



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 4006/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Golden West Resources Limited

1.3. Property details

Property: Mining Lease 53/971
Mining Lease 53/972
Mining Lease 53/1018
Mining Lease 53/1078
Miscellaneous Licence 53/146
Local Government Area: Shire of Wiluna
Colloquial name: John William Douth Open Pit

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 24 March 2011

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia and are useful to look at vegetation extent in a regional context. The following Beard vegetation association is located within the application area:

202: Shrublands; mulga & *Acacia quadrimarginea* scrub.

A number of flora and vegetation surveys have been conducted within and surrounding the application area from 2005 to 2010. The most recent survey was conducted by Recon Environmental. The following vegetation communities have been recorded within the application area (Keith Lindbeck and Associates, 2010):

SIMS-B – Stony Ironstone Mulga Shrublands on rocky slopes and crests, frequently on Banded Iron Formation (BIF). Described as an *Acacia aneura* var. *microcarpa* shrubland with *Grevillea berryna* occurring on rocky outcrops usually on BIF above *Prostanthera campbellii*, *Eremophila latrobei* subsp. *latrobei*, *E. punctata*, over scattered *Ptilotus schwartzii* and *Cheilanthes brownie*;

SIMS-M – Stony Ironstone Mid-slope Mulga Shrubland. Mid-slope habitat associated with iron rich outcrops. It consists of *Acacia aneura* var. *microcarpa*, with scattered *A. pruinocarpa* above *Eremophila latrobei* subsp. *latrobei*, *Dodonaea petiolaris*, *Harnieria kempeana* subsp. *muelleri*, *Eremophila flabellata*, with *E. jucunda* subsp. *jucunda*, and *Ptilotus rotundifolius*;

DRAS – Drainage Tract Acacia Shrubland. Occurs in areas where there is more concentrate run-on. It ranges from a scattered to close tall shrubland, sometimes woodland with understorey development inversely related to upper storey cover. Species common to DRAS are also common to other sclerophyll shrubland habitats;

ASET – Acacia Shrubland over *Eremophila* and *Triodia*. Mixed Acacia shrubland generally comprised of *Acacia aneura* over mid to low shrubs including *Eremophila punctata*, *E. latrobei*, *E. forrestii*, over *Triodia melvillei*;

SIMS-C – Stony Ironstone Mulga Shrublands on rocky slopes and crests. Commonly occurring upland habitat associated with ironstone or laterite; dominated by *Acacia aneura* var. *microcarpa*, with *Grevillea berryna*, above *Eremophila latrobei* subsp. *latrobei* often with *Stenanthemum petraeum*, *Eremophila punctata*, *E. jucunda* subsp. *jucunda*, and *Sida* sp. *Golden calyces glabrous*;

SIME – Stony Ironstone Mulga with *Eremophila forrestii* Shrubland. Commonly occurring mulga shrubland associated with the lower slopes of the hills and ridges in the survey area. It is dominated by *Acacia aneura* var. *microcarpa*, above *Eremophila forrestii* often with *E. punctata*, *E. flabellata* and *E. jucunda* subsp. *jucunda*;

SAES – Stony Acacia Eremophila Shrubland. Occurs as nearly level stony plains below areas of greater relief in both greenstone and granite dominated landscapes. Soils are generally shallow (<60 centimetres) red stony earths. SAES can be summarised as an open *Acacia aneura* shrubland on stony red earth over scattered *Eremophila* species, *Sida ectogama*, *Ptilotus obovatus*, and *P. schwartzii*;

OALS - Open Acacia Shrubland on ironstone or laterite over low scattered shrubs. Varying habitat generally dominated by *Acacia quadrimarginea* and/or *A. balsamea* with *Acacia aneura* and often *Acacia cuthbertsonii* subsp. *cuthbertsonii* over *Scaevola spinescens*, *Eremophila latrobei* subsp. *latrobei*, *Ptilotus obovatus* and *E. flabellata*. OALS frequently occurs on lateritic low rises, low outcrops of weathered BIF, rough quartz slopes and upper breakaway surfaces; and

BRXS – Breakaway Mixed Shrublands. Varied habitat closely allied with BCLS (breakaway footslopes chenopod low shrubland) in that it shares the same physical environmental characteristics. It is generally a scattered *Acacia* species shrubland above *Eremophila* species, *Ptilotus obovatus*, with *Scaevola spinescens*, and often with emergent *Eucalyptus carnei* near the foot slope edges of the breakaway scarp. It has also been recorded as a moderately close tall to mid shrubland.

Clearing Description Golden West Resources Ltd has applied to clear up to 64 hectares within an application area of approximately 249.4 hectares (GIS Database). The application area is located approximately 34 kilometres south-west of Wiluna.

The purpose of the application is to develop the John William Douch Open Pit. This includes the construction of an open pit, waste rock dump, magazine, work area and ore storage (Keith Lindbeck and Associates, 2010).

Vegetation Condition Pristine: No obvious signs of disturbance (Keighery, 1994).

to

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

Comment The vegetation condition was assessed by a botanist from Recon Environmental.

3. Assessment of application against clearing principles

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

Comments Proposal may be at variance to this Principle

Flora and vegetation surveys of the application area identified nine intact vegetation communities (Keith Lindbeck and Associates, 2010). The vegetation condition ranged from 'pristine' to 'excellent' (Keith Lindbeck and Associates, 2010). There have been a number of weed species recorded at the Wiluna West area (Recon Environmental, 2010).

The application area is located within the boundary of the Priority Ecological Community (PEC) 'Wiluna West vegetation complexes (Banded Ironstone Formation)' (Keith Lindbeck and Associates, 2010; GIS Database). This PEC has an indicative boundary of an estimated 23,156 hectares (Keith Lindbeck and Associates, 2010). The proposed clearing is for 64 hectares, 13 of which has been identified as being associated with banded ironstone formation (Keith Lindbeck and Associates, 2010). However, the whole application area is within the indicative boundary and it is likely that the vegetation communities are representative of the PEC.

Flora surveys of the Wiluna West area have recorded a total of 278 native flora taxa from 120 genera and 41 families (Keith Lindbeck and Associates, 2010). The Wiluna West banded ironstone formation has a relatively high level of floristic diversity compared to other banded ironstone formations (BIF) in the Midwest region (Government of Western Australia, 2007). Although the application area is not entirely on banded ironstone formation, there would still be expected to be a higher level of floral diversity than surrounding plain areas.

There has been seven species of Priority Flora recorded within the application area (Keith Lindbeck and Associates, 2010):

- *Sida* sp. Wiluna (Priority 3);
- *Calytrix uncinata* (Priority 3);
- *Homalocalyx echinulatus* (Priority 3);
- *Olearia mucronata* (Priority 3);
- *Sauropus ramosissimus* (Priority 3); and
- *Baeckea* sp. Melita Station (Priority 4).

There have been over 2,500 *Sida* sp. Wiluna individuals recorded within the Wiluna West area (Keith Lindbeck and Associates, 2010). Of these, 1065 individuals have been recorded within the application area and approximately 35 plants will be disturbed by the proposed clearing (Keith Lindbeck and Associates, 2010). In addition to the Wiluna West population a regional survey for this species has recorded over 1,350 individuals from 15 populations (Keith Lindbeck and Associates, 2010). It has been recorded from a variety of vegetation types and is not restricted to BIF habitat. From known records there are over 4,500 individuals of *Sida* sp. Wiluna from 150 populations (Keith Lindbeck and Associates, 2010). The removal of 35 individuals is not anticipated to have a significant impact on this species.

The Priority 3 species *Calytrix uncinata* has been recorded from numerous locations within the application area (Keith Lindbeck and Associates, 2010). There have been approximately 980 individuals recorded from the

Wiluna West locality, 97 of which have been recorded within the application area (Keith Lindbeck and Associates, 2010). The proposed clearing will result in the removal of 26 individuals (Keith Lindbeck and Associates, 2010). This species is widespread throughout the Murchison bioregion and the removal of 26 individuals is not expected to have a significant impact on the local or regional populations.

Baeckea sp. Melita Station has also been recorded at several locations within the application area (Keith Lindbeck and Associates, 2010). There has been 73 individuals recorded within the application area and the proposed clearing will result in the removal of 47 individuals (Keith Lindbeck and Associates, 2010). Over 1,180 individuals have been recorded along the main ridges of the Wiluna West BIF (Keith Lindbeck and Associates, 2010). It has a wide distribution within the Murchison bioregion and the removal of 47 individuals is not expected to have a significant impact on local or regional populations.

The other three species have all been recorded within the application area, however, infrastructure has been relocated to avoid disturbance to these species (Keith Lindbeck and Associates, 2010).

Fauna surveys conducted in the Wiluna West area have recorded a total of 62 bird, 18 mammal, one amphibian and 28 reptile species (Keith Lindbeck and Associates, 2010). Four of these species are of conservation significance and there is the potential for a further 6 species of conservation significance to occur within the application area. BIFs of the Midwest region tend to support a distinct assemblage of fauna in comparison to the surrounding flat areas of sandplain and woodland (Government of Western Australia, 2007). The number of fauna species recorded at Wiluna West is similar to that of other BIFs within the Midwest region (Government of Western Australia, 2007).

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

Methodology Government of Western Australia (2007)
Keith Lindbeck and Associates (2010)
Recon Environmental (2010)
GIS Database:
- 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

There have been three Level 2 Fauna surveys undertaken by Ninox Wildlife Consulting in the spring of 2005, 2006 and 2007 respectively. These surveys covered the entire Wiluna West area including the application area. These surveys recorded 62 bird, 18 mammal, one amphibian and 28 reptile species from the Wiluna West area (Keith Lindbeck and Associates, 2010). Four of these are conservation significant fauna:

- Mulgara (*Dasyercus cristicauda*) – Schedule 1; Vulnerable;
- Malleefowl (*Leipoa ocellata*) – Schedule 1; Vulnerable;
- Australian Bustard (*Ardeotis australis*) – Priority 4; and
- Peregrine Falcon (*Falco peregrinus*) – Schedule 4.

Four Mulgara have been recorded in spinifex sandplain approximately 10 kilometres north of the application area (Keith Lindbeck and Associates, 2010). Additional searches by Martu elders found four old burrows, four active burrows and three areas with recent tracks (Keith Lindbeck and Associates, 2010). As there is not spinifex sandplain within the application area, the proposed clearing is not likely to impact this species.

Fresh Malleefowl footprints were first recorded at Wiluna West during fauna surveys in 2006 and 2007 (Keith Lindbeck and Associates, 2010). A targeted search in May 2008 recorded one active mound, numerous inactive mounds and tracks along the ridge (Keith Lindbeck and Associates, 2010). No targeted searches have been carried out within the application area. Given that Malleefowl are known from the local area it is recommended that a targeted search be undertaken prior to clearing occurring.

The Australian Bustard has been recorded outside the application area, however, suitable habitat for this species is present within the application area (Keith Lindbeck and Associates, 2010). This species is likely to utilise the application area and the proposed clearing will result in the loss of some habitat. However, the Australian Bustard is a nomadic species found across most areas of the state (Johnstone and Storr, 2004). The application area is not likely to represent significant habitat for this species and the proposed clearing is not expected to have a significant impact.

A Peregrine Falcon was observed flying over the survey area (Ninox Wildlife Consulting, 2006). This species also has a wide distribution across the state within a variety of habitats (Johnstone and Storr, 2004). It usually nests on ledges in cliffs and sometimes in hollow trees (Johnstone and Storr, 2004). No nests have been recorded and the application area is not likely to represent significant habitat for this species.

There are six other conservation significant fauna species that have been identified as potentially occurring in the local area:

- Great Desert Skink (*Egernia kintorei*) – Schedule 1; Vulnerable;

- Bush-stone Curlew (*Burhinus grallarius*) – Priority 4;
- Striated Grasswren (*Amytornis striatus*) – Priority 4;
- Long-tailed Dunnart (*Sminthopsis longicaudata*) – Priority 4;
- Fork-tailed Swift (*Apus pacificus*) – Migratory under *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*; and
- Rainbow Bee-eater (*Merops ornatus*) – Migratory under *EPBC Act 1999*.

Given the lack of preferred habitat and these species ecology, the application area is not likely to represent significant habitat. The habitats present are regionally widespread and not restricted to the application area. From the result of fauna surveys in the Wiluna West area none of the habitats surveyed within the application area appear to have any conservation significance (Ninox Wildlife Consulting, 2006).

A Short Range Endemic (SRE) survey was conducted at Wiluna West in October 2006. The search found ten species of spider, however, none of these were identified as being an SRE (Keith Lindbeck and Associates, 2010).

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

Methodology Johnstone and Storr (2004)
Keith Lindbeck and Associates (2010)
Ninox Wildlife Consulting (2006)

(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 Declared Rare Flora (DRF) within the application area (GIS Database). None of the flora surveys conducted over the application area have recorded any DRF (Keith Lindbeck and Associates, 2010).

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

Methodology Keith Lindbeck and Associates (2010)
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**
According to available databases, there are no records of Threatened Ecological Communities (TECs) within the application area (GIS Database). None of the flora surveys over the Wiluna West area have recorded any instances of a TEC (Keith Lindbeck and Associates, 2010).

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

Methodology Keith Lindbeck and Associates (2010)
GIS Database
- Threatened Ecological Sites Buffered

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

Comments **Proposal is not at variance to this Principle**
The application area falls within the Murchison Biogeographic Regionalisation of Australia (IBRA) bioregion in which approximately 100% of the Pre-European vegetation remains (see table) (GIS Database, Shepherd, 2009).

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

202: Shrublands; mulga & *Acacia quadrimarginea* scrub.

According to Shepherd (2009) approximately 100% of this Beard vegetation association remains at both a state and bioregional level. The local area has also been largely uncleared. Therefore, the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion – Murchison	28,120,589	28,120,589	~100	Least Concern	1.06
Beard veg assoc. – State					
202	448,529	448,529	~100	Least Concern	0.39
Beard veg assoc. – Bioregion					
202	339,743	339,743	~100	Least Concern	0

* Shepherd (2009)

** Department of Natural Resources and Environment (2002)

Options to select from: Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment 2002)

Presumed extinct	Probably no longer present in the bioregion
Endangered	<10% of pre-European extent remains
Vulnerable	10-30% of pre-European extent exists
Depleted	>30% and up to 50% of pre-European extent exists
Least concern	>50% pre-European extent exists and subject to little or no degradation over a majority of this area

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd (2009)
GIS Database:
- IBRA WA (Regions – Sub Regions)
- Pre-European Vegetation

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

Comments **Proposal is at variance to this Principle**
There are numerous ephemeral and ill-defined watercourses within the application area (GIS Database). These watercourses only flow following periods of heavy rain (Keith Lindbeck and Associates, 2010). The vegetation community 'DRAS – Drainage Tract Acacia Shrubland' appears to be associated with the ill-defined drainage lines of the application area (Keith Lindbeck and Associates, 2010; GIS Database).

Given this vegetation community is associated with a watercourse, the proposed clearing is at variance to this Principle. However, species common to this vegetation community are also common to other sclerophyll shrubland communities in the local area (Keith Lindbeck and Associates, 2010). This vegetation type is common throughout the Wiluna West and wider area (Keith Lindbeck and Associates, 2010). As they are ill-defined and only sporadically flow, the proposed clearing is not expected to have a significant impact on local watercourses.

Methodology Keith Lindbeck and Associates (2010)
GIS Database:
- Hydrography, linear
- Merewether 80cm Orthomosaic – Landgate 2006

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

Comments **Proposal is not likely to be at variance to this Principle**
The application area has been mapped as occurring on the Gabanintha and Sherwood land systems (GIS Database). The Gabanintha land system is characterised by whitestone hill ranges and very open mulga (Mabbutt et al, 1963). The Sherwood land system is characterised by widespread stony granite plains with laterite breakaways (Mabbutt et al., 1963). The alluvial fan unit of the Sherwood land system is prone to shallow gullying (Mabbutt et al., 1963).

The Wiluna West Range is similar to most Banded Ironstone Formations (BIF's) of the Yilgarn Craton which are characterised by a stony surface mantle which provides effective protection against soil erosion (Government of Western Australia, 2007). The disturbance or removal of this stony mantle may initiate soil erosion. However, given the poor soil coverage on BIF's there is likely to be a minimal amount of erodible material within the application area (Government of Western Australia, 2007).

At a broad scale the pH of the soil within the application area ranges from 5.5 - 6.0 and there is no known occurrence of acid sulphate soils (CSIRO, 2009). Given the application area's elevated position in the landscape the proposed clearing is not likely to cause any water logging or an increase in the ground water level causing salinity.

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

Methodology CSIRO (2009)
Government of Western Australia (2007)
Mabbutt et al. (1963)
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 any conservation areas or DEC managed lands (GIS Database). The nearest conservation area is the ex-pastoral station Mooloogool Station, located approximately 45 kilometres north-west of the application area (GIS Database). At this distance there is not likely to be any impacts on the conservation values of Mooloogool Station.

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

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). There are no permanent watercourses within the application area (GIS Database). There are several ill-defined ephemeral watercourses present within the application area (GIS Database). These watercourses only ever flow following heavy rainfall events. The proposed clearing is not expected to impact the quality of water within these watercourses.

The groundwater salinity within the application area is between 500 – 1,000 milligrams per litre of Total Dissolved Solids (TDS) (GIS Database). This is considered to be potable water. Given the surrounding areas remain largely uncleared, the proposed clearing of 64 hectares within the application area is not likely to cause salinity levels to alter.

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

Methodology GIS Database:
- Hydrography, linear
- Groundwater Salinity, Statewide
- 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

With an average annual rainfall of 255.6 millimetres and an average annual evaporation rate of 3,800 millimetres there is likely to be little surface flow during normal seasonal rains (BoM, 2011; GIS Database). Being located on a range, the topography within the application area facilitates surface water runoff as opposed to ponding, hereby reducing the risk of flooding.

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

Methodology BoM (2011)
GIS Database:
Evaporation Isoleths

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

Comments

The clearing permit application was advertised on 11 October 2010 by the Department of Mines and Petroleum inviting submissions from the public. There was one submission received stating no objections to the proposal.

There is one native title claim over the area under application (GIS Database). This claim (WC07/3) has been registered with the National Native Title Tribunal on behalf of the claimant group (GIS Database). 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 two 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 noted that the proposed clearing may impact on a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) for environmental impact assessment under the *EPBC Act*. The proponent is advised to contact the SEWPAC for further information regarding notification and referral responsibilities under the *EPBC Act*.

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
- Native Title - Registered with the NNTT

4. References

- Bureau of Meteorology (2011) BOM Website - Climate statistics for Australian locations, Averages for Wiluna. Available online at: Bureau of Meteorology (2011) BOM Website - Climate statistics for Australian locations, Averages for Carnarvon Airport. Available online at: http://www.bom.gov.au/climate/averages/tables/cw_006011.shtml Accessed on 8 March 2011. Accessed on 18 March 2011.
- Commonwealth Scientific and Industrial Research Organisation (2009) Australian Soil Resource Information System. Available online at: http://www.asris.csiro.au/index_ie.html Accessed on 8 March 2011.
- 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.
- Government of Western Australia (2007) Strategic Review of the Conservation and Resource Values of the Banded Iron Formations of the Yilgarn Craton. Published jointly by the Department of Environment and Conservation and the Department of Industry and Resources, Perth, Western Australia.
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- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Keith Lindbeck and Associates (2010) Supporting document for clearing permit application: Golden West Resources - John William Douth Pit. Unpublished report for Golden West Resources dated September 2010.
- Mabbutt JA, Litchfield WH, Speck NH, Sofoulis J, Wilcox DG, Arnold JA, Brookfield M and Wright RL (1963). General report on the lands of the Wiluna-Meekatharra area, Western Australia, 1958. CSIRO Land Research Series No. 7.
- Ninox Wildlife Consulting (2006) A Vertebrate Fauna Survey of the Wiluna West Project Area, Western Australia. Unpublished report for Golden West Resources, dated November 2006.
- Recon Environmental (2010) Joyner's Find Hills Regional Vegetation Survey. Unpublished report for Golden West Resources, dated March 2010.
- Shepherd, D.P. (2009) 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.

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.