



1. Application details

1.1. Permit application details

Permit application No.: 2537/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Pty Ltd

1.3. Property details

Property: Lease 3116/4627, Special Lease for Mining Operations; Lot 54 on Deposited Plan 241547
Local Government Area: Shire of Ashburton
Colloquial name: Wandoo Housing Project – Airstrip Extension

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
56.4		Mechanical Removal	Airstrip Extension

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

Vegetation within the application area has been mapped at a 1:250,000 scale as the following Beard vegetation association (Shepherd et al., 2001; GIS Database);

- **173:** Hummock grasslands, shrub steppe; kanji over soft spinifex & *Triodia wiseana* on basalt.

Biota Environmental Services were commissioned by Robe River Pty Ltd to undertake a flora and vegetation assessment for the application area in January 2008. Six vegetation types were recorded within the Pannawonica Airstrip Extension application area.

Biota Environmental Services (2008) have described the vegetation units that have been identified within the application area.

1. AiAaAbTw: *Acacia inaequilatera* scattered tall shrubs over *A. ancistrocarpa* (*A. bivenosa*) open shrubland over *Triodia wiseana* hummock grassland.

2. AiAbTw: *Acacia inaequilatera* scattered tall shrubs over *A. bivenosa* scattered shrubs over *Triodia wiseana* hummock grassland.

3. AxTw: *Acacia xiphophylla* tall shrubland over *Triodia wiseana* very open hummock grassland.

4. ChAbAaTw: *Corymbia hamersleyana* low open woodland over *Acacia bivenosa* (*A. ancistrocarpa*) tall open scrub over *Triodia wiseana* very open hummock grassland.

5. H/G: Herbland/Grassland; and

6. Cleared: Areas currently cleared of vegetation, or historically cleared and extensively degraded by weeds.

Clearing Description

Robe River Pty Ltd has applied to clear up to 56.4 hectares of native vegetation for the Pannawonica airstrip extension. The existing airstrip covers an area of 36.9 hectares. The proposed activities will involve clearing native vegetation around the existing airstrip.

Vegetation will be cleared by a bulldozer with its blade down. All vegetative material and topsoil from cleared areas will be collected and stockpiled and used for future rehabilitation purposes (Robe River, 2008).

Vegetation Condition

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

to

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

Comment

The Assessing Officer attended a site visit to the application area on 30 January 2008 and concurs with the vegetation units that have been described by Biota Environmental Services (2008).

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 Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region which encompasses an area of 17,804,164 hectares (GIS database). The vegetation within the application area consists of Beard vegetation association 173 which is common and widespread throughout this region, with approximately 100% of the pre-European vegetation remaining (Shepherd et al. 2001).

The dominant vegetation of the Pilbara region comprises of *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, and *Eucalyptus leucophloia* over *Triodia wiseana* on ranges (Kendrick and McKenzie, 2001). The Pilbara region is characterised by a diverse range of landforms that includes plains, ranges, hills, plateaux and gorges that provide suitable habitat for a diverse range of flora and fauna species, many of which are endemic to the Pilbara region (Van Vreeswyk et al., 2004; Kendrick and McKenzie, 2001).

Biota Environmental Services (2008) have identified a total of six vegetation types within the application area. Five of the six vegetation types are considered common for the Pannawonica locality (Biota Environmental Services, 2008), and as a result are unlikely to be regarded as areas of local or regional conservation significance.

Biota Environmental Services (2008) note that the vegetation type Herbland/Grassland, which was recorded on the northern side of the existing airstrip, is considered an area of local conservation significance as it comprises of an area of deep cracking clay (gilgai) that supports the Priority 3 species *Goodenia pascua* (Biota Environmental Services, 2008). The Assessing Officer notes that at the time of the survey the gilgai supported only occasional grasses and herbs, however, the area may support a denser herbland or grassland, along with a higher number of individuals of *Goodenia pascua* following substantial rainfall (Biota Environmental Services, 2008).

Following the identification of this locally significant vegetation type, Robe River Pty Ltd have excluded the Herbland/Grassland vegetation unit from the clearing application area, except for the area covered by an existing access track which runs along the northern side of the existing airstrip. Geographic Information System analysis indicates that the existing access track occupies an area of approximately 0.19 hectares (150 metres in length and 12.5 metres in width), and aerial imagery indicates the area to be largely un-vegetated (GIS Database; Biota Environmental Services, 2008). Given that the vegetation unit Herbland/Grassland has been excluded from the clearing application area, the proposed clearing is unlikely to impact on the integrity of this vegetation unit.

A total of 65 native flora species, from 52 genera and belonging to 28 families were identified within application area (Biota Environmental Services, 2008). Biota Environmental Services (2008) note that none of the vegetation types that were identified within the application area were particularly rich in native flora species. The total number of species identified within the application area is not considered to represent an area of high species richness (Biota Environmental Services, 2008).

A total of six weed species were recorded within the Pannawonica airstrip extension application area and these were Kapok (*Aerva javanica*), Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*), Spiked Malvastrum (*Malvastrum americanum*), Basil (*Ocimum basilicum*) and Mimosa Bush (*Vachellia farnesiana*) (Biota Environmental Services, 2008). Biota Environmental Services (2008) indicate that Kapok, Buffel Grass and Birdwood Grass were recorded in disturbed or grazed areas, whilst Basil, Spike Malvastrum and Mimosa Bush were recorded in damp areas associated with flowlines, creeklines and floodplains. The presence of these weed species is likely to have adversely impacted on the biodiversity of the application area. The disturbance of soil is likely to promote weed growth, and there is a risk that the movement of soil and clearing equipment throughout and between the project areas may cause the spread of weed species. The Assessing Officer recommends that should the permit be granted, conditions be imposed on the permit for the purpose of weed management.

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

Methodology

Biota Environmental Services (2008)
Kendrick and McKenzie (2001)
Robe River (2008)
Shepherd et al. (2001)
Van Vreeswyk et al. (2004)
GIS Database:
- Interim Biogeographic Regionalisation of Australia
- Pre-European Vegetation - DA 01/01

(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

A fauna habitat assessment of the application area was undertaken in conjunction with the flora and vegetation survey by Biota Environmental Services (Biota Environmental Services, 2008). In order to identify any significant fauna habitat that may potentially occur within the application area, Biota Environmental Services carried out a search of the Western Australian Museum and Department of Environment and Conservation databases to identify Schedule and Priority listed fauna that may occur within a 50 kilometre radius from Pannawonica. A search of the *Environmental Protection and Biodiversity Conservation Act 1999* database was also conducted (Biota Environmental Services, 2008).

Biota Environmental Services (2008) identified two fauna habitats across the application area:

1. **Stony Undulating Plain:** Mixed Acacia scattered to open shrubland over *Triodia wiseana* (occasionally *T. epactia*) hummock grassland; and
2. **Broad Flowline:** *Acacia bivenosa* tall open scrub over *Triodia wiseana* very open hummock grassland.

Stony undulating plains are common in the Pannawonica locality (Biota Environmental Services, 2008). Such areas typically support a sparse to open cover of mixed wattles, particularly *Acacia inaequilatera*, *A. ancistrocarpa*, *A. atkinsiana*, *A. bivenosa* and occasionally *A. orthocarpa*, over a hummock grassland of hard spinifex (*Triodia wiseana*) or sometimes soft spinifex (*Triodia epactia*) (Biota Environmental Services, 2008). The substrate comprises a clay-loam to loam with a pebbly to stony surface (Biota Environmental Services, 2008). Such areas tend not to have particularly high avian species richness due to the lack of a dense shrub or tree overstorey, but may support numerous species of other vertebrates (Biota Environmental Services, 2008). The Assessing Officer notes that the Stony Undulating Plain habitat characterised the vast majority of the application area, and it was evident from a site visit to the application area that this vegetation type was common throughout adjacent areas. The Assessing Officer concurs with the findings of Biota Environmental Services (2008) that this habitat type appears common in the Pannawonica locality.

Biota Environmental Services (2008) state that Broad Flowlines are also common in the Pannawonica locality. Less well defined flowlines typically support a more dense cover of similar shrub species that dominate the surrounding stony undulating plains, while more defined flowlines may feature shrub species typically associated with creekline habitats (Biota Environmental Services, 2008). An area of approximately 5 hectares of Broad Flowline habitat has been identified in the eastern section of the application area (Biota Environmental Services, 2008; GIS Database). The Assessing Officer notes that the vegetation within this habitat type comprised of a higher density of flora species than the surrounding areas associated with the Stony Undulating Plain habitat type. Biota Environmental Services (2008) have identified this vegetation type as ChAbAaTw: *Corymbia hamersleyana* low open woodland over *Acacia bivenosa* (*A. ancistrocarpa*) tall open scrub over *Triodia wiseana* very open hummock grassland. Such areas may typically provide habitat for a greater abundance and diversity of bird species than the surrounding plains due to the greater habitat complexity (open woodlands over dense scrub and hummock grassland species) (Biota Environmental Services, 2008).

The vegetation and habitats that have been identified and described for the application area are widespread and abundant in the Pannawonica locality (Biota Environmental Services, 2008). During a site visit to the application area the Assessing Officer also observed that the diversity of landforms within the application area is low in terms of ranges, ridges, outcrops or caves suitable to provide habitat for fauna.

Whilst it is possible that some fauna species may utilise these habitats within the application area, the native vegetation and landforms that have been identified within the application area are not likely necessary for the maintenance of any significant fauna habitat. In addition, it would be considered likely that equal or higher quality vegetation and fauna habitats would exist throughout the surrounding Pannawonica locality and throughout Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region.

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

Methodology Biota Environmental Services (2008)
GIS Database:
- Clearing Instruments

(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 datasets there are no known records of Declared Rare Flora (DRF) or Priority flora species within the application area (GIS database).

A Declared Rare Flora and Priority flora survey was undertaken by botanists from Biota Environmental Services on 8 February 2008. No species of DRF were recorded within the survey area (Biota Environmental Services, 2008). Based on the known information, the proposed clearing is unlikely to impact on any DRF species.

Botanists from Biota Environmental Services located five seedlings of the Priority 3 species *Goodenia pascua* during the survey for the expansion to the existing Pannawonica airstrip (Biota Environmental Services, 2008). *Goodenia pascua* is a herb that can grow to 0.5 metres in height and can be found on red sandy soils and on basaltic plains (Western Australian Herbarium, 2008). *Goodenia pascua* was recorded within the Herbland/Grassland vegetation unit which comprises of an area of deep cracking clay (gilgai) on the north side of the existing airstrip (Biota Environmental Services, 2008). Biota Environmental Services (2008) note that this species may be more abundant on these areas of gilgai following substantial rainfall, and made a recommendation that the vegetation unit Herbland/Grassland should be excluded from the clearing application area to protect the population of *Goodenia pascua*. The Assessing Officer notes that no other areas of gilgai were identified within the application area.

Robe River Pty Ltd have subsequently excluded the vegetation unit Herbland/Grassland from the clearing application area, except for the area covered by an existing access track which runs along the northern side of the existing airstrip. Geographic Information System analysis indicates that the existing access track occupies an area of approximately 0.19 hectares (150 metres in length and 12.5 metres in width), and aerial imagery indicates that the area is unvegetated (GIS Database; Biota Environmental Services, 2008). Flora mapping of the application area indicates that *Goodenia pascua* was recorded approximately 50 metres south of the access road and outside of the application area. Given that the vegetation unit Herbland/Grassland (H/G) has been excluded from the clearing application area, the proposed clearing is unlikely to impact on vegetation necessary for the existence of *Goodenia pascua*.

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

Methodology Biota Environmental Services (2008)
Western Australian Herbarium (2008)
GIS Database:
- Declared Rare and Priority Flora List
- Clearing Instruments

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

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

There are no known Threatened Ecological Communities (TEC's) within the application area (GIS database; Biota Environmental Services, 2008). The nearest known TEC is located approximately 77 kilometres east of the application area (GIS database). Given the distance between the proposal and the nearest known TEC, the proposed clearing is unlikely to impact on the conservation of that TEC.

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

Methodology Biota Environmental Services (2008)
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 Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region in which approximately 99.9% of the pre-European vegetation remains (see table) (GIS database; Shepherd et al., 2001).

The vegetation of the clearing application area has been mapped as Beard vegetation association 173: Hummock grasslands, shrub steppe; kanji over soft spinifex & *Triodia wiseana* on basalt (GIS Database, Shepherd et al., 2001). According to Shepherd et al., (2001) approximately 100% of Beard vegetation association 173 remains at both the state and regional level.

According to the Bioregional Conservation Status of Ecological Vegetation Classes the conservation status for the Pilbara Bioregion and Beard vegetation associations 173 is of "Least Concern" (Department of Natural Resources and Environment, 2002).

While a small percentage of the vegetation types within the Pilbara bioregion are protected within conservation reserves, the bioregion remains largely uncleared. As a result, the conservation of vegetation associations within the bioregion is not likely to be impacted by this proposal.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-european % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
173	1,753,116	1,753,116	~100	Least Concern	7.5
Beard veg assoc. – Bioregion					
173	1,752,533	1,752,533	~100	Least Concern	7.5

* Shepherd et al. (2001)

** Department of Natural Resources and Environment (2002)

The vegetation under application is not a remnant of vegetation in an area that has been extensively cleared.

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

Methodology Department of Natural Resources and Environment (2002)
Shepherd et al. (2001)
GIS Database:
- Interim Biogeographic Regionalisation of Australia
- Pre-European Vegetation - DA 01/01

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

Comments **Proposal is not likely to be at variance to this Principle**
There are no permanent naturally occurring wetlands or watercourses within the application area (GIS Database). A site visit to the application area by the Assessing Officer confirmed that the proposed clearing will have no impact on any wetland or watercourse.

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

Methodology Biota Environmental Services (2008)
GIS Database:
- Hydrography, linear_1
- Hydrography, linear (hierarchy)

(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**
According to the Department of Agriculture in Technical Bulletin No 92 "An inventory and condition survey of the rangelands of the Pilbara Region, Western Australia", the application area is comprised of the Rocklea Land System (Van Vreeswyk et al., 2004).

The Rocklea Land System is characterised by basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands (Van Vreeswyk et al., 2004). Landform units within the Rocklea Land System comprise (Van Vreeswyk et al., 2004):

- Hills, ridges, plateaux and upper slopes;
- Lower slopes;
- Stony plains and interfluves;
- Gilgai plains;
- Upper drainage lines; and
- Drainage floors and channels (Van Vreeswyk et al., 2004).

Biota Environmental Services (2008) indicate that the application area is located in the landform unit Stony plains and interfluves which has been described by (Van Vreeswyk et al., 2004) as gently undulating to undulating plains, interfluves and low rises up to 1.5 kilometres in extent, surface mantles of abundant to very abundant pebbles and cobbles of basalt and occasionally shale and other rocks. Van Vreeswyk et al., (2008) land system information indicates that the soils are likely to consist of calcareous shallow loams, red sandy earths and shallow red/brown non-cracking clays. This land system has very low erosion hazard (Van

Vreeswyk et al., 2004).

A site visit to the application area was undertaken by the Assessing Officer on 30 January 2008 during which no evidence of wind or water erosion was observed within the existing cleared area of the airstrip, or adjoining vegetated areas. The proposed clearing is likely to remove stony surface materials and may expose underlying surface mantles which have a higher susceptibility to erosion, especially if the area is exposed to surface water flows. The Assessing Officer notes that it was evident from the site visit that there are no watercourses or drainage lines within the application area which will thereby minimise the risk of erosion. Given the stony nature of the surface materials, water and/or wind erosion is unlikely to occur.

Biota Environmental Services (2008) have identified an area of gilgai on the northern side of the existing airstrip within the vegetation type Herbland/Grassland. Gilgai have been described as areas of deep, self-mulching cracking clays (Biota Environmental Services, 2008; Van Vreeswyk et al., 2004), and as a result these areas may have higher susceptibility to erosion and water-logging due to the presence and characteristics of the fine-grained clay particles. Biota Environmental Services (2008) note that the vegetation type Herbland/Grassland is considered locally significant for the Pannawonica locality as the area of gilgai supports the Priority 3 species *Goodenia pascua* (Biota Environmental Services, 2008). In order to minimise the potential impacts on this vegetation type, Robe River Pty Ltd have excised the vegetation unit Herbland/Grassland from the application area.

The proposed clearing of 56.4 hectares around the existing Pannawonica airstrip will result in a total cleared area of approximately 93.3 hectares (Robe River, 2008; GIS Database). There is the possibility for the proposed clearing of native vegetation to result in increased surface water runoff from the cleared area which subsequently may cause short periods of localised water logging within adjacent areas. However, aerial imagery indicates that there are several drainage channels surrounding the application area and these are likely to quickly disperse any excess floodwaters. In addition, the Assessing Officer noted during a site visit to the application area that the vegetation unit Herbland/Grassland was slightly elevated from the surrounding landscape, therefore, it is unlikely to be adversely impacted on by excess surface water runoff or surface water ponding.

Groundwater salinities have been measured in the range from 500 to 1,000 milligrams/litre Total Dissolved Solids (TDS) (GIS Database). The application area is located at Pannawonica which experiences mean annual rainfall of 400.9 millimetres and mean annual evaporation of approximately 3,400 millimetres (BoM, 2008; GIS Database). Due to the low rainfall to high evaporation ratio and considering the stony nature of the surface mantles, it is likely that the majority of groundwater recharge would occur following significant rainfall events. It is unlikely that the proposed clearing will significantly increase groundwater recharge, or that land salinisation will be increased either on or off-site.

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

Methodology Biota Environmental Services (2008)
Robe River (2008)
Van Vreeswyk et al. (2004)
GIS Database:
- Groundwater Salinity, Statewide
- Evaporation Isopleths

(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 Department of Environment and Conservation managed conservation area (GIS Database). The nearest conservation area is Cane River Conservation Park which is situated approximately 61 kilometres south-west of the application area (GIS database; Biota Environmental Services, 2008). Based on the distance between the proposal and the nearest conservation area, the proposed clearing is not likely to impact on the conservation values of Cane River Conservation Park.

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

Methodology Biota Environmental Services (2008)
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

There are no permanent naturally occurring watercourses, drainage systems or wetlands within the application area (GIS Database; Biota Environmental Services, 2008). The land system associated with the application area has high resistance to erosion (Van Vreeswyk et al., 2004; Payne et al., 1988), thereby reducing the risk

of sediment export which may result in sedimentation and turbidity in nearby watercourses. The proposed clearing is unlikely to cause deterioration in the quality of surface water in the local area.

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is the Millstream Water Reserve which is located approximately 52 kilometres east from the application area (GIS Database). Given the distance separating the application area and the nearest water supply area, the proposed clearing is unlikely to impact on the quality of the Millstream Water Reserve.

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

Methodology Biota Environmental Services (2008)
Payne et al. (1988)
Van Vreeswyk et al. (2004)
GIS Database:
- Hydrography, linear_1
- Hydrography, linear (hierarchy)
- 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 not associated with any permanent wetlands or watercourses (GIS database). The average annual rainfall for the application area is 400.9 millimetres and BoM (2008) indicates that the Pannawonica locality receives a majority of the rainfall between December and March. As a result, local flooding can be expected to occur seasonally in the Pilbara region as a result of heavy rainfall triggered by cyclonic activity and sporadic thunderstorms (Biota Environmental Services, 2008). Aerial imagery indicates that numerous ephemeral watercourses are distributed across the landscape (Robe River, 2008), and these are most likely responsible for quickly dispersing floodwaters after significant rainfall events, thereby reducing peak flood heights (GIS database).

Robe River (2008) has advised that the existing airstrip covers an area of approximately 36.9 hectares. Under this proposal, Robe River Pty Ltd has applied to clear up to 56.4 hectares of native vegetation for the purpose of expanding the existing airstrip. As a result the additional clearing will result in a cleared area of approximately 93.3 hectares (Robe River, 2008; GIS Database). Topographic information indicates that the application area is situated in an area of low relief (approximately 1-2%), and on a stony undulating plain between the Robe River and Fortescue River Catchments which cover an area of 757,138 hectares and 1,860,784 hectares respectively (GIS Database). Given the stony nature of the surface mantles within the application area, the proposed clearing of native vegetation may cause an increase in surface water runoff from the cleared area which subsequently may cause short periods of localised flooding within the vicinity of the cleared area, especially following significant rainfall events. However, given the relatively small size of the proposed clearing in relation to the size of the Robe River and Fortescue River Catchments, the clearing is unlikely to alter drainage patterns within these catchments, or result in an increase in peak flood heights.

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

Methodology Biota Environmental Services (2008)
BoM (2008)
GIS Database:
- Clearing Instruments
- Topographic Contours, Statewide

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

One direct interest submission was received stating no objection to the proposal.

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 licence or approvals are required for the proposed works.

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

4. Assessor's comments

Comment

The proposal has been assessed against the Clearing Principles and is not likely to be at variance to Principles (a), (b), (c), (d), (f), (g), (h), (i) and (j), is not at variance to Principle (e).

It is recommended that should a permit be granted, conditions be endorsed on the permit with regards to weed management, recording areas cleared and reporting against the permit conditions.

5. References

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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.
- Kendrick, P. and McKenzie, N. (2001). Pilbara 1 (PIL3 Hamersley Subregion). In a Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management, pp 547-558.
- Payne A. L., Mitchell A. A., Holman W. F. (1988). Technical Bulletin - An inventory and condition survey of rangelands in the Ashburton River Catchment, Western Australia, No 92, Department of Agriculture, Government of Western Australia, Perth, Western Australia.
- Robe River (2008). Documentation Accompanying Clearing Permit Application for CPS 2537/1, Prepared by Robe River Pty Ltd, June 2008.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Van Vreeswyk A.M.E., Payne A.L., Leighton K.A. and Hennig P. (2004). Technical Bulletin - An inventory and condition survey of rangelands in Pilbara Region, Western Australia, No 92, Department of Agriculture, Government of Western Australia, Perth, Western Australia.
- Western Australian Herbarium (2008). Florabase - The Western Australia Flora, A search for *Goodenia pascua*, Department of Environment and conservation, <http://florabase.calm.wa.gov.au.html>, accessed 23 July 2008.

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.
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	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (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	Rights in Water and Irrigation Act 1914, Western Australia.

s.17 Section 17 of the Environment Protection Act 1986, 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.