity (APM, 2012a). Minjar Gold Pty Ltd has identified management measures for the Malleefowl including traffic speed reductions, monitoring of existing mounds, implementation of a 250 metre buffer for active mounds, training on Malleefowl identification and recording of any Malleefowl/mounds which will be implemented (APM, 2012b). Given the above, the proposed clearing is considered unlikely to have a significant impact on this species.

The Western Spiny-tailed Skink lives in small family groups and inhabits timber and rock crevices (APM, 2012b). Habitat for *Egernia* at Bugeye is considered marginal. Potential habitat includes a very small rock outcrop which occurs adjacent to a dump of rock boulders. In close proximity were a number of hollow logs at the base of eucalyptus species (APM 2012b). Trapping was undertaken at Bugeye with 20 Elliott traps set over four nights. No direct evidence or secondary evidence of *Egernia* was recorded (APM 2012b). Given the above, the proposed clearing is considered unlikely to have a significant impact on this species.

According to APM (2012c), there are three populations of the Shield-backed Trapdoor Spider (*Idiosoma*

nigrum) (Schedule 1) recorded in the vicinity of the Project area: Karara Hills, Blue Hills and Shine (Bamford, 2007, 2012) (cited in APM, 2012c). Two additional records from the Department of Environment and Conservations' (DEC) database for Threatened and Priority Fauna occur adjacent to the project area (APM 2012c, DEC 2012b). Within the application area, potentially suitable habitat includes 14.9 ha of *Acacia* shrubland on orange brown sandy loam with laterite pebbles on slopes and rocky outcrops (APM 2012c). The application area was surveyed by the Principle Zoologist at APM in 2011 which included searches for the Shield-backed Trapdoor Spider (APM, 2012c). No trapdoor spider burrows were recorded in the application area. APM (2012c) notes that grazing feral goats also exert significant pressure on Shield-backed Trapdoor Spiders and that the high number of goats found around this prospect may have contributed to the absence of this species in the area. Based on the above the proposed clearing is unlikely to have a significant impact on habitat for this species.

A Stygofauna Pilot Study was conducted in the Minjar tenements in July 2009 by Outback Ecology Services (Outback Ecology). This study identified stygofauna within a pastoral bore located within the shallow perched alluvial aquifer and no stygofauna within four bores located within the deeper fractured rock aquifer (Outback Ecology, 2009). The taxa recorded were typical for the region and have been shown in other studies to prefer alluvial aquifers and have dispersal capabilities (Outback Ecology, 2009).

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

Methodology APM (2012a)
APM (2012b)
APM (2012c)
DEC (2012b)
Outback Ecology (2009)

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

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

According to available databases, there are no records of Threatened Flora within the application area (GIS Database).

The Threatened Flora species, *Stylidium scintillans*, has been recorded from approximately 3 kilometres north of the application area (GIS Database). This species is confined to the upper slopes and summits of low rises and breakaways composed of highly weathered granitic basement rock with weathered or colluvial ironstone rock and kaolinitic residue (Wege, 2012). It grows in rocky, shallow, pale brown clay-loam soils, with individuals sometimes growing out of rock fissures (Wege, 2012). However, according to APM (2012a), there are no granitic outcrops in the application area and no Threatened Flora species have been recorded during current and previous surveys of the application area (APM 2012a, 2012b). It is therefore considered unlikely that this species occurs within the application area.

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

Methodology APM (2012a)
APM (2012b)
Wege (2012)
GIS Database:
- Threatened and Priority Flora

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

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

According to available databases, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is approximately 55 kilometres south west of the application area (GIS Database).

No TECs have been recorded within the application area during recent surveys (APM, 2012a, 2012b).

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

Methodology APM (2012a)
APM (2012b)
GIS Database:
- Threatened Ecological Sites Buffered

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

Comments Proposal is not at variance to this Principle

The application area falls within the Yalgoo Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 98.6% of the pre-European vegetation remains (see table) (GIS Database, Government of Western Australia, 2011).

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

420: Shrublands; bowgada and jam scrub.

Approximately 95% of this vegetation association remains at a state and bioregional level (Government of Western Australia, 2011). Based on the above, the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% Current extent in All DEC Managed Lands (% Pre-European Extent)
IBRA bioregion – Yalgoo	5,057,314	4,987,193	~98.61	Least Concern	~14.6 (~14.1)
IBRA Subregion - Tallering	3,498,944	3,449,835	~98.60	Least Concern	~16.65 (~16.62)
Local Government – Yalgoo	2,794,644	2,790,720	~99.86	Least Concern	-
Beard vegetation associations - State					
420	859,632	829,977	~96.55	Least Concern	~14.6 (~14.1)
Beard vegetation associations - Bioregion					
420	621,396	620,054	~99.78	Least Concern	~16.5 (~16.47)
Beard vegetation associations - Subregion					
420	549,363	548,406	~99.83	Least Concern	-

* Government of Western Australia (2011)

** 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 (2011)
GIS Database:
- IBRA WA (Regions – Sub Regions)
- Pre-European Vegetation

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

Comments Proposal is not at variance to this Principle

There are no watercourses or wetlands recorded within the application area (GIS Database) and no vegetation has been recorded growing in association with watercourses or wetlands during current and previous surveys of the application area (APM 2012a, 2012b).

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

Methodology APM (2012a)
APM (2012b)
GIS Database:
- Badja 1.4m Orthomosaic - Landgate 2003
- Hydrography, linear

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

Comments Proposal may be at variance to this Principle

The application area has been mapped as occurring on the Graves and Moriarty land systems (GIS Database). The Graves land system comprises of basalt and greenstone rises and lowhills supporting eucalypt woodlands with prominent bluebush and saltbush. The Moriarty land system comprises low greenstone rises and stony plains supporting chenopod shrublands with patchy eucalypt overstoreys (Payne et al., 1998). These land systems are moderately susceptible to erosion where they are found in association with watercourses and alluvial plains or where stone and gravel surface mantles are disturbed (Payne et al., 1998). Based on the above there is potential for erosion to occur, particularly where mantles are disturbed or removed. Potential impacts from erosion as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

The average annual evaporation rate is over 11 times the average annual rainfall, so recharge to the groundwater would be expected to be minimal, thereby reducing the likelihood of raised saline water tables occurring as a result of the proposed clearing (BoM, 2012; GIS Database).

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

Methodology BoM (2012)
Payne et al. (1998)
GIS Database:
- Evaporation Isopleths
- 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

According to available databases, the application area is located within a conservation area (GIS Database). The application area is located on the former Warriedar pastoral lease which has been purchased by the Department of Environment and Conservation (GIS Database).

Given the relatively small scale of the project within previously disturbed areas, and its location away from the high conservation value ranges and associated PECs, the project is not likely to impact on the potential conservation values of Warriedar Station. However, the proposed clearing may potentially increase the spread and occurrence of weeds within the former Warriedar pastoral lease. The implementation of a weed management condition will minimise this risk.

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

Methodology GIS Database:
- DEC Tenure

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

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

According to available databases, the application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). There are no permanent waterbodies or watercourses within the application area (GIS Database, APM 2012b). According to APM (2012b), surface water is only likely to flow following heavy rainfall and occurring as sheet flow.

The annual average rainfall for Yalgoo is 259.8 millimetres and the average annual evaporation rate for the application area is approximately 3,000 millimetres (BoM, 2012; GIS Database). Based on this, surface water is likely to evaporate quickly with surface sheet flow and higher sediment levels generally occurring during larger rainfall events.

According to available databases, groundwater salinity within the application area is between 3,000 and 7,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered brackish to saline. The proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

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

Methodology APM (2012b)
BoM (2012)
GIS Database:
- Evaporation Isopleths
- 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 within the YarraMonger catchment area (GIS Database). Given the size of the area to be cleared (85 hectares) in relation to the size of the catchment area (4,182,476 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a local or catchment scale.

With an average annual rainfall of 259.8 millimetres and an average annual evaporation rate of 3,000 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2012; GIS Database). Whilst large rainfall events may result in flooding of the area, the proposed clearing is not likely to lead to an increase in incidence or intensity of flooding.

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

Methodology BoM (2012)
GIS Database:
- Evaporation Isopleths
- Hydrographic Catchments - Catchments

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

There is one native title claim over the area under application: WC97/72 (GIS Database). This claim has been registered with the Native Title Tribunal 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 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 15 October 2012 by the Department of Mines and Petroleum inviting submissions from the public. There were no submissions received.

Methodology GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims – Registered with the NNTT

4. References

- APM (2011) Minjar Gold Biological Survey Minjar Gold Mine Expansion Flora and Vegetation Assessment November 2011. Unpublished report prepared by Animal Plant Mineral Pty Ltd for Minjar Gold Pty Ltd dated November 2011.
- APM (2012a) Further Information provided by Animal Plant Mineral between 7 and 12 December 2012.
- APM (2012b) Vegetation Clearing Permit Application Support Information August 2012 Application for a Clearing Permit (Purpose Permit) for the Minjar Gold Project South Murchison Region, Western Australia. Bugeye M59/420, M59/497, L59/61. Unpublished report prepared by Animal Plant Mineral Pty Ltd for Minjar Gold Pty Ltd dated August 2012.
- APM (2012c) *Idiosoma Nigrum* Risk Assessment For The Bugeye Prospect Unpublished report prepared by Animal Plant Mineral Pty Ltd for Minjar Gold Pty Ltd dated December 2012.
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- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Yalgoo Department of Conservation and Land Management, Western Australia.
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- DEC (2012b) NatureMap - Mapping Western Australia Biodiversity, Department of Environment and Conservation. <http://naturemap.dec.wa.gov.au/default.aspx>, viewed September 2012.
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Victoria.

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- Outback Ecology (2009) Golden Stallion Resources Minjar Project Stygofauna Pilot Study. Unpublished report prepared by Outback Ecology Services for Golden Stallion Resources dated September 2009.
- 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.
- Wege (2012) Navigating the floral Milky Way: the taxonomy of the microgeophytic triggerplants (*Stylidium petiolare* and allies *Stylidiaceae*). Australian Systematic Botany Journal, 2012, Volume 25, Number 5, Pages 138-169. Published online at www.publish.csiro.au/journals/asb.

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.

