



# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

Permit application No.: 9365/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Chalice Mining Limited

### 1.3. Property details

Property: Exploration Licence 70/5119  
Local Government Area: Shire of Toodyay  
Colloquial name: Hartog and Baudin Project

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
4.4		Pruning, walking over vegetation, and driving an off-road vehicle or equipment over vegetation	Mineral exploration

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 6 January 2022

## 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:  
4: Medium woodland; marri & wandoo; and  
968: Medium woodland; jarrah, marri & wandoo (GIS Database).

A flora and vegetation survey was conducted over the application area by Biologic during April and May 2021. The following vegetation associations were recorded within the application area (Biologic, 2021a):

**H1** - Mid open forest of *Eucalyptus marginata* and *Corymbia calophylla* over mid-tall open shrubland of *Banksia squarrosa* subsp. *squarrosa*, *Xanthorrhoea preissii* and *Banksia sessilis* over low open shrubland of *Hibbertia hypericoides*, *Styphelia retrorsa* and *Banksia dallanneyi* subsp. *sylvestris*;

**H2** - Low open woodland of *Eucalyptus marginata* and *Corymbia calophylla* over tall open shrubland of *Banksia squarrosa* subsp. *squarrosa*, *Xanthorrhoea preissii* and *Macrozamia riedlei* over low open shrubland of *Hibbertia hypericoides*, *Phyllanthus calycinus* and *Hakea lissocarpha*;

**H3** - Low-mid open woodland of *Corymbia calophylla* and *Eucalyptus marginata* over tall shrubland of *Adenanthos cygnorum* and *Banksia squarrosa* subsp. *squarrosa* over low sparse shrubland of *Adenanthos cygnorum*, *Banksia sphaerocephala* var. *pumilio* and *Hibbertia hypericoides*;

**H4** - Mid woodland of *Eucalyptus wandoo*, *Eucalyptus marginata* and *Corymbia calophylla* over mid-tall open shrubland of *Banksia squarrosa* subsp. *squarrosa* and *Xanthorrhoea preissii* over low open shrubland of *Hibbertia hypericoides*, *Styphelia retrorsa* and *Hakea lissocarpha*;

**H5** - Mid woodland of *Eucalyptus wandoo* and *Eucalyptus accedens* over mid sparse shrubland of *Xanthorrhoea preissii* over low sparse shrubland of *Hibbertia hypericoides*, *Hakea lissocarpha* and *Banksia bipinnatifida* subsp. *bipinnatifida*;

**H7** - Tall open shrubland of *Allocasuarina humilis*, *Xanthorrhoea preissii* and *Banksia squarrosa* over low open shrubland of *Patersonia occidentalis*, *Hibbertia hypericoides* and *Babingtonia camphorosmae* over low open herbland of *Laxmannia squarrosa*;

**V1** - Low open woodland of *Eucalyptus accedens* over tall sparse shrubland of *Xanthorrhoea preissii* and *Macrozamia riedlei* over low open shrubland of *Bossiaea eriocarpa*, *Hakea lissocarpha* and *Banksia bipinnatifida* subsp. *bipinnatifida*;

**V2** - Mid woodland of *Eucalyptus wandoo* and *Eucalyptus accedens* over mid-tall open shrubland of *Acacia lasiocarpa* var. *sedifolia* and *Xanthorrhoea preissii* over low open shrubland of *Hibbertia hypericoides*;

**V3** - Mid open woodland of *Eucalyptus marginata* and *Corymbia calophylla* with isolated *Eucalyptus wandoo* trees over tall open *Banksia sessilis* shrubland over mid shrubland of *Daviesia angulata* and *Xanthorrhoea preissii* over low shrubland of *Babingtonia camphorosmae*, *Melaleuca trichophylla* and *Styphelia retrorsa*;

**V5** - Mid open woodland to isolated trees of *Eucalyptus wandoo*, *Corymbia calophylla* and *Eucalyptus marginata* over tall open shrubland of *Leptospermum erubescens*, *Banksia squarrosa* and *Adenanthos cygnorum* over low open shrubland of *Bossiaea eriocarpa*, *Babingtonia camphorosmae* and *Styphelia retrorsa*;

**V6** - Tall closed shrubland of *Banksia squarrosa* subsp. *squarrosa* and *Banksia sessilis* over low open shrubland of *Hibbertia hypericoides*, *Calytrix* sp. indet 2, and *Calothamnus quadrifidus* subsp. *quadrifidus*; and

**C1** – Cleared.

<b>Clearing Description</b>	Hartog and Baudin Project. Chalice Mining Limited proposes to clear up to 4.4 hectares of native vegetation within a boundary of approximately 117.8 hectares, for the purpose of mineral exploration. The project is located approximately 15 kilometres south-east of Bindoon, within the Shire of Toodyay.
<b>Vegetation Condition</b>	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994);  To:  Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994).
<b>Comment</b>	No blade down clearing is proposed. To minimise impacts to vegetation, small track mounted drill rigs with closed-loop drilling fluid systems will be used, negating the need to construct cleared drill pads, sumps, and access tracks. The use of small track-mounted drill rigs and support vehicles, rather than conventional larger wheeled rigs and vehicles, minimises the impact on vegetation, allowing root stock and soil profile (including seed bank) to remain intact, and vegetation to recover once the drill rig and support vehicles have passed over the area (MBS Environmental, 2021).  Drill rigs and support vehicles will utilise existing tracks and/or firebreaks where possible (approximately 30% of drill sites) and drill rigs and all support vehicles will be configured in tandem to further reduce the overall footprint associated with set up and operation of drilling activities (MBS Environmental, 2021).  Drill sites and access routes have been designed in areas of sparse vegetation where practicable and multiple holes will be drilled from a single drill site, rather than grid configuration, to minimise footprint (MBS Environmental, 2021).

### 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 at variance to this Principle
	<p>The clearing permit application area is located within the Northern Jarrah Forest subregion of the Interim Biogeographic Regionalisation for Australia (IBRA) Jarrah Forest Bioregion (GIS Database). This subregion is characterised by Jarrah/Marri forest in the west with Bullich and Blackbutt in the valleys grading to Wandoo and Marri woodlands in the east with Powderbark on breakaways. There are extensive but localised sand sheets with <i>Banksia</i> low woodlands. Heath is found on granite rocks and as a common understorey of forests and woodlands in the north and east. The majority of the diversity in the communities occurs on the lower slopes or near granite soils where there are rapid changes in site conditions (CALM, 2002).</p> <p>In April and May 2021, Biologic Consulting (Biologic) undertook a reconnaissance assessment and targeted field survey over 2,023 hectares, which included the application area. The survey was undertaken outside the optimal period to complete flora surveys within the Jarrah Forest bioregion. The majority of flora present were sterile and lacking in flowers and/or fruit, which are key characters required for confident identification of flora specimens. The survey intensity was also not considered adequate for a targeted flora survey (Biologic, 2021a). An additional targeted flora survey was undertaken by Biologic in September 2021 (Biologic, 2021b). This survey was adequate to inform the assessment of the proposed clearing. Additional detailed and targeted surveys during appropriate survey timing are recommended to better determine potential impacts to the flora and vegetation for any future clearing, and are currently being undertaken by the proponent.</p> <p>Biologic (2021a) identified 11 vegetation communities within the application area. The vegetation condition of the majority of the application area was 'excellent', with areas impacted by existing disturbances such as prescribed burns and informal tracks 'degraded' (Keighery, 1994). No Threatened or Priority Ecological Communities were recorded within the application area (Biologic, 2021a; GIS Database).</p> <p>The survey identified a total of 127 vascular plant taxa from 29 families and 62 genera (Biologic, 2021a). No Threatened Flora species were identified within the application area, however four Priority flora species were identified during the September 2021 targeted flora survey; <i>Drosera sewelliae</i> (Priority 2); <i>Cyanicula ixioides</i> subsp. <i>candida</i> (Priority 2); <i>Acacia drummondii</i> subsp. <i>affinis</i> (Priority 3); and <i>Cyanicula ixioides</i> subsp. <i>ixioides</i> (Priority 4) (Biologic, 2021b). The potential impact from the proposed clearing of native vegetation on conservation significant flora recorded within the application area is displayed in Table 1.</p>

Table 1: Potential impacts from clearing of native vegetation to conservation significant flora recorded within the application area

	Number of individuals found by Biologic in the greater survey area	Total number of individuals	Maximum number of individuals impacted by the proposed clearing	Potential impact as a percentage (%)
<i>Drosera sewelliae</i>	6,704	6,896	600	8.7 %
<i>Cyanicula ixiooides</i> subsp. <i>candida</i>	1	315	1	0.32 %
<i>Acacia drummondii</i> subsp. <i>affinis</i>	116	197	15	7.61 %
<i>Cyanicula ixiooides</i> subsp. <i>ixiooides</i>	1	267	1	0.37 %

The species *Drosera sewelliae* is known from the Northern Jarrah Forest subregion and occurs on lateritic soils in Jarrah and Marri woodland (Biologic, 2021a; 2021b). Although the species has a restricted distribution, based on the available information, the species is abundant within the local area (Biologic, 2021b; DBCA, 2021). DBCA (2021) advised that the number of known individuals recorded is likely a significant under-representation of the total population size, given the high densities in quadrats sampled. The proposed clearing of a maximum of 600 individuals of *D. sewelliae* is not likely to cause a significant impact at a species level. The proposed disturbance is not likely to reduce the overall area of occurrence or genetic connectivity of the species (DBCA, 2021).

The perennial orchid *Cyanicula ixiooides* subsp. *candida* grows in mixed Jarrah and Wandoo forest in sand, laterite and gravel (Biologic, 2021b). This sub-species is known from seven records over a 275 km north-south range, and although this new record by Biologic (2021b) is within the current 'Extent of Occurrence' for this species, and there are other records within Julimar State forest, this record may represent genetic diversity not represented elsewhere due to the distance between this and other records (DBCA, 2021). Ideally, the location of this plant would be avoided, or exploration activities undertaken during the species dormancy period with avoidance of ground disturbance, if possible. However, the proposed clearing of one individual of *C. ixiooides* subsp. *affinis* is not likely to impact the conservation status of this species.

The species *Acacia drummondii* subsp. *affinis* is known from 16 subpopulations, and the individuals recorded within the application area form part of a new subpopulation discovered during the September 2021 targeted flora survey. DBCA (2021) advise that although the proposed clearing of this species may be significant at a local level, it is unlikely to affect the overall persistence of the species.

The proposed clearing of one individual of *Cyanicula ixiooides* subsp. *ixiooides* is not likely to impact the conservation significance of this species (DBCA, 2021). A comprehensive search was undertaken by Biologic (2021b) for other individuals, but no other flowering individuals or basal leaves were found.

There were three weed species identified within the application area (Biologic, 2021a). A dieback assessment was undertaken over parts of the application area, and no dieback infestations were observed (Glevan, 2020). Most of the application area was excluded from the assessment due to being degraded or void of vegetation, and a small section was assessed as uninterpretable due to the lack of reliable indicator species (Glevan, 2020). Dieback is a major threat to plant biodiversity in the south west of Western Australia because the plant pathogen *Phytophthora cinnamomi* kills susceptible plants by attacking their root systems. Dieback has the potential to reduce the understorey species in the area which can lead to an increase of weed species. It is important to limit the spread of dieback and this can be achieved through strict hygiene measures. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a dieback and weed management condition.

Based on biological surveys by Western Wildlife (2021a; 2021b) and the available databases, the vegetation within the application area has the potential to comprise high faunal diversity, especially mammal and bird species, including the Carnaby's Cockatoo (*Calyptorhynchus latirostris*), Baudin's Cockatoo (*Calyptorhynchus baudinii*), and Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) (GIS Database).

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

**Methodology** Biologic (2021a)  
Biologic (2021b)  
CALM (2002)  
DBCA (2021)  
Glevan (2020)  
Keighery (1994)  
Western Wildlife (2021a)

Western Wildlife (2021b)

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 is at variance to this Principle**

A basic vertebrate fauna survey and targeted mammal survey was undertaken over the application area from 14 April to 17 May 2021 (Western Wildlife, 2021a). Two broad faunal habitats were identified within the application area:

1. Jarrah-Marri woodland - occurs on the higher ground on lateritic sandy gravels with occasional surface rock outcropping. The canopy is mostly Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*), with occasional Wandoo (*Eucalyptus wandoo*). There are occasional patches of Bull Banksia (*Banksia grandis*) in the midstory. The understory vegetation is mostly of low mixed shrubs dominated by *Hibbertia hypericoides*, with Grassrees (*Xanthorrhoea* sp.) and Zamia (*Macrozamia riedlei*). There are also extensive thickets of Parrotbush (*Banksia sessilis*) and/or Pingle (*Banksia squarrosa*); and
2. Wandoo woodland - occurs mainly on the lower slopes and valleys on pale clay-loams. The canopy is mostly Wandoo (*Eucalyptus wandoo*) with scattered Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*). On laterite rises there are woodlands of Powderbark Wandoo (*Eucalyptus accedens*). The understory vegetation is often sparse but consists mixed low native shrubs with grassrees (*Xanthorrhoea* sp.). Some of the larger trees contain hollows that may be suitable for nesting and roosting fauna. Fallen logs and woody debris provide shelter for ground-dwelling fauna (Western Wildlife, 2021a).

The habitat within the application area provides critical habitat to several Threatened fauna species, albeit common within the Northern Jarrah Forest subregion. The application area is located within the Julimar State Forest which is a large remnant of native vegetation (Western Wildlife, 2021a).

Based on the fauna habitats within the application area and NatureMap records (DBCA, 2007-), there are 15 species of conservation significance that may occur within the application area, six of which have been recorded;

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) – EPBC Act (Endangered), BC Act (Endangered) – Recorded;
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus latirostris banksii*) – EPBC Act (Vulnerable), BC Act (Vulnerable) – Recorded;
- Baudin's Cockatoo (*Calyptorhynchus baudinii*) – EPBC Act (Endangered), BC Act (Vulnerable);
- Chuditch (*Dasyurus geoffroi*) – EPBC Act (Vulnerable), BC Act (Vulnerable) – Recorded;
- Woylie (*Bettongia penicillata ogilbyi*) – EPBC Act (Endangered), BC Act (Critically Endangered) – Recorded;
- Peregrine Falcon (*Falco peregrinus*) – BC Act (Other Specially Protected);
- Brush-tailed Phascogale (*Phascogale tapoatafa*) – BC Act (Conservation Dependent);
- Julimar trapdoor Spider (*Idiosoma mcclementsorum*) – Priority 2;
- Inornate trapdoor spider (*Euoplos inornatus*) – Priority 3;
- Mortlock River shield-backed trapdoor spider (*Idiosoma schoknechtorum*) – Priority 3;
- Barking Owl, southern (*Ninox connivens connivens*) – Priority 3;
- Dell's Ctenotus (*Ctenotus delli*) – Priority 4;
- Quenda (*Isodon fusciventer*) – Priority 4;
- Western Brush Wallaby (*Notamacropus irma*) – Priority 4 - Recorded; and
- Tammar Wallaby (*Notamacropus eugenii derbianus*) – Priority 4 - Recorded.

The Carnaby's Cockatoo, Baudin's Cockatoo and Forest Red-tailed Black Cockatoo (herein referred to collectively as black cockatoos) are listed as endangered (Carnaby's and Baudin's Cockatoos) and vulnerable (Forest Red-tailed Black Cockatoo) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The known distribution of these species extends throughout the application area (GIS Database). Black cockatoos nest in hollows in live or dead trees of karri, marri, wandoo, tuart, salmon gum, jarrah, flooded gum, York gum, powder bark, bullich and blackbutt (Commonwealth of Australia, 2012). They are known to forage on the seeds and flowers of a large variety of plants including Eucalypt species and Corymbia species (Valentine & Stock, 2008).

The Carnaby's Cockatoo recovery plan (DPaW, 2013) summarises habitat critical to the survival for Carnaby's Cockatoos as:

- The eucalypt woodlands that provides nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding;
- Woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established; and
- In the non-breeding season the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resource.

The Carnaby's Cockatoo Recovery Plan states that there are multiple reasons for the decline of Carnaby's Cockatoos, however the decline to date has primarily been through the extensive clearing of nesting and feeding habitat (DPaW, 2013). Ongoing counts of Carnaby's Cockatoo numbers on the Perth-Peel Coastal Plain estimate that there has been a 35 per cent reduction in their population from 2010-2019 (Peck, Barrett and Williams, 2019). The long-term survival of Carnaby's Cockatoos depends on the availability of suitable breeding habitat and hollows, as well as foraging habitat capable of providing enough food to sustain the population (DPaW, 2013).

The Recovery Plan for Baudin's and Forest Red-tailed Black Cockatoo states that critical habitat for the survival of important populations of these species comprises all marri, karri and jarrah forests, woodlands and remnants in the south-west of Western Australia receiving more than 600 millimetres of annual average rainfall (DEC, 2008). The Recovery Plan also states that two of the main threats is habitat loss through land clearing and nest hollow shortages (DEC, 2008). Nest hollow shortage is the principal ongoing threat to the Forest Red-tailed Black Cockatoo (Garnett et al., 2011). Trees with hollows large enough for use by the Forest Red-tailed Black Cockatoo may need to be at least 209 years old (Johnstone et al., 2013), and such trees are scarce and many have been preferentially felled (DEC 2008; Garnett et al., 2011). Nest hollows are likely to continue to be lost to mining (DEC, 2008) and fire (Garnett et al., 2011). Entire populations are at risk from these threats (DEC, 2008).

A targeted cockatoo habitat tree survey was undertaken over the application and surrounding area by Western Wildlife over four days in August and September 2021 (16, 23 and 24 August, and 8 September) (Western Wildlife, 2021b). The survey was undertaken at the commencement of the breeding season for Carnaby's Cockatoos and Forest Red-tailed Black Cockatoos, so current nesting may have not been identified (Western Wildlife, 2021b). The survey recorded 1,954 potential habitat trees (trees with a diameter greater than 50 centimetres at breast height) within the survey area. Of those habitat trees, 470 contained potential cockatoo hollows, 4 which shows evidence of use by cockatoos (Western Wildlife, 2021b). Potential impacts to black cockatoos as a result of the proposed clearing may be minimised by the implementation of a clearing not authorised condition, and a fauna management condition. The clearing not authorised condition does not allow for standing trees with a diameter 10 centimetres or greater to be cleared. The fauna management condition requires the application area to be surveyed for occupied nesting hollows prior to clearing, and ensuring no clearing occurs within 50 metres of any trees identified as being occupied by black cockatoos.

Foraging evidence by the Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo was recorded within the application area. The woodlands represent high value foraging habitat as they contain favoured cockatoo food-plants such as Marri (Western Wildlife, 2021a). Given the proximity of potential breeding trees, high quality foraging habitat in the area that surrounds nesting hollows increases the chances for successful breeding. The proposed clearing of native vegetation may increase the risk of further decline in breeding success and population size, as breeding birds require a high quantity of food to be available during the breeding season (DEC, 2008). The loss of feeding habitat has been identified as a leading cause of the decline of these species. The impacts of the proposed clearing are considered significant given that the vegetation within the application area comprises significant habitat for the maintenance and ongoing recovery of black cockatoos. While the application area contains quality foraging habitat, foraging vegetation within 7 to 12 kilometres (species dependent) of a breeding site is important to adequately support breeding cockatoos (Commonwealth of Australia, 2012; DPaW, 2013). The application area is located within Julimar State Forest which contains foraging habitat for black cockatoos (GIS Database). The small area of the proposed clearing for mineral exploration and associated activities is unlikely to have any significant impact on the foraging habitat for black cockatoos. No blade down clearing is proposed, and the proposed methods of clearing (pruning, walking over vegetation, and driving an off-road vehicle or equipment over vegetation) will most likely result in no topsoil disturbance, reducing the risk of erosion and impacts on water filtration into the thin topsoil layer containing the seed resource, in turn reducing the potential for weed invasion and establishment, and the rootstock is more likely to stay in place.

The chuditch was recorded within the application area from 17 of the 20 camera traps deployed by Western Wildlife (2021a). DBCA (2021) advise that extensive fauna trapping programs have occurred over many decades in Julimar State forest and the local area. These surveys show that chuditch are known to occur in their highest numbers within Julimar State forest for all trapping sites monitored by DBCA's Western Shield program. The chuditch is likely to use all habitats in the study area, using hollow logs, rock crevices and possibly tree hollows as daytime shelter (Western Wildlife, 2021a). There were no targeted surveys for potential denning habitat for chuditch undertaken within the application area. Exploration activities present the greatest direct risk to denning young if activities occur between (and including) August and October. Outside of this peak period all reasonable effort should be made to minimise impact on potential denning habitat (e.g. fallen trees, tree limbs, rocky outcrops and clumped groups of balga's) (DBCA, 2021). Potential impacts to

Chuditch as a result of the proposed clearing may be minimised by the implementation of a fauna management condition, which requires the proponent to implement and adhere to their conservation management plan approved by DBCA.

Quenda, western brush wallaby, brush-tailed phascogale and woylie are known to occupy low dense understorey located nearby watercourses, dense myrtaceous shrublands or marri and jarrah forest (DEC, 2012a; 2012b; 2012c; Western Wildlife, 2021a) which all occur within the application area. Therefore, the application area may provide suitable habitat for these species. However, given the extent of native vegetation occurring within Julimar State Forest in the local area, which is likely to provide similar or better habitat, the application area is not likely to provide significant habitat for these species. Potential impacts to these species may be minimised by the implementation of a directional clearing condition, which requires the clearing to be undertaken in a slow, progressive manner into one direction to allow sufficient time for mobile fauna to escape.

The Peregrine Falcon may forage within the application area and use it as part of their larger home range, however there is extensive suitable habitat outside the permit boundary, and the proposed clearing is not likely to have a significant impact on this species (Western Wildlife, 2021a).

The Dell's Ctenotus is a small lizard that occurs patchily and uncommonly in the Darling range, where it inhabits Jarrah and Marri woodlands on a range of soil types (Western Wildlife, 2021a). The species may occur within the application area.

The Barking Owl inhabits dry sclerophyll woodlands, particularly in association with watercourses and forest edge. This species nests in large eucalypt hollows in mature trees (Western Wildlife, 2021a). Given the presence of hollows within the application and surrounding area, and suitable habitat within the application area and greater Julimar State Forest, the owl may utilise the application area for foraging or breeding. Potential impacts to this species may be minimised by the clearing not authorised condition which does not allow for standing trees with a diameter 10 centimetres or greater to be cleared.

Populations of the Tammar Wallaby have been translocated in the Julimar State Forest and nearby at Paruna Sanctuary. This species was recorded within the application area, and potentially occurs throughout all habitat types recorded within the application area. Potential impacts to these species may be minimised by the implementation of a directional clearing condition, which requires the clearing to be undertaken in a slow, progressive manner into one direction to allow sufficient time for mobile fauna to escape.

There were no surveys undertaken for invertebrate species. The Julimar trapdoor spider, the inornate trapdoor spider and Mortlock River shield-backed trapdoor spider have the potential to occur within the application area (DBCA, 2021). These species occur within Jarrah-Marri woodland, and there are records of these species occurring within 20 kilometres of the application area (DBCA, 2021). The proposed clearing is not likely to have a significant impact on the conservation status of these species, however potential spider burrows should be avoided where possible.

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

**Methodology** Commonwealth of Australia (2012)  
DBCA (2007-)  
DBCA (2021)  
DEC (2008)  
DEC (2012a)  
DEC (2012b)  
DEC (2012c)  
DPaW (2013)  
Garnett et al (2011)  
Johnstone et al (2013)  
Peck, Barrett and Williams (2019)  
Valentine & Stock (2008)  
Western Wildlife (2021a)  
Western Wildlife (2021b)

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 (Biologic, 2021a; 2021b).

The Biologic (2021a) flora survey was taken outside the recommended period within the Jarrah Forest bioregion, however one Threatened flora species, *Conospermum densiflorum* subsp. *unicephalatum*, was recorded outside the flowering period for this species (Western Australian Herbarium, 1998-). *C. densiflorum* subsp. *unicephalatum* was recorded in close proximity to the application area, however the vegetation type that this species was recorded in does not occur within the application area (Biologic, 2021a; GIS Database). The Biologic (2021b) survey was undertaken during the recommended period and did not identify any Threatened flora species within the application area.

If disturbance within 50 metres of known records of *Conospermum densiflorum* subsp. *unicephalatum* is unavoidable, an authorisation to 'take or disturb' threatened species under section 40 of the *Biodiversity Conservation Act 2016* is recommended to cover any accidental damage to plants, the taking of germinant and soil stored seed.

No blade down vegetation clearing is proposed within the application area (MBS Environmental, 2021). Potential impacts from the proposed clearing may be minimised by the implementation of an authorised activity condition, where it limits the type of clearing permitted within the application area.

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

**Methodology** Biologic (2021a)  
Biologic (2021b)  
MBS Environmental (2021)  
Western Australian Herbarium (1998-)

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 (Biologic, 2021a).

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

**Methodology** Biologic (2021a)

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 may be at variance to this Principle**  
The application area falls within the Northern Jarrah Forest subregion of the Jarrah Forest Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 53% of the pre-European vegetation still exists in the bioregion (Government of Western Australia, 2019). The application area is broadly mapped as Beard vegetation associations:

4: Medium woodland; marri & wandoo; and  
968: Medium woodland; jarrah, marri & wandoo (GIS Database).

Beard vegetation association 4 retains approximately 27 per cent of its pre-European extent at a State and Bioregion level, which is less than the 30 per cent threshold level recommended in the National Objectives and Targets for Biodiversity Conservation, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). There is approximately 4 hectares of vegetation within the application area which has been mapped as Beard vegetation association 4 (GIS Database).

The application area is within the Julimar State Forest, a large expanse of native forest which spans over 29,000 hectares (GIS Database). Although the area surrounding Julimar State Forest has been extensively cleared, the proposed clearing is not within a significant remnant of native vegetation.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DBCA Managed Lands (and post clearing %)
IBRA Bioregion - Jarrah	4,506,660	2,399,838	~53.25	Least concern	39.43 (69.74)
IBRA Subregion - Northern Jarrah Forest	2,607,880	1,291,458	~49.52	Depleted	37.09 (70)
Beard vegetation associations - State					
4	1,054,280	284,102	~26.95	Vulnerable	6.64 (23.85)
968	296,878	95,049	~32.02	Depleted	18.79 (57.64)
Beard vegetation associations - Jarrah Bioregion					
4	1,022,713	277,087	~27.09	Vulnerable	6.66 (23.81)
968	140,823	68,155	~48.40	Depleted	25.42 (51.88)
Beard vegetation associations - subregion					
4	408,512	79,183	~19.38	Vulnerable	1.43 (6.92)
968	68,816	15,009	~21.81	Vulnerable	4.82 (21.85)

\* Government of Western Australia (2019)

\*\* Department of Natural Resources and Environment (2002)

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

**Methodology** Commonwealth of Australia (2001)  
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 not likely to be at variance to this Principle**

There are no permanent watercourses or wetlands within the area proposed to clear (Biologic, 2021a; GIS Database).

The application area intersects three minor ephemeral watercourses (GIS Database). The vegetation association V2 has been mapped in association with creek communities (Biologic, 2021a), in which the application area intersects less than 0.1 hectares of this vegetation association.

No blade down vegetation clearing is proposed. To minimise impacts to vegetation, small track mounted drill rigs will be used, negating the need to construct cleared drill pads, sumps, and access tracks. The use of small track-mounted drill rigs and support vehicles, rather than conventional larger wheeled rigs and vehicles, minimises the impact on vegetation, allowing root stock and soil profile (including seed bank) to remain intact, and vegetation to recover once the drill rig and support vehicles have passed over the area (MBS Environmental, 2021).

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

**Methodology** Biologic (2021a)  
MBS Environmental (2021)

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

The nature of the proposed clearing (small width of clearing of access tracks, coarse linear line spacing and non-mechanised clearing methods) are not likely to result in large areas of disturbed or open land, therefore appreciable land degradation (GIS Database).

The proposed clearing of up to 4.4 hectares of native vegetation within a boundary of approximately 117.8 hectares, for the purpose of mineral exploration is unlikely to cause appreciable land degradation.

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

**Methodology** GIS Database:  
- Soils, Statewide  
- Wind Erosion

**(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.**

**Comments Proposal may be at variance to this Principle**

The application area is located within the Julimar State Forest, which is managed by the Department of Biodiversity, Conservation and Attraction (DBCAs) for purposes including conservation, and covers a total area of over 29,000 hectares (GIS Database). Julimar State forest was nominated in the Forest Management Plan 1994-2003, for a change in vested purpose to a 'Class A' conservation park, and the Forest Management Plan 2014-2023 includes a similar expression of intent (DBCAs, 2021). The Julimar State Forest is also listed on the Register of the National Estate (non-statutory), and occurs within the Darling System (System 6) which is listed on the EPA Red Book as a recommended nature reserve (GIS Database).

Advice was sought from DBCAs, in relation to this clearing application. DBCAs (2021) advised that Julimar State forest occurs in the known to be the vulnerable zone for the occurrence of *Phytophthora dieback*. Julimar State forest contains species of plants, including conservation significant species, susceptible to *Phytophthora cinnamomi*, and other plant pathogens, collectively known as dieback.

The small area of the proposed clearing for mineral exploration is unlikely to have any significant impact on the environmental values of the Julimar State Forest if potential weed and dieback issues are appropriately managed. Potential impacts to the State Forest as a result of the proposed clearing may be minimised by the implementation of a dieback and weed management condition.

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

**Methodology** DBCAs (2021)  
  
GIS Database:  
- DPaW Tenure  
- EPA Red Book 1976-91  
- Register of National Estate

**(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).

Intense rainfall events are unlikely to increase surface run-off within the application area due to the lack of cleared surfaces exposed to wind and/or water erosion (MBS Environmental, 2021).

The groundwater within the application area is between 3,000 to 7,000 milligrams per litre of total dissolved solids (GIS Database). This is considered to be saline water. It would not be expected that the proposed clearing would cause groundwater salinity levels within the application or surrounding area to alter significantly.

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

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

**Methodology** MBS Environmental (2021)

GIS Database:

- Hydrography, Linear
- Groundwater, Salinity
- 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 warm Mediterranean, and the average rainfall recorded in the Julimar area is approximately 520 millimetres per year (CALM, 2002; MBS Environmental, 2021). There are no permanent water courses or waterbodies within the application area (GIS Database). The subregion loses more water via evapotranspiration than it receives as rain during the summer, spring and autumn months, typically a result of hot, sunny weather without significant cloud (MBS Environmental, 2021).

There is no blade down clearing of native vegetation within the application area. It is unlikely the proposed disturbance (pruning, walking over vegetation, and driving an off-road vehicle or equipment over vegetation) will increase water flow within the application area, as infiltration of water into the soil profile is likely to remain similar as existing conditions (MBS Environmental, 2021).

Given this, 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)  
MBS Environmental (2021)

GIS Database:

- Hydrography, linear

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

### Comments

The clearing permit application was advertised on 27 August 2021 by the Department of Mines, Industry Regulation and Safety (DMIRS), inviting submissions from the public. There were two submissions received in relation to the application. The submission did not support the clearing permit application and raised concerns that the proposed clearing will:

- Compromise the biological diversity of the area and further fragment a significant remnant;
- Impact on significant fauna habitat for native fauna;
- Impact on habitat for Threatened flora species; and
- Impact the environmental values of the Julimar State Forest.

These concerns are addressed in clearing principle's A, B, C, E and H.

Mining (including exploration) in State forests requires the consent of the Minister for Mines and Petroleum, who must first consult and seek the concurrence of the Minister for the Environment (section 24 of the *Mining Act 1978*). Concurrence from the Minister for Environment for low impact exploration (non ground-disturbing activities with no clearing required) was first received on 23 December 2020, subject to adherence to a Conservation Management Plan dated 7 December 2020. The Minister for Mines subsequently granted consent on 22 January 2021 subject to a condition requiring adherence to the Conservation Management Plan. A new Conservation Management Plan dated 12 November 2021 has been developed by the applicant to cover the activities the subject of this clearing permit application. The Minister for Environment gave his concurrence to the additional activities proposed in the new Conservation Management Plan on the 24 December 2021, and agreed to the update of tenement conditions to reflect the new Conservation Management Plan.

The permit area is within the South West Native Title Settlement area (DPLH, 2021). This settlement resolves Native Title rights and interests over an area of approximately 200,000 square kilometres within the south west of Western Australia. 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 is one 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.

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)

## 4. References

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## 5. Glossary

### Acronyms:

<b>BC Act</b>	<i>Biodiversity Conservation Act 2016</i> , Western Australia
<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>DAA</b>	Department of Aboriginal Affairs, Western Australia (now DPLH)
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia (now DPIRD)
<b>DAWE</b>	Department of Agriculture, Water and the Environment, Australian Government
<b>DBCA</b>	Department of Biodiversity, Conservation and Attractions, Western Australia
<b>DER</b>	Department of Environment Regulation, Western Australia (now DWER)
<b>DMIRS</b>	Department of Mines, Industry Regulation and Safety, Western Australia
<b>DMP</b>	Department of Mines and Petroleum, Western Australia (now DMIRS)
<b>DoEE</b>	Department of the Environment and Energy (now DAWE)
<b>DoW</b>	Department of Water, Western Australia (now DWER)
<b>DPaW</b>	Department of Parks and Wildlife, Western Australia (now DBCA)
<b>DPIRD</b>	Department of Primary Industries and Regional Development, Western Australia
<b>DPLH</b>	Department of Planning, Lands and Heritage, Western Australia
<b>DRF</b>	Declared Rare Flora (now known as Threatened Flora)
<b>DWER</b>	Department of Water and Environmental Regulation, Western Australia
<b>EP Act</b>	<i>Environmental Protection Act 1986</i> , Western Australia
<b>EPA</b>	Environmental Protection Authority, 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>TEC</b>	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.