



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6197/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Southern Cross Goldfields Limited

1.3. Property details

Property: Mining Lease 77/394
Mining Lease 77/646
Mining Lease 77/931
Mining Lease 77/962
Miscellaneous Licence 77/239
Miscellaneous Licence 77/240
Miscellaneous Licence 77/241
Miscellaneous Licence 77/258
Miscellaneous Licence 77/259
Miscellaneous Licence 77/260
Miscellaneous Licence 77/268
Local Government Area: Shire of Yilgarn
Colloquial name: Marda Gold Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 11 September 2014

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 in a regional context. One Beard vegetation association has been mapped within the application area:

141: Medium woodland; York gum, salmon gum & gimlet.

A Level 2 flora and vegetation assessment was conducted over the application area in 2011 by Rapallo (2012), followed by an additional Level 2 flora and vegetation assessment including a targeted search for rare and priority flora conducted in 2012 by Rapallo (2013). A total of 29 vegetation sub-communities were recorded within the application area, including:

- 1: *Eucalyptus corrugata* or *Casuarina pauper* low open woodland over *Acacia ramulosa* var. *ramulosa*, *Acacia* sp. narrow phyllode (B.R. Maslin 7831) tall open shrubland over *Ptilotus obovatus* low open shrubland.
- 2a: *Eucalyptus salmonophloia* open woodland over *Atriplex nummularia*, *Eremophila scoparia* open shrubland over *Maireana trichoptera*, *Maireana georgei*, *Ptilotus obovatus* low open shrubland and *Austrostipa trichophylla* open tussock grassland.
- 2e: *Eucalyptus corrugata* open woodland over *Atriplex nummularia*, *Eremophila scoparia* open shrubland over *Maireana trichoptera*, *Maireana georgei*, *Ptilotus obovatus* low open shrubland and *Austrostipa trichophylla* open tussock grassland.
- 2h: *Eucalyptus longissima* open woodland over *Atriplex nummularia*, *Eremophila scoparia* open shrubland over *Maireana trichoptera*, *Maireana georgei*, *Ptilotus obovatus* low open shrubland and *Austrostipa trichophylla* open tussock grassland.
- 3: *Casuarina pauper* low woodland over *Eremophila oldfieldii* subsp. *angustifolia* tall open shrubland over *Ptilotus obovatus*, *Olearia muelleri* low open shrubland.
- 4a: *Eucalyptus salmonophloia* open woodland over *Atriplex nummularia*, *Eremophila scoparia*, *Senna*

artemisioides subsp. *filifolia* shrubland over *Olearia muelleri*, *Atriplex nana* low open shrubland.

- 4ab:** *Eucalyptus salmonophloia*, *Eucalyptus salubris* open woodland over *Atriplex nummularia*, *Eremophila scoparia*, *Senna artemisioides* subsp. *filifolia* shrubland over *Olearia muelleri*, *Atriplex nana* low open shrubland.
- 4ae:** *Eucalyptus salmonophloia*, *E. corrugata* open woodland over *Atriplex nummularia*, *Eremophila scoparia*, *Senna artemisioides* subsp. *filifolia* shrubland over *Olearia muelleri*, *Atriplex nana* low open shrubland.
- 4aeij:** *Eucalyptus salmonophloia*, *E. corrugata*, *E. yilgarnensis*, *E. kochii* subsp. *amaryssia* open woodland over *Atriplex nummularia*, *Eremophila scoparia*, *Senna artemisioides* subsp. *filifolia* shrubland over *Olearia muelleri*, *Atriplex nana* low open shrubland.
- 4b:** *Eucalyptus salubris* open woodland over *Atriplex nummularia*, *Eremophila scoparia*, *Senna artemisioides* subsp. *filifolia* shrubland over *Olearia muelleri*, *Atriplex nana* low open shrubland.
- 4bdie:** *Eucalyptus salubris*, *Eucalyptus sheathiana*, *Eucalyptus corrugata*, *Eucalyptus yilgarnensis* open woodland over *Atriplex nummularia*, *Eremophila scoparia*, *Senna artemisioides* subsp. *filifolia* shrubland over *Olearia muelleri*, *Atriplex nana* low open shrubland.
- 4c:** *Eucalyptus longicornis* open woodland over *Atriplex nummularia*, *Eremophila scoparia*, *Senna artemisioides* subsp. *filifolia* shrubland over *Olearia muelleri*, *Atriplex nana* low open shrubland.
- 5a:** *Eucalyptus salmonophloia* and *Casuarina pauper* or *Casuarina obesa* low woodland over *Eremophila oppositifolia* subsp. *angustifolia*, *Atriplex nana*, *Eremophila scoparia* tall shrubland over *Atriplex nana*, *Ptilotus obovatus*, *Olearia muelleri* low shrubland over *Aristida contorta* tussock grassland.
- 5b:** *Eucalyptus salubris* and *Casuarina pauper* or *Casuarina obesa* low woodland over *Eremophila oppositifolia* subsp. *angustifolia*, *Atriplex nana*, *Eremophila scoparia* tall shrubland over *Atriplex nana*, *Ptilotus obovatus*, *Olearia muelleri* low shrubland over *Aristida contorta* tussock grassland.
- 5bg:** *Eucalyptus salubris*, *Eucalyptus loxophleba* subsp. *supralaevis*. and *Casuarina pauper* or *Casuarina obesa* low woodland over *Eremophila oppositifolia* subsp. *angustifolia*, *Atriplex nana*, *Eremophila scoparia* tall shrubland over *Atriplex nana*, *Ptilotus obovatus*, *Olearia muelleri* low shrubland over *Aristida contorta* tussock grassland.
- 5d:** *Eucalyptus sheathiana* and *Casuarina pauper* or *Casuarina obesa* low woodland over *Eremophila oppositifolia* subsp. *angustifolia*, *Atriplex nana*, *Eremophila scoparia* tall shrubland over *Atriplex nana*, *Ptilotus obovatus*, *Olearia muelleri* low shrubland over *Aristida contorta* tussock grassland.
- 5ikl:** *Eucalyptus yilgarnensis*, *Eucalyptus transcontinentalis*, *Eucalyptus ebbanoensis* and *Casuarina pauper* or *Casuarina obesa* low woodland over *Eremophila oppositifolia* subsp. *angustifolia*, *Eremophila scoparia* tall shrubland over *Atriplex nana*, *Ptilotus obovatus*, *Olearia muelleri* low shrubland over *Aristida contorta* tussock grassland.
- 5f:** *Eucalyptus oleosa* subsp. *oleosa* and *Casuarina pauper* or *Casuarina obesa* low woodland over *Eremophila oppositifolia* subsp. *angustifolia*, *Atriplex nana*, *Eremophila scoparia* tall shrubland over *Atriplex nana*, *Ptilotus obovatus*, *Olearia muelleri* low shrubland over *Aristida contorta* tussock grassland.
- 6:** *Melaleuca atroviridis*, *Acacia ramulosa* subsp. *ramulosa* tall shrubland over *Leucopogon* sp. Clyde Hill (M.A. Burgman 1207), *Hibbertia eatoniae* low shrubland.
- 7:** *Allocasuarina acutivalvis* subsp. *prinsepiana* low open woodland over *Acacia quadrimarginea*, *Scaevola spinescens*, *Eremophila clarkei* open shrubland over *Olearia humilis* low open shrubland.
- 8:** *Eucalyptus kochii* subsp. *amaryssia* open woodland over *Acacia ramulosa* var. *ramulosa* tall shrubland over *Eremophila granitica*, *Atriplex nummularia* shrubland.
- 9:** *Acacia effusifolia* low open woodland over *Maireana pyramidata* low sparse shrubland.
- 10ag:** *Eucalyptus salmonophloia*, *Eucalyptus loxophleba* subsp. *supralaevis* low open woodland over *Acacia* sp. Narrow phyllode (B.R. Maslin 7831) tall open shrubland.
- 13:** *Allocasuarina dielsiana* sparse woodland over *Acacia ramulosa* subsp. *ramulosa*, *Allocasuarina tessellata* tall open shrubland over *Prostanthera althoferi* subsp. *althoferi*, *Eremophila ?decipiens* subsp. *decipiens* and *Philotheca brucei* subsp. *brucei* open shrubland.
- 14:** *Eucalyptus salubris* or *Casuarina pauper* open woodland over *Tecticornia* sp., *Cratystylis subspinescens* low open shrubland.
- 16:** *Casuarina pauper* low woodland over *Scaevola spinescens*, *Cratystylis subspinescens* shrubland over *Hyalosperma glutinosum* subsp. *glutinosum* herbland.
- 17:** *Eucalyptus ewartiana* low open woodland over *Acacia* sp. narrow phyllode (B.R. Maslin 7831) sparse shrubland over *Ptilotus obovatus* sparse low shrubland.
- 18:** *Allocasuarina dielsiana* low open woodland over *Acacia acuminata* tall shrubland over *Austrostipa trichophylla*, *Aristida contorta*, *Austrostipa elegantissima* tussock grassland and mixed species herbland.
- 19:** *Casuarina pauper*, *Eucalyptus corrugata* low open woodland over *Templetonia ceracea*, *Acacia acanthoclada* open shrubland.

Clearing Description	Marda Gold Project. Southern Cross Goldfields Limited (SCG) proposes to clear up to 188 hectares within a total boundary of 188 hectares for the purpose of mineral production. The project is located approximately 65 kilometres north, north-west of Koolyanobbing, in the Shire of Yilgarn.
Vegetation Condition	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994); To: Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)
Comment	Vegetation condition was derived from a flora and vegetation assessment conducted by Rapallo (2013).

3. Assessment of application against clearing principles

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

Comments	<p>Proposal is not likely to be at variance to this Principle</p> <p>The application is located within the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) region and the Southern Cross subregion (GIS Database). The Southern Cross subregion comprises gently undulating uplands separated by broad valleys and bands of low greenstone hills (CALM, 2002). The region has an arid to semi-arid Warm Mediterranean climate (CALM, 2002). The vegetation within the application area is mapped as belonging to Beard vegetation association 141 (GIS Database). A number of flora and vegetation assessments have occurred over the project area, the most recent of which comprise Level 2 flora and vegetation surveys and targeted surveys undertaken by Rapallo (2012; 2013). Vegetation surveys have recorded 16 broad vegetation communities within the application area. The vegetation community with the largest proposed impact is vegetation community 4 (98.96 hectares), which is comprised of six sub-communities (SCG, 2014a).</p> <p>None of the vegetation communities were identified as belonging to a Threatened Ecological Community. The application area does not occur within any mapped Priority Ecological Communities (PECs) or associated buffer zones (GIS Database), however one vegetation association within the vegetation community '5ikl' is analogous to the Mount Jackson Range vegetation complex (banded ironstone formation) PEC (Priority 1). A total of 0.25 hectares of this vegetation association lies within the proposed clearing, which comprises 1.41% of this vegetation community within the area mapped by Rapallo (2013) (SCG, 2014a). The proposed clearing is not considered likely to impact on the conservation of the vegetation community 5ikl or the Mount Jackson Range vegetation complex (BIF) PEC.</p> <p>No rare flora have been recorded within the application area (Rapallo, 2013; SCG, 2014a). A total of three priority flora were recorded within the clearing footprint, including <i>Gnephosis intonsa</i> (Priority 3), <i>Gnephosis</i> sp. <i>Norseman</i> (K.R. Newbey 8096) (Priority 3), and <i>Stenanthemum newbeyi</i> (Priority 3). The proposed clearing will impact approximately 8% of the local population of both <i>Gnephosis</i> sp. <i>Norseman</i> (K.R. Newbey 8096) and <i>Stenanthemum newbeyi</i> (SCG, 2014a). <i>Gnephosis</i> sp. <i>Norseman</i> (K.R. Newbey 8096) has a relatively broad distribution across the Avon Wheatbelt and Coolgardie bioregions (DPaW, 2014a), and the proposed clearing is not expected to impact the conservation of this species. <i>Stenanthemum newbeyi</i> is known only from the Southern Cross sub-region (DPaW, 2014b). However, it occurs in high numbers outside the application area (SCG, 2014a), and therefore the proposed clearing is not likely to impact this species on a local or regional scale.</p> <p>One location of the Priority 1 flora <i>Lepidosperma jacksonense</i> occurs outside the proposed clearing (SCG, 2014a). There are approximately 100 individuals of this species at this location, which is adjacent to a proposed abandonment bund (Rapallo, 2013; SCG, 2014a). Southern Cross Gold Limited have advised that a 50 metre exclusion buffer surrounding <i>L. jacksonense</i> will be utilised where possible (SCG, 2014a).</p> <p>Outside of the application boundary, Southern Cross Goldfields Ltd have delineated an exclusion boundary surrounding a population of <i>Lepidosperma ferricola</i> (Priority 3) and a banded ironstone formation (BIF) vegetation community following liaison with DPaW (SCG, 2014c).</p> <p>Ten introduced flora species were recorded within the application area, none of which are declared weeds or Weeds of National Significance (SCG, 2014a). Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area (DEC, 2011). Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.</p> <p>A total of 254 vertebrate fauna species have been identified as potentially occurring within the project area and surrounds, including 143 avian, 32 mammal, 75 reptile and four amphibian species (Bamford, 2013a). This is not considered to represent an area of exceptionally high fauna diversity. The application area may provide habitat for a number of conservation significant fauna, including Malleefowl (<i>Leipoa ocellata</i>; Schedule 1), Major Mitchell's Cockatoo (<i>Lophochroa leadbeateri</i>; Schedule 4), Carpet Python (<i>Morelia spilota imbricata</i>; Schedule 4), Shy Heathwren (<i>Calamanthus cautus whitlocki</i>; Priority 4), Crested Bellbird (<i>Oreoica gutturalis gutturalis</i>; Priority 4), Bush Stone-Curlew (<i>Burhinus grallarius</i>; Priority 4), Peregrine Falcon (<i>Falco peregrinus</i>;</p>
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Schedule 4), Central Long-eared Bat (*Nyctophilus (timorensis) sp.*; Priority 4), Crested Shrike-tit (*Falcunculus frontatus leucogaster*; Priority 4), White-browed Babbler (*Pomatostomus superciliosus ashbyi*; Priority 4), and the Tree-stem Trapdoor Spider (*Aganippe castellum*; Priority 4) (Terrestrial Ecosystems, 2011a; 2011b; Bamford, 2013a). However, all fauna species are distributed throughout the wider area, and none are likely to be specifically dependent on habitat within the application area (Terrestrial Ecosystems, 2011a; 2011b; Bamford, 2013a; Bamford, 2013b).

A stygofauna and troglofauna assessment conducted by Bennelongia (2013) advised that it was unlikely that a significant stygofauna community will be impacted by clearing for the Marda Gold Project, given that Stygofauna communities within the wider area are typically depauperate, and that calcrete habitats will not be disturbed. Bennelongia (2013) also advised that troglofauna with localised distributions may occur within the project area.

However, existing troglofauna studies suggest that any species which occur are unlikely to be significantly impacted by the Marda Project due to the small size of the proposed pits, which avoids disturbing large continuous areas of habitat (Bennelongia, 2013). Any troglofauna which may occur are therefore most likely to persist in areas surrounding the proposed clearing.

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

Methodology Bamford (2013a)
Bamford (2013b)
Bennelongia (2013)
CALM (2002)
DEC (2011)
DPaW (2014a)
DPaW (2014b)
Rapallo (2012)
Rapallo (2013)
SCG (2014a)
SCG (2014b)
SCG (2014c)
Terrestrial Ecosystems (2011a)
Terrestrial Ecosystems (2011b)
GIS Database:
- IBRA WA (Regions - Sub Regions)
- Pre-European vegetation
- 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

Level 1 fauna surveys comprising desktop and field-based habitat assessments have been conducted across the Marda Gold Project (Terrestrial Ecosystems, 2011a; 2011b; Bamford, 2013a). Mining leases encompassing the King Brown and Marda Central areas contain two habitat types; 'tall open Eucalypt woodland' and 'stony hills with shrubs and scattered trees' (Terrestrial Ecosystems, 2011a; 2011b). Some areas show evidence of previous disturbance from exploration activity or grazing pressure from cattle, however most of the habitat is advised to be in good condition. Both habitat types are advised to be well represented outside the application area, and unlikely to represent significant habitat for fauna (Terrestrial Ecosystems, 2011a; 2011b).

The miscellaneous licences connecting the mining leases contain a total of eight vegetation-soil associations, most of which are advised to be generally widespread in the region (Bamford, 2013a). These may be considered as discrete habitat types, and include:

1. Eucalypt Woodland: mixed Eucalypt Woodland or *Eucalyptus oleosa* dominated on stony rises;
2. Creekline Woodland: Eucalyptus Woodland on drainage flats;
3. Acacia/ Mallee: shrubland on stony flats;
4. *Casuarina* Woodland: open woodland over mixed Acacia shrubland;
5. Open Acacia shrubland on loam flats;
6. Open Acacia shrubland on sandy granitic flats: minor outcropping;
7. Acacia shrubland with areas of dense *Allocasuarina* spp. woodland: on hill slopes and stony rises; and
8. Chenopod shrubland: on saline drainage flats.

Two habitat types listed above are considered to be of heightened significance for fauna. 'Acacia shrubland with areas of dense *Allocasuarina* spp. Woodland (7)' is regionally restricted and occurs in three discrete patches along one proposed haul road (Bamford, 2013a). In addition to the more widespread habitat types 3 and 4, it has the potential to provide habitat for Malleefowl and the Tree-stem Trapdoor Spider (Bamford, 2013a). A breeding population of approximately 27 Malleefowl pairs are estimated to inhabit the wider Mount Jackson area, with mounds most often occurring in dense thicket vegetation (Bamford, 2013a). Approximately 400 hectares of suitable Malleefowl habitat (dense shrubland on sandy loam to rocky soils) occurs in the wider Marda Project area and surrounds, however suitable habitat is restricted to approximately one quarter of the

total application area (Bamford, 2013a; Bamford, 2013b). No active mounds were recorded within application area during a targeted survey (Bamford, 2013b). Secondary evidence of Malleefowl occurrence (old, inactive mounds and feathers) indicated that the species is likely to move through and utilise habitat within the application area, but is currently breeding outside of the project area (Bamford, 2013b). To minimise impacts to Malleefowl during and following clearing activities, Southern Cross Goldfields Ltd will adhere to their Malleefowl Management Plan which aims to reduce impacts from fire, feral species, vegetation clearing, and vehicle interaction (SCG, 2014b). The proposed clearing is therefore unlikely to pose a risk to Malleefowl on a local or regional scale.

'Eucalyptus Woodland' (on stony rises and drainage flats) is not regionally restricted, but has the potential to provide hollow-bearing trees necessary for species which require hollows for breeding such as the Major Mitchell's Cockatoo (Bamford, 2013a). However, Major Mitchell's Cockatoo has not been recorded within the Project area, and similar habitat, including hollow-bearing trees, are available outside the application area (Terrestrial Ecosystems, 2011a; 2011b; SCG, 2014a).

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

Methodology Bamford (2013a)
Bamford (2013b)
SCG (2014a)
SCG (2014b)
Terrestrial Ecosystems (2011a)
Terrestrial Ecosystems (2011b)

(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

Based on habitat type and surrounding records, there are 11 Threatened flora species which could potentially occur within the application area (SCG, 2014a). However, no Threatened flora species were recorded within the application area during a targeted flora survey (Rapallo, 2013).

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

Methodology Rapallo (2013)
SCG (2014a)

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

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

According to available databases, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The vegetation survey by Rapallo (2013) did not identify any TECs.

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

Methodology Rapallo (2013)
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 occurs within the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) bioregion, in which approximately 98% of the pre-European vegetation remains (see table) (GIS Database; Government of Western Australia, 2013).

The vegetation within the application area has been mapped as Beard vegetation association 141 (GIS Database). Approximately 82.9% and 97.2% of Beard vegetation association 141 remains at a state and bioregional level, respectively (Government of Western Australia, 2013). Therefore, the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared. Based on aerial imagery, the vegetation within the application area is neither a remnant itself nor does it form part of any remnants within the local area (GIS Database).

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPaW Managed Lands (and post clearing %)
IBRA Bioregion - Coolgardie	12,912,204	12,648,491	~98.0	Least Concern	~15.5
Beard veg assoc. – State					
141	1158,760	960,759	~82.9	Least Concern	~32.7
Beard veg assoc. – Bioregion					
141	883,086	858,526	~97.2	Least Concern	~42.7
Beard veg assoc. – subregion					
141	883,086	858,526	~97.22	Least Concern	~42.7

* Government of Western Australia (2013)

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
Government of Western Australia (2013)
GIS Database:
- IBRA WA (Regions - Sub Regions)
- Jackson 50cm Orthomosaic - Landgate 2007
- 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

The application area is intersected by a number of minor, non-perennial watercourses (GIS Database). A total of four vegetation communities occur exclusively in association with drainage depressions or floodplains, including vegetation community 1, 2, 4 and 9 (Rapallo, 2013), and therefore may be considered to be riparian in nature. However, only a small proportion of the local mapped area of each of these vegetation communities occurs within the application area (SCG, 2014a), and therefore the proposed clearing is not likely to impact the conservation of any riparian vegetation communities. Impacts to riparian vegetation may be minimised by the implementation of a watercourse management condition.

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

Methodology Rapallo (2013)
SCG (2014a)
GIS Database:
- Hydrography, linear

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

Comments Proposal may be at variance to this Principle

The application area occurs upon undulating plains on granite within the Kalgoorlie Province defined in Tille (2006). Soils in this area are predominantly red loamy earths with red brown hardpan shallow loams and some red sandy earths, red shallow loams and loamy gravels (Tille, 2006; Rapallo, 2013). Signs of erosion and vegetation degradation are pre-existing across the project area due to grazing pressure from cattle and horses (Rapallo, 2013). Soil mapping has been conducted across the project area and found soils to be particularly thin and susceptible to erosion (SCG, 2014a). The clearing of native vegetation in this area is likely to increase the risk of wind erosion and subsequent loss of topsoil. The proponent has advised that topsoil will be handled and stored to maintain material for rehabilitation (SCG, 2014a). Further impacts from wind erosion 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 Rapallo (2013)
SCG (2014a)
Tille (2006)

(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 may be at variance to this Principle

Approximately one quarter of the application area occurs within the former Mount Jackson Pastoral Lease, which is managed by the Department of Parks and Wildlife (DPaW) as a proposed 5(1)(h) Conservation and Mining Reserve (GIS Database). SCG has conducted extensive consultation with DPaW regarding areas of the project which occur within DPaW managed land. As a result of this consultation, DPaW have acknowledged efforts by the proponent to locate infrastructure in such a way which minimises impacts to DPaW managed land and conservation significant flora species, and the development of a Malleefowl management plan (SCG, 2014c). DPaW has advised that the potential risk for the spread of weed species into adjacent vegetation be addressed (SCG, 2014c). Potential impacts from weed species may be minimised by the implementation of a weed management condition.

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

Methodology SCG (2014c)
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 does not occur within a Public Drinking Water Source Area (PDWSA), however it is 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. The application area is intersected by a number of minor, non-perennial watercourses (GIS Database).

The clearing of native vegetation has the potential to destabilise soils and cause temporary sedimentation to watercourses. SCG has advised that surface drainage within the application area consists mainly of sheet flows during periods of heavy rainfall, with a small number of short, minor drainage lines (SCG, 2014d). SCG advised that the flow of surface water will be maintained by use of culverts to minimise impacts to downstream vegetation (SCG, 2014d). A watercourse management condition is recommended to reflect this commitment.

Groundwater salinity in the local area is estimated to be between 7000 - >35,000 milligrams/Litre Total Dissolved Solids (TDS), which is considered saline to hypersaline (GIS Database). The proposed clearing activity is not likely to significantly alter groundwater salinity levels within the application area.

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

Methodology SCG (2014d)
GIS Database:
- Jackson 50cm Orthomosaic - Landgate 2007
- Groundwater Salinity, Statewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)
- RIWI Act, Groundwater Areas

(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

Mean annual rainfall in Southern Cross is approximately 300.9 millimetres (BoM, 2014). The Coolgardie region has an arid to semi-arid warm Mediterranean climate, receiving a majority of its rainfall during winter months (CALM, 2002). However, rainfall data for Southern Cross indicates that rainfall is spread throughout the year (BoM, 2014), and rainfall events are unlikely to result in localised flooding. A seasonal lake occurs near the west satellite of the application area, which is likely to become inundated following rainfall. Given the proposed clearing does not occur within the lake boundary or in an area of low topography (GIS Database), the proposed clearing is not likely to increase the incidence or intensity of flooding within the Project area or surrounds.

The application area is located within the Swan Avon - Yilgarn catchment area (GIS Database). Given the size of the area to be cleared (188 hectares) in relation to the size of the catchment area (5,836,045 hectares), the proposed clearing is not likely to increase the potential for flooding in this region (GIS Database).

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

Methodology BoM (2014)
CALM (2002)
GIS Database:

- Hydrographic Catchments - Catchments
- Topographic Contours, Statewide

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

Comments

There is one native title claim over the application area (GIS Database). This claim (WAD420/2013) has been filed at the Federal Court 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*.

There are two registered Sites of Aboriginal Significance located in 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.

It is the proponent's responsibility to liaise with the Department of Environment Regulation, the 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.

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 the Environment for environmental impact assessment under the EPBC Act. The proponent is advised to contact the Department of the Environment for further information regarding notification and referral responsibilities under the EPBC Act.

The clearing permit application was advertised on 11 August 2014 by the Department of Mines and Petroleum inviting submissions from the public. There were no submissions received.

Methodology

- GIS Database:
- Aboriginal Sites of Significance
 - Native Title Claims - Registered with the NNTT
 - Native Title Claims - Filed at the Federal Court

4. References

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- Rapallo (2012) Level 2 Flora And Vegetation Survey of Marda Tenement (M77/394) and Associated Infrastructure, consultants report prepared by Rapallo environmental for Southern Cross Goldfields Ltd.
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- SCG (2014a) Native Vegetation Clearing Permit Application Supporting Document: Marda Gold Project, prepared by Southern Cross Goldfields Limited.
- SCG (2014b) Southern Cross Goldfields Ltd Marda Gold Project: Malleefowl Management Plan, prepared by Southern Cross Goldfields Limited.
- SCG (2014c) Further information provided to the assessing officer on 7 August 2014.
- SCG (2014d) Further information provided to the assessing officer on 5 September 2014.
- Terrestrial Ecosystems (2011a) Level 1 Fauna Risk Assessment for Southern Cross Goldfields King Brown Project Area,

consultants report prepared by Terrestrial Ecosystems for Southern Cross Goldfields Limited.
 Terrestrial Ecosystems (2011b) Level 1 Fauna Risk Assessment for Southern Cross Goldfields Marda Project Area,
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 Western Australia.

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.
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- 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.