Government of Western Australia
Department of Mines, Industry Regulation and Safety

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 9175/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Minara Resources Pty Ltd**

1.3. Property details

Property: Mining Lease 39/1088
Miscellaneous Licence 39/282
Local Government Area: Shire of Menzies
Colloquial name: Irwin Hills Project

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
312		Mechanical Removal	Mineral Exploration and Associated Activities

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 12 August 2021

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description

The vegetation of the application area is broadly mapped as the following Beard vegetation associations:
18: Low woodland; mulga (*Acacia aneura*);
389: Succulent steppe with open low woodland; mulga over saltbush; and
1239: Hummock grasslands, open medium tree & mallee steppe; marble gum & mallee (*E. youngiana*) over hard spinifex *Triodia basedowii* on sandplain (GIS Database).

Flora, vegetation and habitat surveys of the application area have been undertaken over several seasons between November 2019 and September 2020 for the Irwin Hills Project, which includes the application area (Phoenix, 2020). The survey report describes a number of vegetation associations located within the clearing permit application area (Phoenix, 2020; Strategen, 2020):

AcElTtEe: Low open woodland to open forest of mulga (*Acacia caesaneura, A. incurvaneura, A. aptaneura*), over mid sparse to open shrubland of *Eremophila latrobei* subsp. *filiformis, E. latrobei* subsp. *glabra*, and *Psydrax suaveolens*, over sparse shrubland of *Teucrium teucrifloraum, Solanum lasiophyllum*, *Prostanthera althoferi* subsp. *althoferi,* over sparse to open tussock grassland of *Eragrostis eriopoda, Paspalidium basicladum,* and variably present *Triodia basedowii.*

AqElf: Tall sparse to open shrubland of *Acacia quadrimarginea* with or without *A. ramulosa* var. *ramulosa* or mulga (*A. aptaneura, A. caesaneura, A. fuscaneura*), over mid sparse shrubland of *Eremophila latrobei* subsp. *filiformis*, *Dodonaea rigida*, *Scaevola spinescens*.

AsppAbMp: Low open woodland to woodland of mulga (*Acacia aptaneura, A. caesaneura, A. mulganeura*), over tall open shrubland of *Acacia burkittii, A. tetragonophylla*, and *Santalum spicatum*, over low sparse chenopod shrubland to shrubland typically of *Maireana pyramidata, Ptilotus obovatus*, and *Atriplex vesicaria*.

AsppArrAtPo: Low sparse to open woodland of mulga (*A. aneura, A. caesaneura, A. incurvaneura, A. aptaneura, A.mulganeura*), over open tall shrubland of *Acacia ramulosa* var. *ramulosa* and *A. burkittii*, over mid sparse shrubland of *A. tetragonophylla*, *Dodonaea rigida*, and *Senna cardiosperma*, over low sparse shrubland of *Ptilotus obovatus*, *Scaevola spinescens*, and *Teucrium teucriflorum*.

AsppSaaMp: Low open woodland to woodland of mulga *(Acacia aptaneura, A. aneura, A. caesaneura*), *A. tetragonophylla*, over sparse mid shrubland of *Senna artemisioides* subsp. x *artemisioides,* over variable low sparse chenopod shrubland of *Maireana pyramidata, Atriplex vesicaria*, and *Sclerolaena diacantha*.

CpAdPo: Low open woodland of *Casuarina pauper* with or without mulga (*Acacia macraneura, A. incurvaneura*), over tall sparse to open shrubland of *Acacia duriuscula*, *Acacia tetragonophylla*, and *Santalum spicatum,* over mid sparse to open shrubland of *Eremophila oldfieldii* subsp. *angustifolia*, *Senna artemisioides* subsp. *filifolia*, and *S. cardiosperma*, over low open shrubland of *Ptilotus obovatus* and *Scaevola spinescens.*

CpEpSsTb: Low open woodland of *Casuarina pauper* with or without *Acacia burkittii*, over mid sparse to open shrubland of *Eremophila pantonii*, *Senna artemisioide*s subsp. *filifolia*, over low sparse shrubland of *Scaevola spinescens, Ptilotus obovatus, Olearia muelleri*, over isolated tussocks to sparse tussock grassland of *Triodia*

basedowii.

EcAhTb: Low to mid open mallee woodland of *Eucalyptus concinna* and/or *E. horistes* with mulga (*A. caesaneura, A. mulganeura, A. aneura*), over variable mid isolated shrubs to open shrubland of *Acacia hemiteles, A. ligulata*, and *Dodonaea lobulata*, over hummock grassland of *Triodia basedowii.*

EgAlTb: Low to mid open woodland of *Eucalyptus gongylocarpa*, with or without *E. youngiana* and/or *E. concinna*, over mid sparse shrubland of *Acacia ligulata, Hakea francisiana*, and *Acacia sibina*, over hummock grassland of *Triodia basedowii*.

ElAhTb: Low open mallee woodland of *Eucalyptus longissima* with variably present mulga (*Acacia aptaneura, A. caesaneura, A. aneura*), over mid sparse shrubland of *Acacia hemiteles, A. nyssophylla*, and *Senna artemisioides* subsp. *filifolia*, over open hummock grassland of *Triodia basedowii.*

ElEpSs: Low to mid open woodland of *Eucalyptus lesouefii*, over mid sparse to open shrubland of *Eremophila pantonii*, *Senna artemisioides* subsp. *filifolia*, and *Dodonaea obulata,* over low sparse shrubland of *Scaevola spinescens*, *Ptioltus obovatus*, and *Atriplex vesicaria*.

EoTb: Low sparse to open woodland variably of *Eucalyptus oleosa* subsp. *oleosa, E. horistes*, *and E. youngiana*, over variable isolated shrubs including *Acacia jenerae, Senna artemisioides* subsp*. filifolia,* and *Dodonaea viscosa* subsp*. angustissima*, over sparse hummock grassland to hummock grassland of *Triodia basedowii* or *T. ?longiceps*.

MI: Mid shrubland of *Melaleuca laxiflora*, over variable low chenopod shrubland of *Atriplex* spp., and *Frankenia* spp.

MpEp: Low open chenopod shrubland of *Maireana pyramidata*, *Atriplex vesicaria*, and *Maireana tomentosa*, over sparse tussock grassland variably of *Eragrostis eriopoda*, *Enteropogon ramosus*, and *Eragrostis dielsii*.

ScEp: Mid isolated shrub of *Senna cardiosperma* and *S. artemisioides* subsp. x *artemisioides*, over open tussock grassland of *Enneapogon polyphyllus*, *Aristida contorta*, and *Enneapogon caerulescens*.

Clearing Description

Irwin Hills Project.
Minara Resources Pty Ltd proposes to clear up to 312 hectares of native vegetation within a boundary of approximately 1,825 hectares, for the purpose of mineral exploration and associated activities. The project is located approximately 85 kilometres south east of Laverton, within the Shire of Menzies.

Vegetation Condition

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

To:

Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

Comment

The vegetation condition was derived from a vegetation survey conducted by Phoenix (2020).

The proposed clearing will enable the applicant to investigate the development potential of the Irwin Hills Project. The applicant is proposing to complete an exploration (grade control) programme across the southern portion of the Irwin Hills project. The exploration program will impact an area of approximately 312 hectares which includes resource area and access roads.

3. Assessment of application against Clearing Principles

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

Comments

Proposal is not likely to be at variance to this Principle

The clearing permit application area is located within the Shield subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Great Victoria Desert Bioregion (GIS Database). The Shield subregion is characterised by salt lakes and major valley floors with lake derived dunes. Sand plains occur with patches of seif dunes running east west. The subregion includes areas of moderate relief with outcropping and silcrete-capped mesas and breakaways (CALM, 2002). Spinifex (*Triodia spp*) and mallee (*Eucalypt*us *kingsmillii, E. youngiana*) over hummock grassland dominated by *Triodia basedowii* occur on the aeolian sand plain. Scattered marble gum (*E. gongylocarpa*) and native pine (*Callitris*) occur on the deeper sands of the sand plains. Mulga and acacia woodlands occur mainly on the colluvial and residual soils. Halophytes such as salt bush (*Atriplex*), Bluebush (*Kochia*), and samphire (*Arthrocnemum*) occur, margins of salt lakes and in saline drainage areas (CALM, 2002).

Flora, vegetation and habitat surveys were conducted for the Irwin Hills Project, in conjunction with desktop reviews (Phoenix, 2020). High-level reconnaissance surveys were initially conducted over a broader study area (~28,819 hectares), and subsequently more detailed surveys (4,625 hectares) were conducted, which included the application area (~1,825 hectares). Detailed flora and vegetation surveys over the application area were conducted in November 2019 and April 2020 (Phoenix, 2020). Targeted searches were conducted in September 2020 for significant flora species identified in previous surveys (Phoenix, 2020).

A total of 306 flora taxa were recorded within the broader study area, comprised of 275 identified to taxon level, 29 species that could only be identified to genus level, and two to family level (Phoenix, 2020). Four species were considered potentially undescribed species, whilst several of the species were also recorded as having range extensions for the survey area, none of which were identified within the application area (Phoenix, 2020).

No threatened flora were recorded during the field survey or desktop reviews (Strategen, 2020). One species for which a significant range extension was recorded (>100 kilometres) was identified within the application area: *Eremophila latrobei* subsp. *filiformis*. However, the species is well represented in several bioregions and was found at multiple (28) locations across the larger survey area, with three locations within the application area. The species is considered to be locally abundant (Phoenix, 2020) and the proposed clearing is considered unlikely to impact the conservation status of the species nor significantly reduce the local population.

No other flora species of conservation significance were identified within the application area. Desktop reviews and the broader field survey did identify a number of priority flora species that have some likelihood of occurring within the application area (Phoenix, 2020). However, the survey efforts did not identify any of those species within the application area. All of the priority species with the potential to occur are locally and regionally well represented, and therefore unlikely to be significantly impacted by the proposed clearing, if present (Strategen, 2020; Western Australian Herbarium, 1998-).

The majority of vegetation within the application area was recorded to be in 'Very Good' to 'Excellent' condition. Very low numbers of weed species were recorded around the broader survey area and none within the application area. Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

A total of 108 terrestrial vertebrate species representing 67 families and 81 genera were recorded in the survey area during the field surveys (Phoenix, 2020). There were four fauna habitat types identified within the application area. These habitats are common in the local area and are not likely to support a higher level of faunal diversity than surrounding areas (Strategen, 2020).

The vegetation associations, fauna habitats and landform types present within the application area, are well represented in surrounding areas (Phoenix, 2020; Strategen, 2020; GIS Database). The application area is unlikely to represent an area of higher biodiversity than surrounding areas, in either a local or regional context.

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

Methodology

CALM (2002)
Phoenix (2020)
Strategen (2020)
Western Australian Herbarium (1998-)

GIS Database:
- IBRA Australia
- Pre-European Vegetation
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers
- Threatened and Priority Flora
- Threatened Fauna

(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.

Comments

Proposal may be at variance to this Principle

Phoenix (2020) conducted fauna and fauna habitat surveys over the application area in September 2019 and May 2020. The following four broad fauna habitats were described:

- Mulga woodland;
- Mallee over spinifex;
- Mid-tall shrubland; and
- Rocky hills and outcrops.

The predominant habitats within the application area are the 'mallee over spinifex' and 'mulga woodland' habitats, representing 47.9% and 42.7% respectively (Strategen, 2020). The landforms and habitat prevalent within the application area are considered widespread within the region and are not restricted to the application area (Phoenix, 2020).

Within the application area, only the 'Rocky hills and outcrops' habitat is considered to have moderate potential to harbour Short Range Endemic (SRE) invertebrate species (Phoenix, 2020; Strategen, 2020). However, the examples present are considered too small to provide mesic conditions that might further constrain taxa, and are more extensively represented outside of the application area (Phoenix, 2020).

The Central Long-eared bat (*Nyctophilus major tor*, P3) occurs regionally and was tentatively detected on ultrasonic recordings outside and to the west of proposed application area, however no activity was recorded within (DBCA, 2007-; Phoenix, 2020). The 'rocky hills and outcrops' habitat type would be suitable habitat for bats (roosting caves, overhangs or adits), however it is uncommon within the application area itself, whilst there are extensive rocky ranges running just outside of the application area (Phoenix, 2020). The species may occasionally use the application area for foraging, however the application area is unlikely to represent significant habitat for the Central Long-eared bat (Strategen, 2020; Phoenix, 2020; GIS Database).

The Malleefowl (*Leipoa ocellata*, VU) appear to be actively using the area, evidenced by fresh tracks and recently active mounds recorded in the application area and broader survey area (Phoenix, 2020). Although the species has a broader local and regional distribution range and large tracts of suitable habitat extend beyond the application area (DAWE, 2021; DBCA, 2007-; GIS Database), it is likely that the area contains important habitat for the species.

The survey efforts did not identify any other fauna species of conservation significance within the application area, however a number of taxa have some likelihood of occurring, based on known range and availability of suitable habitat (DAWE, 2021; DBCA, 2007-; Phoenix, 2020).

The Great Desert Skink (*Liopholis kintorei,* VU), Brush-tailed Mulgara (*Dasycercus blythi*, Priority 4) and Long-tailed Dunnart (*Sminthopsis longicaudata,* P4), have previously been regionally recorded, however the habitat types most likely to host these mobile species are considered regionally widespread and their habitats not unique or restricted to the application area (DAWE, 2021; DBCA 2007-; Phoenix, 2020). The application area is unlikely to represent significant habitat for any of these species.

A number of bird species of conservation significance have the potential to occur within the application area, however each are known from broad distribution ranges and are nomadic or migratory in nature (DAWE, 2021; DBCA 2007-; Phoenix, 2020). Fauna habitat within the application area is unlikely to be locally or regionally significant for these species.

Based on the above, the proposed clearing may be at variance to this principle. Potential impacts to the Malleefowl may be minimised by the implementation of a fauna management condition requiring further searches for Malleefowl if clearing during the breeding season and avoidance of active mounds, if present.

Methodology

DAWE (2021)
DBCA (2007-)
Phoenix (2020)
Strategen (2020)

GIS Database:
- Imagery
- Pre-European Vegetation
- Threatened Fauna

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

Comments

Proposal is not likely to be at variance to this Principle

There are no known records of Threatened flora within the application area (GIS Database). Flora surveys of the application area did not record any species of Threatened flora (Phoenix, 2020).

The vegetation associations within the application area are common and widespread within the region (Phoenix, 2020; GIS Database), and the vegetation proposed to be cleared is unlikely to be necessary for the continued existence of any species of Threatened flora.

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

Methodology

Phoenix (2020)

GIS Database:
- Pre-European Vegetation
- 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

There are no known Threatened Ecological Communities (TECs) located within or in close proximity to the application area (GIS Database). A flora and vegetation survey of the application area did not identify any TECs (Phoenix, 2020).

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

Methodology Phoenix (2020)

GIS Database:
- Threatened and Priority Ecological Communities Boundaries
- Threatened and Priority Ecological Communities Buffers

(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 Great Victoria Desert Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 99% of the pre-European vegetation still exists in the IBRA Great Victoria Desert Bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations 18: Low woodland; mulga (*Acacia aneura*); 389: Succulent steppe with open low woodland; mulga over saltbush; and 1239: Hummock grasslands, open medium tree & mallee steppe; marble gum & mallee (*E. youngiana*) over hard spinifex *Triodia basedowii* on sandplain (GIS Database). Approximately 99% to 100% of the pre-European extent of each of these vegetation associations remains uncleared at both the state and bioregional level (Government of Western Australia, 2019).

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 DBCA managed lands
IBRA Bioregion – Great Victoria Desert	21,794,222	21,784,887	~99	Least Concern	8.46
Beard vegetation associations – WA					
18	19,892,306	19,843,148	~99	Least Concern	6.62
389	642,356	640,468	~99	Least Concern	3.58
1239	2,234,315	2,234,315	~100	Least Concern	11.85
Beard vegetation associations – Great Victoria Desert					
18	1,954,628	1,954,625	~100	Least Concern	9.22
389	147,692	147,692	~100	Least Concern	-
1239	2,233,684	2,233,684	~100	Least Concern	11.85

* Government of Western Australia (2019)
** 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 (2019)

GIS Database:
- IBRA Australia
- 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

There are no permanent watercourses or wetlands within the area proposed to clear (Phoenix, 2020; GIS Database). Some seasonal drainage lines pass through the application area (GIS Database). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall (CALM, 2002; Strategen, 2020).

Based on the above, the proposed clearing is at variance to this Principle. However, the vegetation survey of the application area did not identify any riparian vegetation (Phoenix, 2020), and impacts from the proposed clearing to vegetation growing in association with watercourses is likely to be minimal.

Methodology CALM (2002)
Phoenix (2020)
Strategen (2020)

GIS Database:
- Hydrography, Lakes
- 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 lies within the Bullimore, Gundockerta, Laverton, Violet and possibly the Carnegie land systems (DPIRD 2021; GIS Database). These land systems have been mapped and described by the Department of Primary Industries and Regional Development.

The Bullimore land system is described as extensive sandplains supporting spinifex hummock grassland. The system is characterised by level to gently undulating sandplains that have been variously re-worked by aeolian, fluvial and colluvial processes. The spinifex grasslands are highly flammable when wildfires in hot months can cause considerable damage to less fire-adapted plant communities. Wind erosion may occur after fire; however, stabilisation is usually rapid following rain and consequent regeneration of vegetation (DPIRD, 2021).

The Carnegie land system is described as salt lakes and fringing level to gently sloping plains with saline alluvium and low sand dunes above surrounding saline plains. The lack of slope renders most of the system generally not susceptible to soil erosion except at lake margins where wind erosion may be exacerbated by loss of stabilising vegetation (DPIRD, 2021).

The Gundockerta land system is described as extensive undulating calcareous stony plains supporting bluebush shrubland. Where not protected by a stony mantle the saline plains and adjacent lower alluvial tracts are susceptible to water erosion, particularly in areas where perennial shrub cover is reduced or the soil surface is disturbed (DPIRD, 2021).

The Laverton land system is described greenstone hills and ridges with acacia shrublands, hills with banded ironstone ridges and sparse narrow drainage tracts with shallow channels. Stone mantles protect most of this land system against soil erosion, the exception being the narrow drainage tracts which are mildly susceptible to water erosion (DPIRD, 2021).

The Violet land system is described as undulating stony and gravelly plains with low rises supporting mulga shrublands. This land system consists of extensive, gently undulating to level plains and low rises with mantles of ironstone pebbles and level to very gently inclined plains subject to sheet flow with mantles of fine ironstone gravel. Abundant mantles provide effective protection against soil erosion over most of this land system, except where the soil surface has been disturbed. In such circumstances, the soil becomes moderately susceptible to water erosion. Narrow drainage tracts are mildly susceptible to water erosion.

The proposed clearing of up to 312 hectares of native vegetation within a boundary of approximately 1,825 hectares, for the purpose of mineral exploration could cause some erosion issues in limited areas, such as the drainage tracts.

Based on the above, the proposed clearing may be at variance to this Principle. Potential land degradation as a result of the proposed clearing may be minimised by the implementation of a staged clearing condition.

Methodology DPIRD (2021)

GIS Database:
- Landsystem Rangelands
- Soils, Statewide

(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**

There are no conservation areas in the vicinity of the application area. The nearest DBCA (formerly DPaW) managed land is the Queen Victoria Spring Nature Reserve which is located approximately 110 kilometres south of the application area (GIS Database). The proposed clearing is unlikely to impact on the environmental values of any conservation area.

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**
There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). There are no permanent watercourses or wetlands within the area proposed to clear (GIS Database). Creek lines in the region are dry for most of the year, only flowing briefly immediately following significant rainfall (CALM, 2002; Strategen, 2020). The proposed clearing is unlikely to result in significant changes to surface water flows.

The proposed clearing is unlikely to cause deterioration in the quality of underground water.

Groundwater in the application area is generally brackish, with between 3,000 to 7,000 milligrams per litre of Total Dissolved Solids (GIS Database). It is unlikely the proposed clearing will cause an incremental increase in groundwater salinity, nor cause deterioration in the quality of underground water.

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

Methodology CALM (2002)
Strategen (2020)

GIS Database:
- 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 climate of the region is arid, with a low average rainfall of approximately 190 millimetres per year (CALM, 2002). Drainage lines in the area are dry for most of the year, only flowing briefly immediately following significant rainfall (CALM, 2002; Strategen, 2020).

There are no permanent water courses or waterbodies within the application area (GIS Database). Seasonal drainage lines are common in the region and temporary localised flooding may occur briefly following heavy rainfall events. However, the proposed clearing is unlikely to increase the incidence or intensity of natural flooding events.

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

Methodology CALM (2002)
Strategen (2020)

GIS Database:
- Hydrographic Catchments - Catchments
- Hydrography, linear

Planning Instrument, Native Title, previous EPA decision or other matter.

Comments

The clearing permit application was advertised on 1 February 2021 by the Department of Mines, Industry Regulation and Safety (DMIRS), inviting submissions from the public. No submissions were received in relation to this application.

There is one native title claim (WC2019/002) over the area under application (DPLH, 2021). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group. 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 Aboriginal Sites of Significance within the application area (DPLH, 2021). It is the proponent's responsibility to comply with the Aboriginal Heritage Act 1972 and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Due to potential impacts to Malleefowl habitat, the proponent self-referred the Irwin Hills Nickel Project Grade Control Drilling proposal to the Environmental Protection Authority (EPA) under Part IV, section 38 of the *Environmental Protection Act 1986* (EP Act). On 23 July 2021 the EPA decided that the proposal was not to be assessed under Part IV of the EP Act – Dealt with under Part V Division 2 (Clearing) (EPA, 2021).

It is noted that the application area covers habitat for the Malleefowl *(Leipoa ocellata*), which is listed as a 'matter of national environmental significance' (MNES) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Actions which are likely to have a significant impact on an MNES require approval under the EPBC Act. The proponent is encouraged to contact the Department of Agriculture, Water and the Environment for further information on its responsibilities under the EPBC Act.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

Methodology DPLH (2021)
EPA (2021)

4. References

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Conservation and Land Management, Western Australia.

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DBCA (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Biodiversity, Conservation and Attractions. https://naturemap.dbca.wa.gov.au/ (Accessed 24 February 2021).

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DPIRD (2021) Advice received in relation to Clearing Permit Application CPS 9175/1. Commissioner of Soil and Land Conservation, Department of Primary Industries and Regional Development, Western Australia, February 2021.

DPLH (2021) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS (Accessed 29 February 2021).

EPA (2021) Notice of Decision Not To Assess A Proposal – Irwin Hills Nickel Grade Control Drilling. Environmental Protection Authority, Western Australia, 23 July 2021.

Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth. https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Phoenix (2020) Flora, vegetation and terrestrial fauna surveys for the Irwin Hills Project. Prepared for Minara Resources Pty Ltd, by Phoenix Environmental Sciences Pty Ltd, December 2020.

Strategen (2020) Irwin Hills Exploration Native Vegetation Clearing Permit – Purpose Permit Supporting Documentation 59698-134,101 (Rev 1). Prepared for Minara Resources Pty Ltd, by Strategen JBS&G Pty Ltd, December 2020.

Western Australian Herbarium (1998-) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. https://florabase.dpaw.wa.gov.au/ (Accessed 2 March, 2021).

5. Glossary

Acronyms:

BC Act	*Biodiversity Conservation Act 2016,* Western Australia
BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia (now DPLH)
DAFWA	Department of Agriculture and Food, Western Australia (now DPIRD)

DAWE	Department of Agriculture, Water and the Environment, Australian Government
DBCA	Department of Biodiversity, Conservation and Attractions, Western Australia
DER	Department of Environment Regulation, Western Australia (now DWER)
DMIRS	Department of Mines, Industry Regulation and Safety, Western Australia
DMP	Department of Mines and Petroleum, Western Australia (now DMIRS)
DoEE	Department of the Environment and Energy (now DAWE)
DoW	Department of Water, Western Australia (now DWER)
DPaW	Department of Parks and Wildlife, Western Australia (now DBCA)
DPIRD	Department of Primary Industries and Regional Development, Western Australia
DPLH	Department of Planning, Lands and Heritage, Western Australia
DRF	Declared Rare Flora (now known as Threatened Flora)
DWER	Department of Water and Environmental Regulation, Western Australia
EP Act	*Environmental Protection Act 1986*, Western Australia
EPA	Environmental Protection Authority, 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
PEC	Priority Ecological Community, Western Australia
RIWI Act	*Rights in Water and Irrigation Act 1914*, Western Australia
TEC	Threatened Ecological Community

Definitions:

{DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia}:-

T **Threatened species:**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**
Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN **Endangered species**
Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU **Vulnerable species**
Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Extinct Species:

EX **Extinct species**

Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW **Extinct in the wild species**

Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species:

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI **Migratory species**

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD **Species of special conservation interest (conservation dependent fauna)**

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS **Other specially protected species**

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P **Priority species:**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

P1 **Priority One - Poorly-known species**

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

P2 **Priority Two - Poorly-known species**

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

P3 **Priority Three - Poorly-known species**

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations 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 locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

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 are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.