



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 6413/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Sirius Gold Pty Ltd

### 1.3. Property details

Property: Miscellaneous Licence 69/22  
Local Government Area: Shire of Dundas  
Colloquial name: Nova Nickel Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
584.5		Mechanical Removal	haul road, borrow pits and associated activities

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 19 March 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 and are useful to look at vegetation in a regional context. Two Beard vegetation associations have been mapped within the application area:

**487:** Medium woodland; redwood & red mallee (*Eucalyptus oleosa*); and  
**500:** Mosaic: Medium woodland; merrit & red mallee / Shrublands; *Dodonaea* scrub.

A flora and vegetation survey was conducted over the application area by Mattiske (2014b). A total of 25 vegetation communities were identified within the application area, including:

W1: Woodland of mixed Eucalypts including *Eucalyptus salubris*, *Eucalyptus celastroides*, *Eucalyptus calycogona* subsp. *calycogona*, *Eucalyptus oleosa* subsp. *oleosa* and *Eucalyptus lesouefii* over *Cratystylis conocephala*, *Exocarpos aphyllus*, *Diocirea ternata*, *Eremophila alternifolia*, *Eremophila interstans*, *Eremophila ionantha*, *Eremophila scoparia* and *Geijera linearifolia* over *Olearia muelleri*, *Atriplex vesicaria* and *Scaevola spinescens* over mixed shrubs, herbs and grasses on orange-brown sandy clay-loams on flats.

W2: Woodland of *Eucalyptus salubris* and *Eucalyptus oleosa* subsp. *oleosa* with patches of mixed Eucalyptus species over *Melaleuca quadrifaria*, *Acacia hemiteles*, *Cratystylis conocephala* over *Diocirea ternata*, *Eremophila ionantha*, *Atriplex vesicaria*, *Eremophila decipiens* subsp. *decipiens*, *Eremophila scoparia*, *Geijera linearifolia*, *Senna artemisioides* subsp. *filifolia* and *Exocarpos aphyllus* over *Vittadinia dissecta* var. *hirta*, *Olearia muelleri*, *Sclerolaena diacantha*, *Ptilotus holosericeus* and *Zygophyllum ovatum* over herbs and grasses on red-orange clay-loams on flats and lower slopes.

W3: Woodland of *Eucalyptus oleosa* subsp. *oleosa* and *Eucalyptus lesouefii* with occasional *Eucalyptus celastroides* and *Eucalyptus salubris* over *Cratystylis conocephala* over *Olearia muelleri*, *Atriplex vesicaria* and *Santalum acuminatum* over *Rhagodia crassifolia*, *Zygophyllum apiculatum* and *Sclerolaena diacantha* over other mixed shrubs and herbs on orange-brown clay-loams on flats and slopes.

W4: Woodland to open woodland of mixed Eucalyptus species over *Eremophila scoparia*, *Cratystylis conocephala* and *Atriplex vesicaria* over *Sclerolaena diacantha*, *Olearia muelleri*, *Zygophyllum* species and *Rhagodia crassifolia* over herbs on orange clay-loams and sandy-loams on flats.

W5: Woodland of *Eucalyptus clelandii*, *Eucalyptus urna*, *Eucalyptus oleosa* subsp. *oleosa* and *Eucalyptus lesouefii* over *Melaleuca sheathiana* over *Olearia muelleri*, *Eremophila scoparia* and *Alyxia buxifolia* over *Zygophyllum glaucum* and *Maireana* species on orange-brown sandy-loams on flats and lower slopes.

W6: Open woodland of mixed Eucalyptus species over *Eremophila dempsteri*, *Melaleuca halmaturorum* and *Melaleuca sheathiana* over *Cratystylis conocephala* and *Eremophila scoparia* over *Olearia muelleri* and mixed shrubs and herbs on orange clay-loams on flats and slopes.

W8: Low open woodland of *Eucalyptus oleosa* subsp. *oleosa*, *Eucalyptus spreata* and *Eucalyptus lesouefii* over

*Melaleuca sheathiana*, *Eremophila ionantha*, *Acacia hemiteles*, *Eremophila scoparia*, *Cratystylis conocephala* and *Melaleuca halmaturorum* over mixed shrubs and herbs on orange-brown clay-loams and sandy-loams on lower to mid slopes.

W9: Low open woodland of *Eucalyptus gracilis* and *Eucalyptus salubris* over *Eremophila scoparia*, *Eremophila ionantha*, *Melaleuca halmaturorum*, *Diocirea ternata*, *Cratystylis conocephala*, *Olearia muelleri*, *Melaleuca sheathiana* and *Dodonaea stenozyga* over low shrubs and herbs on red-brown sandy-loams and clay-loams on flats.

W10: Open woodland of *Eucalyptus oleosa* subsp. *oleosa* over *Melaleuca halmaturorum* over *Acacia hemiteles* and *Eremophila alternifolia* over *Olearia muelleri* and *Zygophyllum glaucum* on pale orange clay-loams and sandy-loam gravels on flats.

W11: Open woodland of *Eucalyptus salubris*, *Eucalyptus fraseri* subsp. *fraseri*, *Eucalyptus celastroides* and *Eucalyptus prolixa* over *Diocirea ternata*, *Eremophila ionantha*, *Eremophila scoparia* and *Olearia muelleri* over mixed low Chenopods on orange to red clay-loams on flats.

W12: Open woodland of *Eucalyptus oleosa* subsp. *oleosa*, *Eucalyptus polita* and *Eucalyptus prolixa* over *Diocirea ternata*, *Dodonaea stenozyga*, *Eremophila* species, *Daviesia benthamii* subsp. *acanthoclona* and *Olearia muelleri* over mixed low Chenopods and localised patches of *Triodia ?scariosa* on orange to red clays and clay loams on flats.

W13: Open woodland of *Eucalyptus flocktoniae* and *Eucalyptus celastroides* subsp. *virella* over *Melaleuca sheathiana*, *Diocirea ternata*, *Dodonaea stenozyga*, *Eremophila scoparia*, *Daviesia benthamii* subsp. *acanthoclona*, *Acacia erinacea* and *Olearia muelleri* over herbs and grasses on orange to red clays on flats.

W14: Open woodland of *Eucalyptus salubris*, *Eucalyptus calycogona* subsp. *calycogona* and *Eucalyptus spreta* over *Melaleuca halmaturorum*, *Diocirea ternata*, *Eremophila decipiens* subsp. *decipiens*, *Eremophila scoparia*, *Atriplex vesicaria* and *Olearia muelleri* over herbs and grasses on cracking clays on flats.

W16: Open woodland of mixed Eucalypts including *Eucalyptus transcontinentalis*, *Eucalyptus calycogona* subsp. *calycogona*, *Eucalyptus eremophila* subsp. *eremophila*, *Eucalyptus oleosa* subsp. *oleosa* and *Eucalyptus uma* over *Cratystylis conocephala*, *Commersonia kraurophylla*, *Eremophila* species, *Melaleuca sheathiana*, *Olearia muelleri* and *Scaevola spinescens* over herbs and grasses on orange clay-loams and sandy-loams on flats and slopes of undulating rises.

W18: Open woodland of *Eucalyptus laevis*, *Eucalyptus moderata*, *Eucalyptus salubris* and *Eucalyptus spreta* over *Acacia hemiteles*, *Acacia merrallii*, *Cratystylis conocephala*, *Eremophila dempsteri*, *Eremophila ionantha*, *Eremophila scoparia*, *Melaleuca halmaturorum* and mixed Chenopod species over patches of *Triodia irritans* on orange to red-brown clay-loams and sandy-loams on flats.

W19: Open woodland of *Eucalyptus ?loxophleba* subsp. *lissophloia*, *Eucalyptus oleosa* subsp. *oleosa*, *Eucalyptus uma* and *Eucalyptus spreta* over *Acacia hemiteles*, *Acacia merrallii*, *Cratystylis conocephala*, *Dodonaea stenozyga*, *Eremophila ionantha*, *Eremophila scoparia* and *Exocarpos aphyllus* over herbs and grasses on orange to red-brown clay-loams and sandy-loams on flats.

W20: Open woodland of *Eucalyptus salubris* with local patches of *Eucalyptus calycogona* subsp. *calycogona*, *Eucalyptus spreta*, *Eucalyptus fraseri* subsp. *fraseri* and *Eucalyptus oleosa* subsp. *oleosa* over *Melaleuca sheathiana*, *Acacia hemiteles*, *Cratystylis conocephala*, *Eremophila scoparia* and *Olearia muelleri* over localised patches of *Triodia irritans* on orange to red-brown clay-loams and sandy-loams on flats and lower slopes.

W21: Open woodland of *Eucalyptus polita* with local patches of *Eucalyptus flocktoniae* and *Eucalyptus lesouefii* over *Melaleuca sheathiana*, *Melaleuca halmaturorum*, *Acacia hemiteles*, *Acacia merrallii*, *Eremophila ionantha*, *Eremophila scoparia* and *Olearia muelleri* over herbs on orange to red-brown clay-loams and sandy-loams on flats and lower slopes.

S4: Open scrub of *Allocasuarina helmsii* and *Melaleuca uncinata* with occasional *Eucalyptus rigidula* and *Eucalyptus salubris* over *Acacia hemiteles*, *Alyxia buxifolia*, *Dodonaea microzyga* var. *acrolobata*, *Grevillea acuarina*, *Scaevola spinescens* and *Olearia muelleri* over patches of *Triodia ?scariosa* and herbs on orange to red clay loam and clays on flats and slopes.

S6: Open scrub of *Melaleuca hamata*, *Allocasuarina* sp. over *Vittadinia dissecta* var. *hirta*, *Acacia acanthoclada* subsp. *acanthoclada*, *Grevillea huegelii*, *Hannafordia bissillii* subsp. *latifolia* and *Melaleuca fulgens* subsp. *fulgens* over herbs and grasses on red-orange sandy-loams on flats.

S9: Open scrub of *Allocasuarina campestris*, *Eremophila alternifolia*, *Eremophila decipiens* subsp. *decipiens*, *Geijera linearifolia*, *Melaleuca uncinata* and *Melaleuca fulgens* subsp. *fulgens* over *Trymalium myrtillus* subsp. *myrtillus*, *Senna artemisioides* subsp. *filifolia* over herbs and patches of *Triodia ?scariosa* on red-brown clays on flats and lower slopes.

G1: Open hummock grassland of mixed *Triodia* sp. with emergent *Eucalyptus griffithsii*, *Eucalyptus oleosa* subsp. *oleosa*, *Eucalyptus rigidula* and *Eucalyptus ?kumarlensis* over *Acacia erinacea*, *Acacia burkittii* and *Acacia hemiteles* over *Cryptandra aridicola*, *Westringia rigida*, *Senna artemisioides* subsp. *filifolia*, *Eremophila decipiens* subsp. *decipiens*, *Alyxia buxifolia* and *Grevillea acuarina* over herbs on orange-red clay-loams and sandy-loams on flats and slopes.

G2: Open hummock grassland of *Triodia irritans* with emergent *Eucalyptus horistes* and *Eucalyptus websteriana* subsp. *norsemanica* over *Acacia assimilis* subsp. *atroviridis*, *Allocasuarina helmsii*, *Cryptandra leucopogon*, *Grevillea plurijuga* subsp. *plurijuga*, *Halgania erecta* and *Scaevola amblyanthera* var. *centralis* over herbs on orange-yellow clay-loams and sandy-loams on slopes.

G3: Open hummock grassland of *Triodia irritans* with emergent *Eucalyptus salubris* and *Eucalyptus griffithsii* over

*Acacia hemiteles*, *Eremophila alternifolia*, *Eremophila decipiens* subsp. *decipiens*, *Grevillea acuaria* and *Senna artemisioides* subsp. *filifolia* over herbs on red-brown clays and clay-loams on flats.

G4: Open hummock grassland of *Triodia irritans* with emergent *Eucalyptus griffithsii* over *Acacia hemiteles*, *Allocasuarina* species, *Pultenaea elachista*, *Scaevola spinescens* and *Westringia rigida* over herbs on red-brown clay-loams on flats and lower slopes.

**Clearing Description**

Nova Nickel Project.

Sirius Gold Pty Ltd (Sirius Gold) proposed to clear up to 584.5 hectares of native vegetation within a total boundary of approximately 1,355 hectares, for the purpose of haul road, borrow pits and associated activities. The project is located approximately 123 kilometres east of Norseman, in the Shire of Dundas.

**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**

Mattiske (2014b) notes that significant sections of the application area have been recently burnt with a local and intense fire.

A total of 0.2 hectares within the application area has been previously disturbed (MBS, 2015).

The original applied area to clear was 700 hectares. This amount was reduced to 584.5 during the assessment process to mitigate impacts to a Priority Ecological Community.

### 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 in the Coolgardie IBRA bioregion (GIS Database). This region surrounding the application area is comprised of Mallees and shrublands on sandplains, and is rich in endemic eucalypts (on low greenstone hills, valley alluvials and calcareous plains) and endemic acacias (in the east) (Grant et al., 2002). A flora and vegetation survey conducted over the entire Nova Nickel Project by Mattiske (2014a; 2014b) recorded a total of 433 taxa from 53 families and 156 genera, across 45 vegetation communities. The application area lies over 25 of these vegetation communities.

No Threatened Ecological Communities (TECs) were recorded within the application area (Mattiske, 2014b). Approximately one fifth of the application area is proposed to be cleared within the mapped boundary of the Priority 1 Southern Hills Priority Ecological Community (PEC) (MBS, 2014a; MBS, 2015; GIS Database). This PEC is described as a complex of woodland (*Eucalyptus oleosa*, *Eucalyptus transcontinentalis*, *Eucalyptus flocktoniae*) on flats with open stony ridges carrying mainly mallee and spinifex (*Eucalyptus effusa* mallee: *Eucalyptus* aff. *uncinata* (KRN 7854) over *Cassia helmsii* (now *Senna artemisioides* subsp. *helmsii*), *Cryptandra miliaris*, *Dodonaea boroniifolia* (now *D. adenophora*), *Dodonaea stenozyga* and *Triodia scariosa*). It also includes patches of grassland, wattle thicket and mallee (Mattiske, 2014a). However, DPaW (2015) advises that the vegetation description for both this and the adjacent Fraser Range PEC is not comprehensive, and should not form the sole basis for determining potential impacts to the PEC as a result of the proposed clearing. Instead, impacts proportional to the known distribution of each vegetation community within the application area were assessed, in accordance with advice provided by DPaW (2015).

Following liaison between the assessing officer and the proponent, the proposed clearing was reduced from 700 hectares within a total boundary of 1,650 hectares, to 584.5 hectares within a total boundary of 1,355 hectares to reduce the proportional impacts to vegetation communities present within the application area (MBS, 2015). The largest impacts from clearing will be to vegetation communities G2 and W16, with 15.9% and 20% of the mapped area of these vegetation communities occurring within the application area, respectively (MBS, 2015). The proposed clearing will impact less than 10% of the local mapped extent of 20 of the 25 vegetation communities that occur within the application area (MBS, 2015). Of the five vegetation communities that have 10 - 20% of their mapped extent (from the current survey) proposed to be cleared, all are considered to be common in the wider region (MBS, 2014a) and the proposed clearing is not considered likely to impact the conservation of these vegetation communities on a local or regional scale. Furthermore, it was noted during the survey that many vegetation communities were in various stages of regeneration following fire, and as regeneration progresses many vegetation communities are likely to amalgamate (Mattiske, 2014a; MBS, 2015).

No Threatened flora were recorded. While some Priority flora species were recorded during the project-level survey conducted by Mattiske (2014b), none occurred within the application area.

A total of 142 vertebrate fauna species including 82 bird, 20 mammals and 40 reptile species were recorded across the Nova Nickel Project by Rapallo (2014a). Targeted surveys for Malleefowl recorded a total of 21 Malleefowl mounds within the application area, with 12 of these classified as 'extinct' mounds (highly degraded, little to no structure remaining) and 9 classified as 'dormant' (inactive, some structure remaining) (MBS, 2014a; Rapallo, 2014d; 2014e). A total of five dormant and three extinct mounds may be impacted by the proposed clearing, however, targeted surveys found no evidence of recent Malleefowl activity in the region, and all dormant mounds were considerably eroded (Rapallo, 2014d; 2014e).

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

**Methodology**      DPaW (2015)  
Grant et al. (2002)  
Mattiske (2014a)  
Mattiske (2014b)  
MBS (2014a)  
MBS (2015)  
Rapallo (2014a)  
Rapallo (2014d)  
Rapallo (2014e)  
GIS Database:  
- IBRA WA (Regions - Sub Regions)  
- 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**

A Level 2 fauna survey was conducted within the application area in November 2013 by Rapallo (2014a). A targeted search for Malleefowl and Malleefowl mounds was also conducted in January, February and May of

2014 (Rapallo, 2014d; 2014e).

Habitat mapping and information provided by MBS (2014a) indicates that six fauna habitats occur within the application area, including:

- Woodland: Open Eucalyptus woodland to 15 metres often over *Cratystylis conocephala* dominated shrubland with scattered Santalum, Eremophila, Atriplex and Olearia;
- Melaleuca: Open Eucalyptus woodland over Melaleuca thicket over mixed shrubs;
- Regenerating Woodland: Very dense, regenerating Eucalypt woodland with emergent dead tree trunks;
- Burnt Plain: Regenerating low shrubland/herbland of mixed Allocasuarina, Triodia and ephemeral herbs. Regeneration in early stage, with 80% bare soil;
- Mallee/Triodia: Triodia plain under sparse straggle mallees to 3 metres. Occasional Allocasuarina that can form groves. Mallee/Triodia habitat lower than the surrounding woodland habitat; and
- Creepline.

Fauna habitat mapping was limited to the proposed access road, and did not cover the proposed borrow pits that occur adjacent to the access road. However, aerial imagery indicates that the habitat types listed above are likely to be represented in unmapped areas (GIS Database).

A number of introduced fauna species have been recorded across the Nova Nickel Project, including the House Mouse *Mus musculus*, European Rabbit *Oryctolagus cuniculus*, Dingo/ feral Dog *Canis lupis*, Cattle *Bos taurus*, Dromedary Camel *Camelus dromedarius* and Fox *Vulpes vulpes* (Rapallo 2014a; 2014c).

A desktop assessment indicates that 22 conservation significant fauna have the potential to occur within the application area (MBS, 2014a). Eight conservation significant fauna were recorded by Rapallo (2014a), including:

- Malleefowl (*Leipoa ocellata*; Schedule 1 - WC Act and Vulnerable - EPBC Act);
- Rainbow Bee-eater (*Merops ornatus*; Schedule 3 - WC Act and Migratory - EPBC Act);
- Fork-tailed Swift (*Apus pacificus*; Schedule 3 - WC Act and Migratory - EPBC Act);
- Australian Bustard (*Ardeotis australis*; Priority 4);
- Crested Bellbird (*Oreoica gutturalis gutturalis*; Priority 4);
- Crested Shrike-tit (*Falcunculus frontatus whitei*; Priority 4);
- Rufous Fieldwren (*Calamanthus campestris montanellus*; Priority 4); and
- Shy Heathwren (*Hylacola cauta whitlocki*; Priority 4).

In addition to the species listed above, Sirius exploration personnel have observed the South-west Carpet Python (*Morelia spilota imbricata*; Schedule 4 - WC Act) on adjacent tenement M28/376 (MBS, 2014a).

With the exception of Malleefowl, the conservation significant bird species recorded within the project area are highly mobile. According to aerial imagery (GIS Database) and MBS (2014a), the habitat types present within the application area are continuous and widespread in the region. Given both the availability of habitat outside the application boundary and the long, linear shape of the application area, the proposed clearing is unlikely to represent significant habitat for any of these fauna species.

A total of 34 inactive Malleefowl mounds have been recorded across the entire Nova Nickel project area (Rapallo, 2014d; 2014e; 2015), of which nine dormant and 12 extinct Malleefowl mounds occur within the application area (Rapallo, 2014d; 2014e). The proponent advises that five dormant and three extinct mounds are within the proposed disturbance footprint (MBS, 2014a). The Malleefowl is a ground-nesting species that primarily occurs in semi-arid and arid shrublands and low woodlands, usually dominated by Mallee (*Eucalyptus* spp.) and Acacia spp. (MBS, 2014a; Department of the Environment, 2015). Sand and leaf litter found in these habitats is used by the species for mound construction and heat regulation (Department of the Environment, 2015). For this reason, and for shelter, Malleefowl have been shown to occur mostly in long-unburnt habitat (Benshemesh, 2007). Nest construction occurs over several months from autumn to spring, preceding the Malleefowl breeding season and egg-laying occurring from September to mid-to-late summer, or in some seasons early autumn (Department of the Environment, 2015). Eggs hatch after 60-90 days, after which chicks leave the nest and receive no parental care (Department of the Environment, 2015). Malleefowl are suggested to have an average breeding life of approximately 15 years, and mounds can and are often re-used in subsequent years (Department of the Environment, 2015).

A total of 15.9 hectares of habitat within the application area has been recently burnt, and is therefore unsuitable for Malleefowl occupancy (Benshemesh, 2007; MBS, 2014a). While Mallee/Triodia and Woodland habitats along the proposed road corridor were considered to be suitable for Malleefowl, no recent Malleefowl activity or active mounds were recorded in or near the application area (MBS, 2014a; Rapallo, 2014e). Two additional inactive mounds were recorded to the west of the application area (Rapallo, 2014e), which indicates that habitat outside the proposed clearing is equally suitable for use by the local Malleefowl population. Given the absence of any recent Malleefowl activity, and the availability of habitat outside the application area, the proposed clearing is not likely to represent significant habitat for Malleefowl.

A Short Range Endemic (SRE) survey was conducted by Rapallo (2014b). Although the SRE status of 10 taxa could not be determined, four were recorded at multiple locations and six were recorded in habitat that was

common in the landscape (Rapallo, 2014b). Given no adult males were collected, the taxonomic identification of these 10 taxa remains uncertain, and they are classified as 'Potential SRE - Data deficient' (MBS, 2014a; Rapallo, 2014b).

The application area is for the purpose of a 30 kilometre long access road (MBS, 2014a). This has the potential to impede movement by terrestrial fauna in an east-west direction. However, given the large areas of continuous habitat outside the application area, it is unlikely that the proposed clearing will have a significant impact on fauna movement on a landscape scale.

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

**Methodology** Benshemesh (2007)  
 Department of the Environment (2015)  
 MBS (2014a)  
 Rapallo (2014a)  
 Rapallo (2014b)  
 Rapallo (2014c)  
 Rapallo (2014d)  
 Rapallo (2014e)  
 Rapallo (2015)  
 GIS Database  
 - Imagery

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

**Comments** **Proposal is not likely to be at variance to this Principle**  
 According to available databases and survey reports, no Threatened flora species occur or have the potential to occur within the application area (Mattiske, 2014a; MBS, 2014a; GIS Database).  
 Based on the above, the proposed clearing is not likely to be at variance to this Principle.

**Methodology** Mattiske (2014a)  
 MBS (2014a)  
 GIS Database:  
 - Threatened and Priority flora

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

**Comments** **Proposal is not likely to be at variance to this Principle**  
 A search of available databases indicates that the application area is not likely to occur within a Threatened Ecological Community (TEC) (GIS Database). The nearest TEC occurs approximately 145 kilometres south, south-east 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:  
 - Threatened Ecological Sites Buffered

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

**Comments** **Proposal is not at variance to this Principle**  
 The application area falls within the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) bioregion, in which approximately 98% of the pre-European vegetation remains (see table) (Government of Western Australia, 2013; GIS Database).

The vegetation within the application area has been mapped as Beard vegetation associations 487 and 500 (GIS Database). Over 90% of these Beard vegetation associations remain at both a state and bioregional level (Government of Western Australia, 2013). 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). Therefore, the application area does not represent a significant remnant of native vegetation in an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DPaW Managed Lands

IBRA Bioregion – Coolgardie	12,912,204	12,648,491	~ 98	Least Concern	15.53
Beard veg assoc. - State					
487	498,611	498,611	~ 100	Least Concern	22.36
500	98,941	98,930	~ 100	Least Concern	0.82
Beard veg assoc. - Bioregion					
487	498,179	498,179	~ 100	Least Concern	22.35
500	98,940	98,929	~ 100	Least Concern	0.82

\* 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:  
- Imagery  
- Pre-European Vegetation

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

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

No permanent watercourses or wetlands occur within or near to the proposed clearing (MBS, 2014a; GIS Database). However, according to available databases and supporting information, three minor, non-perennial watercourses intersect the application area (MBS, 2014a; GIS Database).

None of the vegetation communities recorded by Matiske (2014b) were found to occur in association with a watercourse or wetland. In addition, aerial imagery does not indicate that vegetation composition or structure along ephemeral watercourses is different to that within surrounding areas (GIS Database). Therefore, these vegetation communities are not considered to be riparian in nature.

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

**Methodology** Matiske (2014b)  
MBS (2014a)  
GIS Database:  
- Hydrography, linear  
- Imagery

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

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

The Western Australian Department of Agriculture and Food (DAFWA) has advised that the Nova Nickel Project occurs within a previously undescribed land system, likely to be similar to the Gumland land system with increasing occurrences of *Eucalyptus oleosa* and melaleucas over calcareous loamy earths and red deep duplex soils (DAFWA, 2015). Similarly, a landform and soil characterisation study conducted over the application area by MBS (2014b) advised that soil over the project area was associated with either alkaline red shallow loamy duplex, or calcareous shallow loam.

DAFWA (2015) advises that these soils are likely to be moderately susceptible to erosion following the clearing of native vegetation, and should the surface hydrology be altered. MBS (2014a) also suggests that soil compaction may occur as a result of the proposed clearing. The application to clear for the purpose of constructing an access road has the potential to obstruct the three ephemeral drainage lines that intersect the application area (MBS, 2014a; GIS Database). In order to mitigate land degradation via soil erosion and compaction, MBS (2014a) advises that Sirius Gold will implement the following measures:

- Minimising the clearing of native vegetation wherever possible;
- Confining vehicle movements to defined roads and tracks;
- Maintaining existing flow paths of ephemeral drainage lines through the installation of culverts or floodways;
- Restricting topsoil-stripping activities to during periods of low winds;
- Appropriately stockpiling topsoil and vegetation for rehabilitation;
- Progressively rehabilitating cleared areas (particularly within borrow areas adjacent to the proposed road); and

- Scarifying or deep-ripping compacted areas prior to rehabilitation.

Land degradation as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition and a watercourse management condition.

A total of 16 weed species were recorded within the wider project area by Mattiske (2014a; 2014b). Invasive flora species can decrease the biodiversity value of an area, as they out-compete native vegetation for available resources, contribute to land degradation and increase the frequency and intensity of fires (DEC, 2011). Potential impacts to biodiversity within and nearby the application area as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

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

**Methodology** DAFWA (2015)  
DEC (2011)  
Mattiske (2014a)  
Mattiske (2014b)  
MBS (2014a)  
MBS (2014b)  
GIS Database:  
- Hydrography, linear

**(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 does not lie within any conservation areas of Department of Parks and Wildlife managed lands (GIS Database). The nearest conservation area is the Dundas Nature Reserve (Class B), which is located approximately 35 kilometres south of the application area at its nearest point (GIS Database). From this distance, the proposed clearing is not likely to impact the environmental values of the Dundas Nature Reserve.

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

**Methodology** GIS Database:  
- DPaW Tenure

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

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

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database), and there are no permanent watercourses in or surrounding the application area (GIS Database). Three minor, ephemeral watercourses intersect the application area (GIS Database). The proposed clearing may increase sedimentation within ephemeral watercourses during periods of heavy rainfall. MBS (2014a) advises that impacts to surface water will be mitigated by minimising disturbance to ephemeral watercourses, installing culverts or floodways to maintain water flow, and implementing a surface water management plan.

According to available databases, groundwater salinity within the application area ranges between 14,000 and >35,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database), which is considered to be saline to hypersaline. The proposed clearing is not likely to alter groundwater salinity on a local or regional scale.

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

**Methodology** MBS (2014a)  
GIS Database:  
- Groundwater Salinity, Statewide  
- Hydrography, linear  
- Public Drinking Water Source 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**

The application area is located within the Fraser Range region, which has a semi-arid to arid climate with a low annual rainfall of approximately 315 millimetres (MBS, 2014a). Annual evaporation in the region is estimated to be above 2,200 and 2,400 millimetres, highest between November and March (MBS, 2014a; GIS Database). Flood mapping was conducted over the Nova Nickel project area by JDA Consultant Hydrologists (JDA, 2013). The 100 year Average Recurrence Interval (ARI) flood mapping showed that flow is maintained within drainage channels, with flooding events unlikely to occur (JDA, 2013; MBS, 2014a).

Three minor, ephemeral watercourses occur within the application area (GIS Database). While localised flooding may occur following significant rainfall events, it is likely to be temporary. The proposed clearing is not likely to lead to an increase in the incidence or intensity of flooding on a local or regional scale.



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

**Methodology** MBS (2014a)  
JDA (2013)  
GIS Database:  
- Evaporation Isoleths

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

##### **Comments**

There is one native title claim over the application area (GIS Database). This claim (WC1990/002) has been registered with the Native Title Tribunal on behalf of the claimant group (GIS Database). However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are no 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.

The clearing permit application was advertised on 12 January 2015 by the Department of Mines and Petroleum inviting submissions from the public. There were no submissions received.

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

#### **4. References**

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- Mattiske (2014a) Flora and Vegetation Survey of the Fraser Range Fence Line Access Track. Unpublished report prepared by Mattiske Consulting Pty Ltd for Sirius Gold Pty Ltd.
- Mattiske (2014b) Flora and Vegetation Survey of the Nova Project, Fraser Range. Unpublished report prepared by Mattiske Consulting Pty Ltd for Sirius Gold Pty Ltd.
- MBS (2014a) Purpose Permit Application: Nova Nickel Project, Assessment of Clearing Principles L69/22. Prepared by MBS Environmental for Sirius Gold Pty Ltd.
- MBS (2014b) Nova Project Landform and Soil Assessment. Unpublished report prepared by MBS Environmental for Sirius Gold Pty Ltd.
- MBS (2015) Further information provided to the assessing officer on 11 March 2015.
- Rapallo (2014a) Fauna Survey of the Nova Project Area. Unpublished report prepared for Sirius Gold Pty Ltd. 28 March 2014.
- Rapallo (2014b) Memorandum: SRE Invertebrates Collected from the Nova Project Area. Unpublished memorandum prepared Rapallo Group for Sirius Gold Pty Ltd.
- Rapallo (2014c) Memorandum: Survey Data – Phase Two Fauna Survey of the Nova Project Area. Unpublished memorandum prepared Rapallo Group for Sirius Gold Pty Ltd.
- Rapallo (2014d) Memorandum: Targeted Malleefowl Survey of Proposed Borrow Pits. Unpublished memorandum prepared Rapallo Group for Sirius Gold Pty Ltd.
- Rapallo (2014e) Targeted Malleefowl Survey of the Nova Project Area. Unpublished report prepared Rapallo Group for Sirius Gold Pty Ltd.

## 5. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>DAA</b>	Department of Aboriginal Affairs, Western Australia
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia
<b>DEC</b>	Department of Environment and Conservation, Western Australia (now DPaW and DER)
<b>DER</b>	Department of Environment Regulation, Western Australia
<b>DMP</b>	Department of Mines and Petroleum, Western Australia
<b>DRF</b>	Declared Rare Flora
<b>DotE</b>	Department of the Environment, Australian Government
<b>DoW</b>	Department of Water, Western Australia
<b>DPaW</b>	Department of Parks and Wildlife, Western Australia
<b>DSEWPaC</b>	Department of Sustainability, Environment, Water, Population and Communities (now DotE)
<b>EPA</b>	Environmental Protection Authority, Western Australia
<b>EP Act</b>	<i>Environmental Protection Act 1986</i> , Western Australia
<b>EPBC Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
<b>GIS</b>	Geographical Information System
<b>ha</b>	Hectare (10,000 square metres)
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>PEC</b>	Priority Ecological Community, Western Australia
<b>RIWI Act</b>	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
<b>s.17</b>	Section 17 of the <i>Environment Protection Act 1986</i> , Western Australia
<b>TEC</b>	Threatened Ecological Community

### Definitions:

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

<b>T</b>	<b>Threatened species:</b> Specially protected under the <i>Wildlife Conservation Act 1950</i> , 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 the Department according to their level of threat using IUCN Red List criteria. For example Carnaby's Cockatoo <i>Calyptorhynchus latirostris</i> is specially protected under the <i>Wildlife Conservation Act 1950</i> as a threatened species with a ranking of Endangered.  <u>Rankings:</u> 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.
<b>X</b>	<b>Presumed Extinct species:</b> Specially protected under the <i>Wildlife Conservation Act 1950</i> , 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).
<b>IA</b>	<b>Migratory birds protected under an international agreement:</b> Specially protected under the <i>Wildlife Conservation Act 1950</i> , 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.
<b>S</b>	<b>Other specially protected fauna:</b> Specially protected under the <i>Wildlife Conservation Act 1950</i> , listed under Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice.
<b>P1</b>	<b>Priority One - Poorly-known species:</b> 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.
<b>P2</b>	<b>Priority Two - Poorly-known species:</b> 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.