



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6634/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Hawthorn Resources Limited

1.3. Property details

Property: General Purpose Lease 31/4
Mining Lease 31/78
Mining Lease 31/79
Mining Lease 31/113
Mining Lease 31/284
Miscellaneous Licence 31/32
Miscellaneous Licence 31/65
Miscellaneous Licence 31/66

Local Government Area: Shire of Menzies

Colloquial name: AngloSaxon Gold Mining Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 20 August 2015

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. Two Beard vegetation associations have been mapped within the application area:

Beard vegetation association 18: Low woodland; mulga (*Acacia aneura*); and

Beard vegetation association 400: Succulent steppe with open low woodland; mulga over bluebush (GIS Database).

A Level 1 flora and vegetation survey conducted by Woodman Environmental Consultants (Woodman) (2015) during 14 to 16 October 2013 identified 37 vegetation types within the application area:

1 - Mid Isolated Clumps of Mallee Shrubs of *Eucalyptus youngiana* over Tall Isolated Clumps of Shrubs of *Acacia ramulosa*, *Grevillea juncifolia* subsp. *temulenta* and *Hakea francisiana* over Low Sparse to Low Open Shrubland of *Enekbatus eremaeus*, *Homalocalyx thryptomenoides* and *Verticordia helmsii*, occasionally with Mid Isolated Clumps of Shrubs of *Calothamnus gilesii* and/or *Grevillea acacioides* on dunes/low hills of red sand;

2 - Mid Open Mallee Shrubland of *Eucalyptus horistes* and *E. hypolaena* over Low Isolated Clumps of Shrubs of *Westringia rigida* over Low Hummock Grassland of *Triodia irritans* and *T. ?scariosa* occasionally with scattered Tall Isolated Clumps of Shrubs of *Callitris ?verrucosa* on dunes/low hills of red sand;

3 - Mid Open Mallee Shrubland of *Eucalyptus concinna*, *E. hypolaena* and *E. rigidula* over Mid Isolated Clumps of Shrubs of *Acacia hemiteles*, *Scaevola spinescens* and *Senna artemisioides* subsp. *x artemisioides* over Low Isolated Clumps of Shrubs of *Westringia rigida* over Low Hummock Grassland of *Triodia irritans* on dunes/low hills of red clayey sand;

4 - Mid Open Mallee Shrubland of *Eucalyptus concinna* and *E. hypolaena* over Mid Sparse Shrubland of *Eremophila caperata* and *Melaleuca eleuterostachya* over Low Isolated Clumps of Shrubs of *Coopermookia strophiolata* and *Westringia rigida* over Low Hummock Grassland of *Triodia irritans* on dunes/low hills of red clayey sand;

5 - Mid Open Mallee Shrubland of *Eucalyptus concinna* over Tall Isolated Clumps of Shrubs of *Acacia warramaba* over Mid Isolated Clumps of Shrubs of *Acacia burkittii*, *A. colletioides* and *A. hemiteles* over Low Isolated Clumps of Shrubs of *Westringia rigida* over Low Open Hummock Grassland of *Triodia irritans* on low mounds/rises of red clayey sand with calcrete pebbles;

- 6 - Mid Sparse Shrub Mallee of *Eucalyptus concinna* and *E. loxophleba* subsp. *lissophloia* over Tall Sparse Shrubland of *Acacia burkittii* and *Acacia warramaba* over Mid Isolated Clumps of Shrubs of *Acacia colletioides* and *A. hemiteles* over Low Isolated Clumps of Shrubs of *Westringia rigida* over Low Open Hummock Grassland of *Triodia irritans* with scattered Tall Isolated Clumps of Mulga Shrubs of *Acacia aptaneura* on plains of red clayey sand;
- 7 - Mid Open Mallee Shrubland of *Eucalyptus concinna* over Low Open Mulga Woodland of *Acacia caesaneura* over Mid Shrubland of *Acacia burkittii*, *A. hemiteles* and *Senna artemisioides* subsp. *filifolia* over Low Open Hummock Grassland of *Triodia irritans* with scattered mixed shrubs on plains of red clayey sand;
- 8 - Mid Mallee Shrubland of *Eucalyptus concinna* and *E. loxophleba* subsp. *lissophloia* over Low Isolated Clumps of Mulga Trees of *Acacia caesaneura* over Tall Open Shrubland of *Acacia burkittii* over Mid Isolated Clumps of Shrubs of *Senna artemisioides* subsp. *filifolia* on flats of red sandy clay;
- 9 - Mid Isolated Clumps of Mallee Shrubs to Mid Open Mallee Shrubland of *Eucalyptus concinna*, *E. ?eremicola* and *E. rigidula* over Low Open to Low Mulga Woodland of *Acacia aneura*, *A. caesaneura* and *A. incurvaneura* over Tall Isolated Clumps of Shrubs to Tall Open Shrubland of *Acacia burkittii* over Low to Mid Isolated Clumps of Shrubs of *Eremophila granitica*, *Ptilotus obovatus*, *Scaevola spinescens* and *Senna artemisioides* subsp. *filifolia* on flats of red sandy clay to red clayey sand;
- 10 - Low Mulga Woodland of *Acacia caesaneura* and *A. incurvaneura* over Mid Isolated Clumps of Mallee Shrubs of *Eucalyptus rigidula* and *E. concinna* over Tall Open Shrubland of *Acacia burkittii* and *A. ramulosa* over Mid Isolated Clumps of Shrubs of *Eremophila forrestii* on red clayey sand flats;
- 11 - Mid Isolated Clumps of Mallee Shrubs of *Eucalyptus rigidula* over Low Mulga Woodland of *Acacia caesaneura* and *A. incurvaneura* over Tall Sparse Shrubland of *Acacia burkittii* and *A. ramulosa* with Mid Isolated Shrubs of *Scaevola spinescens* on lower slopes of red sandy clay;
- 12 - Low Mulga Woodland of *Acacia caesaneura* over Tall Open Shrubland of *Acacia burkittii* and *A. ramulosa* over Mid Isolated Clumps of Shrubs of *Acacia tetragonophylla* and *Eremophila forrestii* over Low Isolated Clumps of Shrubs of *Ptilotus obovatus* and *Solanum lasiophyllum*, with Low Isolated Clumps of Tussock Grasses of *Eragrostis eriopoda* and *Monachather paradoxus* on plains of red sandy clay;
- 13 - Low Isolated Clumps of Mulga Trees of *Acacia caesaneura* and *A. incurvaneura* over Mid Isolated Clumps of Mallee Shrubs of *Eucalyptus concinna* over Tall Open Shrubland of *Grevillea nematophylla* subsp. *supraplana*, *Acacia burkittii* and *A. ligulata* over Low to Mid Isolated Clumps of Shrubs of *Eremophila decipiens* subsp. *decipiens*, *E. granitica*, *Scaevola spinescens* and *Senna artemisioides* subsp. *filifolia* on flats of red sandy clay;
- 14 - Low Open Mulga Forest of *Acacia caesaneura* and *A. pteraneura* over Mid Isolated Clumps of Mallee Shrubs of *Eucalyptus rigidula* (occasionally absent) over Tall Isolated Clumps of Shrubs of *Acacia burkittii* and *A. ramulosa* over Mid Isolated Shrubs of *Eremophila forrestii* in claypans of red clayey sand;
- 15 - Mid Isolated Clumps of Mallee Shrubs of *Eucalyptus ewartiana* over Low Mulga Woodland of *Acacia caesaneura* and *A. pteraneura* over Tall Sparse Shrubland of *Acacia burkittii* and *A. ramulosa* over Low to Mid Isolated Shrubs of *Eremophila forrestii*, *Scaevola spinescens* and *Senna artemisioides* subsp. *filifolia* on flats of red clayey sand;
- 16 - Low Mulga Woodland of *Acacia caesaneura* over Tall Open Shrubland of *Acacia burkittii* and *A. ramulosa* over Mid Isolated Clumps of Shrubs of *Acacia tetragonophylla*, *Scaevola spinescens* and *Senna artemisioides* subsp. *filifolia*/x *artemisioides* on claypans of red sandy clay;
- 17 - Low Open Mulga Woodland of *Acacia caesaneura* over Tall Shrubland of *Acacia ramulosa* over Low Isolated Clumps of Shrubs of *Ptilotus obovatus* on mid-slopes of red clayey;
- 18 - Low Mulga Woodland of *Acacia aptaneura* and *A. caesaneura* over Mid Isolated Clumps of Shrubs of *Eremophila forrestii* over Low Isolated Clumps of Shrubs of *Ptilotus obovatus* and Low Isolated Clumps of Tussock Grasses of *Monachather paradoxus* on flats of red sandy clay;
- 19 - Tall Shrubland of *Acacia burkittii*, *A. ligulata* and *Senna artemisioides* subsp. *filifolia* over Mid Isolated Clumps of Shrubs of *Dodonaea lobulata* on flats of red sandy;
- 20 - Mid Isolated Clumps of Mallee Shrubs of *Eucalyptus concinna* over Tall Shrubland of *Grevillea nematophylla* subsp. *supraplana*, *Acacia burkittii* and *A. ligulata* over Mid Isolated Clumps of Shrubs of *Acacia ramulosa*, *Scaevola spinescens* and *Senna artemisioides* subsp. *filifolia* with scattered Isolated Clumps of Mulga Trees of *Acacia caesaneura* on flats of red sandy clay;
- 21 - Low Open Mulga Woodland of *Acacia caesaneura* and *A. ?pteraneura* over Tall Sparse Shrubland of *Acacia burkittii* over Mid Sparse Shrubland of *Acacia hemiteles* and *Senna artemisioides* subsp. *filifolia* over Low Isolated Clumps of Shrubs of *Eremophila granitica* and *Ptilotus obovatus* over Low Isolated Clumps of Chenopod Shrubs of *Maireana triptera* on flats of red sandy clay;
- 22 - Low Closed Mulga Forest of *Acacia aneura* and *A. aptaneura* over Tall Isolated Clumps of Shrubs of *Eremophila longifolia* over Low Open Shrubland of *Ptilotus obovatus* and *Sida ?fibulifera* over Low Open Forbland in drainage lines of red sandy loam;
- 23 - Low Mulga Woodland of *Acacia aneura* and *A. aptaneura* over Low Woodland of *Casuarina pauper* over Tall Isolated Clumps of Shrubs of *Acacia burkittii* over Mid Isolated Clumps of Shrubs of *Acacia tetragonophylla*, *Dodonaea lobulata* and *Senna artemisioides* subsp. *filifolia*/x *artemisioides* over Mid Isolated Clumps of Chenopod Shrubs of *Maireana sedifolia* over Low Isolated Clumps of Shrubs of *Ptilotus obovatus* in stoney drainage lines of red sandy clay;

24 - Low Mulga Woodland of *Acacia aneura* and *A. caesaneura* over Tall Isolated Clumps of Shrubs of *Acacia tetragonophylla* over Mid Isolated Clumps of Shrubs of *Acacia burkittii* and *Eremophila granitica* over Mid Isolated Clumps of Chenopod Shrubs of *Enchylaena tomentosa* var. *tomentosa* and *Rhagodia drummondii* over Low Shrubland of *Ptilotus obovatus* in drainage lines of red sandy clay;

25 - Low Isolated Clumps of Mulga Trees of *Acacia macraneura* over Tall Sparse Shrubland of *Acacia burkittii* and *A. tetragonophylla* over Mid Isolated Clumps of Chenopod Shrubs of *Maireana pyramidata* and *M. sedifolia* over Low Isolated Clumps of Shrubs *Ptilotus obovatus* over Low Isolated Clumps of Tussock Grasses of *Enneapogon caerulescens* in slightly stoney drainage lines of red-brown sandy clay loam;

26 - Low Mulga Woodland of *Acacia aneura*, *A. aptaneura* and *A. caesaneura* over Tall Isolated Clumps of Shrubs of *Acacia burkittii* over Mid Isolated Clumps of Shrubs of *Acacia tetragonophylla* and *Scaevola spinescens* over Mid Isolated Clumps of Chenopod Shrubs of *Maireana sedifolia* over Low Open Shrubland of *Ptilotus obovatus* on flats of orange-brown clay loam with quartz pebbles;

27 - Low Mulga Woodland of *Acacia aptaneura* and *A. caesaneura* over Tall Shrubland of *Acacia burkittii* and *A. ramulosa* over Mid Sparse Shrubland of *Dodonaea lobulata*, *Eremophila granitica*, *E. oldfieldii* subsp. *angustifolia*, *Scaevola spinescens* and *Spartothamnella teucriflora* over Low Open Shrubland of *Ptilotus obovatus* and *Sida calyxhymenia* over Low Isolated Clumps of Tussock Grasses of *Enneapogon caerulescens* and *Eragrostis eriopoda* on plains of red clay loam with ironstone and quartz pebbles;

28 - Low Open Mulga Woodland of *Acacia caesaneura* over Tall Isolated Clumps of Shrubs of *Acacia ramulosa* over Mid Isolated Clumps of Shrubs of *Dodonaea lobulata*, *Scaevola spinescens* and *Sida calyxhymenia* over Mid Isolated Clumps of Chenopod Shrubs of *Maireana sedifolia* over Low Isolated Clumps of Shrubs of *Ptilotus obovatus* on flats of red-brown loamy clay with ironstone and quartz pebbles;

29 - Mid Mallee Woodland of *Eucalyptus loxophleba* subsp. *supralaevis* over Low Isolated Clumps of Mulga Trees of *Acacia caesaneura* over Tall Sparse Shrubland of *Acacia burkittii*, *A. ramulosa*, *A. tetragonophylla*, *Eremophila oldfieldii* subsp. *angustifolia* and *Senna artemisioides* over Mid Sparse Shrubland of *Dodonaea lobulata* and *Scaevola spinescens* over Low Isolated Clumps of Shrubs of *Olearia muelleri* and *Ptilotus obovatus* on low granite ridge of red sandy clay;

30 - Low Isolated Clumps of Trees of *Casuarina pauper* over Low Isolated Clumps of Mulga Trees of *Acacia caesaneura* over Tall Isolated Shrubs of *Acacia tetragonophylla* over Mid Sparse Shrubland of *Dodonaea lobulata* and *Sida calyxhymenia* over Mid Isolated Clumps of Chenopod Shrubs of *Maireana sedifolia* and Low Isolated Clumps of Shrubs of *Ptilotus obovatus* on ironstone ridge of red loamy clay;

31 - Tall Sparse Shrubland of *Acacia ramulosa* and *Eremophila oldfieldii* subsp. *angustifolia* over Mid Sparse Shrubland of *Dodonaea lobulata*, *Eremophila scoparia* and *Scaevola spinescens* over Low Isolated Clumps of *Ptilotus obovatus* on ironstone ridges on red sandy clay with quartz pebbles;

32 - Low Isolated Clumps of Trees of *Casuarina pauper* over Mid Isolated Clumps of Shrubs of *Dodonaea lobulata* and *Sida calyxhymenia* over Mid Open Chenopod Shrubland of *Maireana sedifolia* over Low Isolated Clumps of Shrubs of *Ptilotus obovatus* over Low Isolated Clumps of Tussock Grasses of *Enneapogon caerulescens* on low broad ridges of red-brown loamy clay with quartz and ironstone pebbles;

33 - Low Isolated Clumps of Trees to Low Woodland of *Casuarina pauper* over Low Isolated Clumps of Mulga Trees to Low Woodland of *Acacia aneura*, *A. aptaneura* and *A. caesaneura* over Tall Isolated Clumps of Shrubs of *Acacia burkittii* over Mid Isolated Clumps of Shrubs of *Acacia tetragonophylla*, *Dodonaea lobulata*, *Scaevola spinescens* and *Senna artemisioides* subsp. *filifolia*/x *artemisioides* over Mid Sparse to Mid Open Shrubland of *Maireana pyramidata* and/or *M. sedifolia* over Low Isolated Clumps of Shrubs of *Ptilotus obovatus* and *Solanum lasiophyllum* over Low Isolated Clumps of Tussock Grasses of *Enneapogon caerulescens* and *E. polyphyllus* on undulating plains of orange-brown clay loam with quartz and calcrete pebbles;

34 - Low Isolated Clumps of Trees of *Casuarina pauper* over Tall Isolated Clumps of Shrubs of *Acacia burkittii*, *A. tetragonophylla* and *Eremophila oldfieldii* subsp. *angustifolia* over Mid Open Shrubland of *Dodonaea lobulata*, *Scaevola spinescens* and *Senna artemisioides* subsp. *filifolia* over Low Isolated Shrubs of *Ptilotus obovatus* in depressions of red sandy clay with calcrete pebbles;

35 - Low Woodland of *Casuarina pauper* over Tall Isolated Mulga Trees of *Acacia caesaneura* over Tall Open Shrubland of *Acacia ligulata*, *Eremophila oldfieldii* subsp. *angustifolia*, *E. scoparia* and *Senna artemisioides* subsp. *filifolia* over Mid Sparse Shrubland of *Dodonaea lobulata*, *Ptilotus obovatus* and *Scaevola spinescens* over Mid Isolated Clumps of Chenopod Shrubs of *Maireana sedifolia* on flats of red clayey sand with calcrete pebbles;

36 - Low Isolated Clumps of Trees of *Casuarina pauper* over Tall Isolated Clumps of Shrubs of *Hakea preissii* over Mid Sparse Shrubland of *Eremophila scoparia* and *Senna artemisioides* subsp. *filifolia* over Mid Isolated Clumps of Chenopod Shrubs over Low Isolated Clumps of Shrubs of *Ptilotus obovatus* on flats of red sandy clay; and

37 - Low Isolated Clumps of Mulga Trees over Low Chenopod Shrubland of *Maireana sedifolia* and *M. pyramidata* over Low Open Tussock Grassland of *Enneapogon polyphyllus* with Low Isolated Clumps of Shrubs of *Sida ?fibulifera* and *Solanum lasiophyllum* on plains of red-brown clay loam.

Clearing Description

AngloSaxon Gold Mining Project.

Hawthorn Resources Limited applied to clear up to 283.1 hectares of native vegetation within a total boundary of approximately 1,927 hectares, for the purpose of mineral production. The project is located approximately 140 kilometres north-east of Kalgoorlie, in the Shire of Menzies.

Vegetation Condition

Excellent: Vegetation structure intact; disturbance affecting individual species; weeds are non-aggressive

species (Keighery, 1994);

To:

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).

Comment

The proposed clearing of native vegetation is for the purpose of re-opening the historic Anglo-Saxon gold mine.

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 occurs within the East Murchison subregion of the Murchison Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by internal drainage and extensive areas of elevated red desert sandplains with minimal dune development. Vegetation is dominated by Mulga Woodlands which is often rich in ephemerals; hummock grasslands, saltbush shrublands and *Halosarcia* shrublands (CALM, 2002).

Woodman Environmental Consultants (2015) conducted a Level 1 flora and vegetation survey of the application area during 14 to 16 October 2013. The survey identified 37 vegetation types within the application area (Woodman Environmental Consultants, 2015). The area proposed to be cleared is not considered to be remnant vegetation and areas have been disturbed by historical mining activities (GIS Database). Species composition and vegetation types within the application area are typical of the local region and not considered to be unusually diverse (Woodman Environmental Consultants, 2015).

A search of the Department of Parks and Wildlife's Threatened and Priority Flora databases revealed no records of Threatened Flora and two Priority Flora species within a 10 kilometre radius of the application area (DPaW, 2015). No Threatened or Priority Flora species, Threatened or Priority Ecological Communities were identified within the application area by Woodman Environmental Consultants (2015).

There was five weed species identified during the survey; *Cuscuta planiflora*, Wild Sage (*Salvia verbenaca*), Blue Pimpernel (*Lysimachia arvensis*), Mustard Rocket (*Sisymbrium* sp.), and Doublegee (*Emex australis*) (Woodman Environmental Consultants, 2015). Doublegee is a significant environmental weed and is a declared pest under the *Biosecurity and Agriculture Management Act 2007*. Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

There were five fauna habitat types recorded within the application area by Bamford Consulting Ecologists (2013). All faunal habitats within the application area are considered to be common and widespread within the subregion and faunal assemblages are unlikely to be different to those found in similar habitat located elsewhere in the region (GIS Database). The clearing of 283.1 hectares of native vegetation within the 1,927 hectare boundary is unlikely to have a significant impact on faunal diversity in a regional and local context.

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

Methodology

Bamford Consulting Ecologists (2013)
CALM (2002)
DPaW (2015)
GIS Database
Woodman Environmental Consultants (2015)

(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 Level 1 fauna survey was conducted over the application area between 4 and 7 November 2013 by Bamford Consulting Ecologists (2013) which mapped five broad habitats within the application area:

- 1 - Undulating plains supporting chenopod shrubland with the occasional Casuarina pauper on gravely calcareous loam;
- 2 - Larger watercourses with loamy soils, supporting tall Mulga woodland with scattered understorey;
- 3 - Mixed Acacia woodland/shrubland on loamy sands;
- 4 - Mallee Eucalyptus Woodland over mixed understorey on loamy sands; and
- 5 - Mallee Eucalyptus Woodland over Triodia grassland on red sands.

The landforms and habitat found within the application area are considered as being well represented in the local region (Bamford Consulting Ecologists, 2013). The application area does not contain habitats or faunal assemblages that are ecologically significant, however the larger watercourses habitat is of moderate value as it has the potential to provide habitat for a number of conservation significant fauna (Bamford Consulting Ecologists, 2013). The fauna assemblage of the study area is considered common and typical of the region

and is not specifically dependent on the habitats within the application area.

The faunal survey recorded two fauna species of conservation significance within the application area (Bamford Consulting Ecologists, 2013):

- Malleefowl (*Leipoa ocellata*) (EPBC Act – Vulnerable; WC Act – Schedule 1); and
- Rainbow Bee-eater (*Merops ornatus*) (EPBC Act – Migratory species; JAMBA, CAMBA).

The Rainbow Bee-eater is a transient species and the habitat within the application area is not likely to represent significant habitat for this species (Bamford Consulting Ecologists, 2013). There is suitable breeding and foraging habitat within the local and surrounding region (Bamford Consulting Ecologists, 2013; GIS Database).

Bamford Consulting Ecologist (2013) recorded four individual Malleefowl during the fauna survey, however no active mounds were identified. There were a few freshly dug-out areas recorded which suggests being a result of Malleefowl, although their purpose is unknown (Bamford Consulting Ecologist, 2013). Several of the vegetation types recorded by Woodman Environmental Consulting (2015) may provide leaf litter suitable for Malleefowl and Malleefowl mound construction. Potential impacts to Malleefowl mounds as a result of the proposed clearing may be minimised by the implementation of a fauna management condition.

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

Methodology Bamford Consulting Ecologists (2013)
GIS Database
Woodman Environmental Consulting (2015)

(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 the available databases, there are no known records of Threatened Flora within the application area (GIS Database). A search of the Department of Parks and Wildlife's Threatened and Priority Flora databases identified no Threatened Flora species as occurring within a 10 kilometre radius of the application area (DPaW, 2015).

Flora surveys conducted over the application area did not record any species of rare flora (Woodman Environmental Consulting, 2015).

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

Methodology DPaW (2015)
GIS Database
Woodman Environmental Consulting (2015)

(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

A search of the available databases showed that there are no known Threatened Ecological Communities situated within 50 kilometres of the application area (GIS Database).

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

Methodology GIS Database

(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 Central Ranges IBRA bioregion (GIS Database). The vegetation within the application area is recorded as:

Beard vegetation association 18: Low woodland; mulga (*Acacia aneura*); and

Beard vegetation association 400: Succulent steppe with open low woodland; mulga over bluebush (GIS Database).

According to the Government of Western Australia (2014), Beard vegetation associations 18 and 400 retain approximately 99% of their pre-European extent.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Murchison	28,120,587	28,044,823	~99.73	Least Concern	1.04
Beard vegetation associations - State					
18	19,892,305	19,843,727	~99.76	Least Concern	2.13
400	190,823	189,665	~99.39	Least Concern	-
Beard vegetation associations - Bioregion					
18	12,403,172	12,363,252	~99.68	Least Concern	0.36
400	190,823	189,665	~99.39	Least Concern	-

* Government of Western Australia (2014)

** 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)
GIS Database
Government of Western Australia (2014)

(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

According to available databases few ephemeral drainage tracts transect the application area where the proposed haul road will be situated (GIS Database). These are minor drainage lines similar to those that are widespread throughout the surrounding area (CALM, 2002). Vegetation associations 23, 24 and 25 are associated with drainage lines in the application area (Woodman Environmental Consulting, 2015).

These vegetation associations can provide faunal habitat of a moderate range of microhabitats with logs, leaf litter, tree hollows and occasional soft soils present and the proposed clearing is likely to have some impact to the riparian vegetation. Potential impacts to riparian vegetation may be minimised through the implementation of a vegetation management condition.

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

Methodology CALM (2002)
GIS Database
Woodman Environmental Consulting (2015)

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

Comments Proposal may be at variance to this Principle

According to the available datasets the application area intersects the Deadman, Kirgella, Gundockerta and Lawrence land systems (GIS Database).

The Deadman land system is described as calcareous plains adjacent to salt lake systems, supporting acacia shrublands with black oak overstoreys. This land system is generally not susceptible to soil erosion (Pringle et al., 1994).

The Lawrence land system is described as low greenstone hills with ironstone ridges supporting pearl bluebush shrublands and eucalypt woodlands with halophytic undershrubs (Pringle et al., 1994). Narrow drainage tracts are susceptible to water erosion, particularly where perennial shrub cover has been substantially reduced and/or the soil surface is disturbed (Pringle et al., 1994).

The Kirgella land system is described as extensive sandplain, with scattered granite outcrop and fringing drainage foci and very sparse drainage tracts, supporting mainly spinifex hummock grasslands and mulga and mallee shrublands (Pringle et al., 1994). Pringle et al. (1994) did not identify soil erosion as a land management issue in the Kirgella land system. This land system generally has a low susceptibility to soil erosion.

The Gundockerta Land System is described as extensive, gently undulating, calcareous, stony plains, supporting bluebush shrublands (Pringle et al., 1994). Where the land is not protected by a stony mantle, saline

plains and adjacent alluvial tracts are susceptible to water erosion, particularly where perennial shrub cover is substantially reduced or the soil surface is disturbed (Pringle et al., 1994),

The above land systems generally have a low erosion hazard, however, due the large area of native vegetation proposed to be cleared (283.1 hectares) potential land degradation impacts as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

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

Methodology GIS Database
Pringle et al. (1994)

(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 area (GIS Database). The nearest conservation area is Queen Victoria Spring Nature Reserve, located approximately 42 kilometres south-east of the application area (GIS Database).

Given the distance of the application area from Queen Victoria Spring Nature Reserve, the proposed clearing is not likely to provide a significant ecological linkage or fauna movement corridor and is not likely to impact the environmental values of the conservation area.

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

Methodology GIS Database

(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 (GIS Database). The application areas are located within the proclaimed Goldfields groundwater area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for the purposes other than domestic and/or stock watering is subject to licence by the Department of Water.

There are no permanent watercourses or water bodies within the application area (GIS Database). Several ephemeral drainage tracts transect the application area (GIS Database). These drainage tracts are dry for most of the year and only flow and hold surface water for short durations following significant rainfall events (GIS Database).

The application has a groundwater salinity that ranges from saline to hypersaline (3,000 to 7,000 milligrams/Litre Total Dissolved Solids (TDS)) (GIS Database). The clearing of vegetation as a result of this proposal is therefore unlikely to result in any further deterioration in surface or groundwater quality in the local area.

There are no known groundwater dependent ecosystems within the application area (GIS Database). It is unlikely that Stygofauna are present within the application area as the ground water salinities range up to 120,000 milligrams/Litre TDS and there is no calcrete below the water table in the area which is not suitable habitat conditions for Stygofauna (GIS Database).

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

Methodology GIS Database

(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 experiences an arid climate, with mainly winter rainfall of an annual average rainfall of approximately 264 millimetres per year (CALM, 2002). Based on an average annual evaporation rate of 2,400 – 2,800 millimetres, any surface water resulting from rainfall events is likely to be relatively short lived (CALM, 2002).

Given the size of the area to be cleared (283.1 hectares) compared to the size of the Raeside-Ponton catchment area (11,586,574 hectares) (GIS Database) it is not likely that the proposed clearing will lead to an appreciable increase in run off, and subsequently cause or exacerbate the incidence or intensity of flooding.

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

Methodology CALM (2002)
GIS Database

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

Comments

There are no Native Title claims over the area under application (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*.

There are no known registered Aboriginal Sites of Significance located within the clearing permit 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 Regulation, Department of Parks and Wildlife 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 13 July 2015 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

Methodology GIS Database

4. References

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- Department of Parks and Wildlife (DPAW) (2015) NatureMap Department of Parks and Wildlife, viewed 12 August 2015 <<http://naturemap.dec.wa.gov.au>>.
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- Pringle, H.J.R., Van Vreeswyk, A.M.E. and Gilligan, S.A. (1994) An Inventory and Condition Survey of the Rangelands in the North-Eastern Goldfields, Western Australia, Technical Bulletin No. 87. Department of Agriculture, Western Australia.
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5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DPAW and DER)
DER	Department of Environment Regulation, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DRF	Declared Rare Flora
DotE	Department of the Environment, Australian Government
DoW	Department of Water, Western Australia
DPAW	Department of Parks and Wildlife, Western Australia
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DotE)
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (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
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
s.17	Section 17 of the <i>Environment Protection Act 1986</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2013) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

- T Threatened species:**
Specially protected under the *Wildlife Conservation Act 1950*, listed under Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna or the Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened Fauna and Flora are further recognised by DPaW according to their level of threat using IUCN Red List criteria. For example Carnaby's Cockatoo *Calyptorhynchus latirostris* is specially protected under the *Wildlife Conservation Act 1950* as a threatened species with a ranking of Endangered.

Rankings:
CR: Critically Endangered - considered to be facing an extremely high risk of extinction in the wild.
EN: Endangered - considered to be facing a very high risk of extinction in the wild.
VU: Vulnerable - considered to be facing a high risk of extinction in the wild.
- X Presumed Extinct species:**
Specially protected under the *Wildlife Conservation Act 1950*, listed under Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora (which may also be referred to as Declared Rare Flora).
- IA Migratory birds protected under an international agreement:**
Specially protected under the *Wildlife Conservation Act 1950*, listed under Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice.
Birds that are subject to an agreement between governments of Australia and Japan, China and The Republic of Korea relating to the protection of migratory birds and birds in danger of extinction.
- S Other specially protected fauna:**
Specially protected under the *Wildlife Conservation Act 1950*, listed under Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P1 Priority One - Poorly-known species:**
Species that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, rail reserves and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.
- P2 Priority Two - Poorly-known species:**
Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.
- P3 Priority Three - Poorly-known species:**
Species that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.
- P4 Priority Four - Rare, Near Threatened and other species in need of monitoring:**
(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.
(b) Near Threatened. Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.
(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.
- P5 Priority Five - Conservation Dependent species:**
Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.