



1. Application details

1.1. Permit application details

Permit application No.: 8235/1
Permit type: Area

1.2. Applicant details

Applicant's name: Northern Star (Hampton Gold Mining Areas) Ltd
Application received date: 31 October 2018

1.3. Property details

Property: Lot 105 on Deposited Plan 40396, Karramindie
Local Government Authority: Coolgardie, Shire Of
Localities: Karramindie

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
200		Mechanical	Mineral Exploration

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 27 August 2019
Reasons for Decision:

The clearing permit application was received on 31 October 2018 and has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986*. It has been concluded that clearing of the application area is at variance to clearing principles (a) and (b), may be at variance to clearing principles (f) and (h) and not likely to be at variance to the remaining clearing principles.

In determining to grant a clearing permit subject to conditions, the Delegated Officer considered that the environmental impacts of the proposed clearing can be managed through onsite avoidance and mitigation measures.

2. Site Information

Clearing Description The application is to clear 200 hectares of native vegetation within Lot 105 on Deposited Plan 40396, Karramindie, for the purpose of mineral exploration (figure 1)

Vegetation Description A flora survey of Lot 105, undertaken by GHD in 2018, was conducted in two parts, Eastern and Western survey areas.

The Eastern survey (GHD, 2018a) identified 11 vegetation associations within the application area:

- Samphire open shrubland (VT01a) (732.18 hectares);
- *Eucalyptus* spp. isolated trees over chenopod open shrubland (VT01b) (117.25 hectares);
- *Acacia acuminata* tall shrubland (VT02) (506.83 hectares)
- *Eucalyptus* spp. over *Eremophila* spp. open shrubland (VT03) (216.46 hectares);
- *Eucalyptus salmonophloia* and *E. celastroides* subsp. *celastroides* woodland (VT04) (267.22 hectares);
- *Eucalyptus salmonophloia* over chenopod shrubland (VT05) (77.28 hectares);
- *Eucalyptus* spp. woodland (VT06) (2047.40 hectares);
- *Eucalyptus* spp. open woodland on rocky slopes (VT07) (173.08 hectares);
- *Acacia jennerae* tall open shrubland (VT08) (9.94 hectares);
- *Brachychiton gregorii* isolated trees over tall open shrubland (VT09) (3.08 hectares);
- *Eremophila* spp. tall shrubland (VT10) (64.92 hectares).

The Eastern survey also identified 14.43 hectares of water source areas and 39.44 hectares of cleared areas (tracks/roads etc).

The Western survey (GHD, 2018b) identified seven vegetation associations within the application area:

- *Eucalyptus loxophleba* subsp. *lissophloia* and *E. griffithsii* open woodland (VT01) (215.97 hectares);
- *Eucalyptus* spp. isolated trees over tall shrubland (VT02) (517.14 hectares);
- *Eucalyptus* spp. woodland over open hummock grassland (VT03) (450.49 hectares);
- Mixed open shrubland over herbland (VT04) (5.02 hectares);
- *Eucalyptus* spp. over *Melaleuca* spp./ *Allocasuarina* sp. Tall sparse shrubland (VT05) (860.96 hectares);

- Mosaic *Eucalyptus spp.* woodland (VT06) (1,944.45 hectares);
- *Eucalyptus spp.* woodland over quartz (VT07) (1,153.09 hectares).

The Western survey also identified 67.19 hectares of cleared areas within the survey area.

Vegetation Condition

Vegetation condition within this assessment has been assessed using the vegetation condition scale developed by Keighery (1994). All references to vegetation condition throughout this assessment therefore reference this scale.

A flora survey of the Eastern section of Lot 105, undertaken by GHD (2018a) mapped the vegetation in an excellent to good condition, described as:

- Excellent - Vegetation structure intact; disturbance affecting individual species; weeds are non-aggressive species;
- Good - Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by frequent fires; the presence of some very aggressive weeds at high density; partial clearing; dieback; grazing.

Vegetation condition	Extent in survey area (ha)
Excellent	4,175.04
Good	40.60
Not rated – cleared, roads, tracks etc.	53.86
Total	4,269.50

A flora survey of the Western section of Lot 105, undertaken by GHD (2018a) mapped the vegetation in an excellent to good condition, described as:

- Excellent - Vegetation structure intact; disturbance affecting individual species; weeds are non-aggressive species;
- Good - Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by frequent fires; the presence of some very aggressive weeds at high density; partial clearing; dieback; grazing.

Vegetation condition	Extent in survey area (ha)
Excellent	5,136.27
Good	10.86
Not rated – cleared, roads, tracks etc.	67.19
Total	5,214.32

Overall the condition of the vegetation within the application area is approximately 98 per cent excellent condition, 1 per cent good condition and 1 per cent not assessed (cleared areas).

Local area

The local area is defined as 20 kilometres from the edge of the application areas.



Figure 1 – Application area

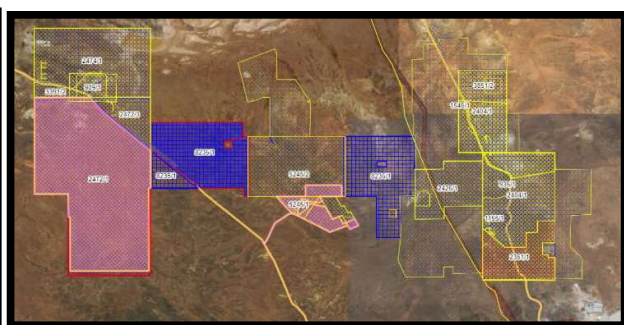


Figure 2 – Local context

3. Assessment of application against clearing principles

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

Proposed clearing is at variance to this Principle

As assessed within Principle (e), the local area is highly vegetated retaining approximately 99 per cent native vegetation. Flora and fauna assessments undertaken by GHD (2018a-b) determined that the vegetation under application is consistent with surrounding vegetation.

No threatened flora have been recorded within the local area, or within a 20 kilometre radius of the application area. No threatened (TEC) or priority (PEC) ecological communities have been recorded within the local area. The flora surveys of Lot 105 (GHD, 2018a-b) did not identify any threatened flora or vegetation consistent with a TEC or PEC. Given this, the application area is not likely to contain these environmental values.

No flora species listed as Priority by the Department of Biodiversity Conservation and Attractions (DBCA) have been mapped within the application area. The flora surveys of Lot 105 (GHD, 2018a-b) did not identify any Priority flora, however, a likelihood of occurrence assessment (GHD, 2018a-b) determined that two priority taxa were likely to have suitable habitat within the two vegetation types within the eastern survey area (VT02 and VT09; cumulatively 509.91 hectares) and one vegetation type within the western survey area (VT02; 517.14 hectares). Both taxa are listed as priority one; *Acacia websteri* and *Thryptomene* sp. Londonderry (R.H. Kuchel 1763). The application area includes approximately 1,027.05 hectares of suitable habitat for these species.

Acacia websteri is known from 21 records (Western Australian Herbarium (1998-)). As the habitat types for these records are present within the application area and given the application area occurs within the known range extent, this species may be present within the application area. Given the limited records of this species, an occurrence within the application area may be significant.

Thryptomene sp. Londonderry (R.H. Kuchel 1763) is known from 20 records (Western Australian Herbarium (1998-)). As the habitat types for these records are present within the application area and given the application area occurs within the known range extent, this species may be present within the application area. Given the limited records of this species, an occurrence within the application area may be significant.

As assessed within Principle (b), according to mapping the proposed clearing may contain habitat for the Malleefowl (*Leipoa ocellata*; Threatened) and the Rainbow Bee-eater (*Merops ornatus*; International agreement) which has been recorded in close proximity to the application area. Suitable habitat for these species was identified within the application area during a reconnaissance survey and given that the species are known from the local area, they may be impacted by the proposed clearing.

Habitat for the Malleefowl has been recorded within the application area, with an individual sighted in the Western survey area, along with three mounds (one of which was recently active). There is potential that this species may be impacted by the proposed clearing if breeding and critical habitat is not avoided. As Malleefowl are breeding within the Western application area, impacts to this species may be significant. Conditioning a clearing permit to ensure that nests and buffers to these areas are not impacted by the proposed clearing would assist in reducing the potential impact to this species.

As the proposed clearing may contain suitable habitat for two Priority 1 flora species, contains critical Malleefowl habitat (including breeding habitat), as well as suitable habitat for Rainbow Bee-eater, the proposed clearing is at variance to this Principle.

(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.

Proposed clearing is at variance to this Principle

Two conservation significant fauna species have been recorded within the local area; Rainbow Bee-eater (*Merops ornatus*) and Malleefowl (*Leipoa ocellata*).

GHD (2018a-b) undertook a fauna assessment of the Eastern and Western application areas. It was determined that:

- a total of eight and five broad habitat types were identified within the Eastern and Western survey areas respectively;
- no habitat type recorded was considered to be exclusive to either survey area;
- the habitat within the survey areas is well connected to the habitat in surrounding areas and the broader region;
- one conservation significant fauna species was recorded within the Western survey areas during the field survey (Malleefowl); and
- a likelihood of occurrence assessment determined that two conservation significant fauna species do or are likely to occur within the survey areas; Rainbow Bee-eater and Malleefowl.

Malleefowl generally occurs in semi-arid areas of Western Australia's South West. They nest in a large mound of sand or soil and organic matter, prefer vegetation with a dense understorey of shrubs and their breeding habitat is characterised by light soil and an abundant leaf litter, which is used in the construction of nesting mounds. Density of the canopy cover is an important feature associated with high breeding densities, with grazed areas generally having much lower densities. In the WA Wheatbelt, Malleefowl distribution is associated with landscapes with lower rainfall, greater amounts of mallee and shrubland that occur as large remnants, and lighter soil surface textures. As this species was sighted in the Western survey area, along with three mounds (one of which was recently active) and suitable habitat for this species was recorded within the application area, it will be impacted by the proposed clearing if breeding and critical habitat cannot be avoided. As Malleefowl are breeding within the Western application area, any impacts to this species may be significant. Conditioning a clearing permit to ensure that critical habitat (including nests and buffers) to these areas are not impacted by the proposed clearing would assist in reducing the potential impact to this species.

The Rainbow Bee-eater occurs in numerous habitats including open forests and woodlands, shrublands, in cleared or semi-cleared habitats such as areas of human habitation and farmland. It prefers open, cleared or lightly-timbered areas that are often, but not always in close proximity to permanent water (DotE, 2019). The application area may provide suitable habitat for the Rainbow Bee-eater, however, the proposed clearing is unlikely to significantly impact upon the conservation status of this species given the highly mobile nature of this species.

Given the above, the proposed clearing is at variance to this Principle. Malleefowl management conditions are likely to minimise the risk to this species.

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

Proposed clearing is not likely to be at variance to this Principle

No threatened flora have been recorded within the local area. Flora surveys of Lot 105, undertaken by GHD (2018a-b) did not identify any threatened flora within the Eastern or Western application areas.

Given the above, the proposed clearing is not likely to be at variance to this Principle

(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.

Proposed clearing is not likely to be at variance to this Principle

No State listed TEC's have been recorded within the local area. Flora surveys of Lot 105, undertaken by GHD (2018a-b) did not identify any vegetation consistent with a State listed TEC.

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

(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.

Proposed clearing is not at variance to this Principle

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The mapped Interim Biogeographic Region of Australia (IBRA) bioregion, Coolgardie, retains 97.7 per cent native vegetation. All mapped Beard vegetation associations within the application area, retain above 97 per cent of their pre-European extent within the Coolgardie IBRA Bioregion. The local area retains approximately 99 per cent native vegetation. As the mapped vegetation associations and the local area occur significantly above the 30 per cent threshold, the proposed clearing does not occur within a highly cleared landscape.

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

Table 1: Vegetation extents.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in Parks and Wildlife Managed Lands (%)
IBRA Bioregion*				
Coolgardie	12,912,204.4	12,648,491.4	97.7	16.7
Beard Vegetation Association in Bioregion*				
9 (Eastern and Western areas)	240,442.0	235,101.0	97.8	8.1
128 (Western area only)	184,549.90	183,891.19	99.64	18.85
468 (Eastern Area only)	583,357.7	575,360.6	98.6	22.7
936 (Eastern and Western areas)	586,792.22	584,336.13	99.58	3.10
1413 (Western area only)	1,061,212.30	1,042,553.78	98.24	18.50

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

Proposed clearing may be at variance this Principle

Minor, non-perennial watercourses are mapped within the Eastern and Western application areas. Each of the watercourses originates within or in close proximity to the application area. GHD (2018a-b) assessed the vegetation along the minor watercourses and determined it to be *Eucalyptus spp.* over *Eremophila spp.* open shrubland (Eastern area) and *Eucalyptus loxophleba subsp. lissophloia* and *E. griffithsii* open woodland (Western area). The flora taxa recorded within these vegetation units was not considered to contain wetland or dampland species (GHD, 2018a-b).

Creeklines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall (Kern, 1995). Given the lack of identified riparian vegetation, the mapped watercourses are likely to represent these minor creeklines.

Although minor in nature, the proposed clearing may include vegetation growing in association with a watercourse and may be at variance to this Principle. Given the presence of weeds within the application area it is likely that these weeds will spread along the watercourse areas and degrade their environmental values.

Watercourse and weed management conditions are likely to minimise the impacts to watercourses and wetlands.

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

Proposed clearing not likely to be at variance to this Principle

The application area is mapped within the following rangeland soil systems:

- My154 is described as undulating country on acid volcanic rocks and sedimentary materials;
- Mx43 is described as gently undulating valley plains and pediments; some outcrop of basic rock; and
- BB5 is described as rocky ranges and hills of greenstones-basic igneous rocks.

Minor non-perennial watercourses are mapped within the application area. Each of the watercourses originates within or in close proximity to the application area. Rainfall is mapped as 300 millimetres per year with an evapotranspiration rate of 300 millimetres per year.

As assessed within Principle (f), creeklines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall. No significant watercourses or wetlands are present within the application area.

The proposed clearing is for mineral exploration and therefore it is unlikely that the clearing will leave large areas of exposed soils. Given the above, the proposed clearing is not likely to be at variance to this Principle.

Further, the applicant has agreed to revegetate temporarily cleared areas reducing any potential impacts associated with land degradation from the exposure of soils through vegetation clearing.

(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.

Proposed clearing may be at variance to this Principle

The application area is adjacent to Department of Biodiversity Conservation and Attractions Reserves; Yallari Timber Reserve (south of Western area) and Karamindie Forest (east of Western area)

The Eastern application area occurs 3.5 kilometres west of an unmanaged reserve.

Three introduced flora were recorded within the Eastern and Western areas (GHD, 2018a-b). Of these, Bathurst Burr (*Xanthium spinosum*) is listed as Declared Pest under the *Biosecurity and Agriculture Management Act 2007*. Mechanical removal of vegetation can cause weeds to spread and given the close proximity of the western area to conservation areas and the presence of a declared weed within the application area there is a risk to the environmental values of the adjacent conservation areas.

Given this, the proposed clearing may be at variance to this Principle. Weed management and vegetation buffer conditions will likely mitigate the risk of environmental impact associated with the proposed clearing.

(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.

Proposed clearing is not likely to be at variance to this Principle

As assessed within Principle (e), the local area is extensively vegetated retaining approximately 99 per cent native vegetation. As assessed within Principle (f), creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall. No significant watercourses or wetlands are present within the application area.

Given the extent of native vegetation within the local area, the proposed clearing is not likely to deteriorate the quality of underground water.

Given the minor nature of the watercourses within the application area, the proposed clearing is not likely to impact on the quality of surface water.

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

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not likely to be a variance to this Principle

As assessed within Principles (e), (f) and (g), the local area is extensively vegetated retaining approximately 99 per cent native vegetation, creeklines in the region are dry for most of the year only flowing briefly immediately following significant rainfall. No significant watercourses or wetlands are present within the application area. Annual rainfall within the region is low at 300 millimetres.

Given that there are a number of methods for water dispersal within the application area, it is unlikely that the proposed clearing will cause, or exacerbate, the incidence or intensity of flooding and therefore is not likely to be at variance to this Principle.

Planning instruments and other relevant matters.

No Aboriginal sites of significance have been mapped within the application area.

The clearing permit application was advertised on the DWER website on 6 December 2018 with a 21 day submission period. No submissions were received.

The applicant amended the purpose for clearing during the assessment process to only include Mineral Exploration.

4. References

- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Department of the Environment and Energy (DotEE) (2019) Species Profile and Threats Database, Department of the Environment, Canberra. Accessed August 2019. Available from: https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=670
- Government of Western Australia (201) 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of February 2018. WA Department of Parks and Wildlife, Perth.
- GHD (2018a) Lot 105 Eastern Flora and Fauna Assessment, May 2018. DWER ref:A1734360.
- GHD (2018b) Lot 105 Western Flora and Fauna Assessment, May 2018. DWER ref:A1734362
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Kern, A.M. (1995) Hydrogeology of the Kalgoorlie 1:250 000 Sheet. Geological Survey of Western Australia, 1:250 000 Hydrogeological Series Explanatory Notes, 16p, Western Australia.
- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/> (Accessed February 2019).

GIS Database List

- SAC Bio datasets (February 2019)
- Hydrography, linear
- Aboriginal Sites of Significance
- RIM Areas
- Hydrography, linear
- Groundwater Salinity
- Pre-European vegetation
- DPaW Estate
- Soils, statewide
- Salinity Risk