



# Clearing Permit Decision Report

## 1. Application details and outcomes

### 1.1. Permit application details

<b>Permit number:</b>	8087/3
<b>Permit type:</b>	Purpose Permit
<b>Applicant name:</b>	Big Bell Gold Operations Pty Ltd
<b>Application received:</b>	29 May 2023
<b>Application area:</b>	319 hectares
<b>Purpose of clearing:</b>	Mineral production and associated activities
<b>Method of clearing:</b>	Mechanical Removal
<b>Tenure:</b>	Mining Leases 20/17, 20/21, 20/22, 20/78, 20/99, 20/102, 20/103, 20/104, 20/171, 20/192, 20/202, 20/218, 20/252, 20/256, 20/297, 20/299, 20/301, 20/332, 20/354, 20/456, 21/7, 21/14, 21/44, 21/49, 21/65, 21/75, 21/89, 21/96; Miscellaneous Licences 20/21, 20/40
<b>Location (LGA area/s):</b>	Shire of Cue
<b>Colloquial name:</b>	Central Murchison Gold Project

### 1.2. Description of clearing activities

Big Bell Gold Operations Pty Ltd proposes to clear up to 319 hectares of native vegetation within a boundary of approximately 5,215 hectares, for the purpose of mineral production and associated activities. The project consists of the Day Dawn, Cuddingwarra and Big Bell project areas located approximately four kilometres south-west, seven and 25 kilometres north-west of Cue respectively.

Clearing permit CPS 8087/1 was granted by the Department of Mines and Petroleum (now the Department of Mines, Industry Regulation and Safety) on 16 August 2018 and was valid from 8 September 2018 to 7 September 2023. The permit authorised the clearing of up to 80 hectares of native vegetation within a boundary of approximately 3,789 hectares, for the purpose of mineral production and associated activities. CPS 8087/1 replaced CPS 5202/3 which was valid from 5 January 2013 to 5 January 2018. The permit authorised the clearing of up to 80 hectares within a boundary of 3,789 hectares, however no clearing was conducted under this permit.

Clearing permit CPS 8087/2 was granted on 30 July 2020, amending the permit to increase the area of clearing authorised from 80 hectares to 319 hectares, increase the permit boundary from 3,789 hectares to approximately 5,215 hectares and include an additional ten tenements to the permit boundary.

On 29 May 2023, the Permit Holder applied to amend CPS 8087/2 to extend the permit duration to 7 September 2028 and remove 'Fauna Management' conditions 9 and 10 from the native vegetation clearing permit.

### 1.3. Decision on application and key considerations

<b>Decision:</b>	Grant
<b>Decision date:</b>	7 September 2023
<b>Decision area:</b>	319 hectares of native vegetation

### 1.4. Reasons for decision

This clearing permit application was made in accordance with section 51KA(1) of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Mines, Industry Regulation and Safety (DMIRS) on 29 May 2023. DMIRS advertised the application for a public comment for a period of 7 days, and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix A.1), relevant datasets (Appendix D), the clearing principles set out in Schedule 5 of the EP Act (Appendix B), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3).

The assessment identified that the proposed clearing may result in:

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- potential land degradation;
- the loss of riparian vegetation; and
- the loss of native vegetation that is suitable habitat for Threatened flora species *Eremophila rostrata* subsp. *rostrata*.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds;
- commence construction no later than three months after undertaking clearing to reduce the risk of erosion;
- maintain existing surface flow of a watercourse where impacted by clearing; and
- restrict native vegetation clearing on quartz outcrop habitat.

The assessment has not changed since the assessment for CPS 8087/2, with the exception of principles (b), (d) and (i). The Delegated Officer determined that the proposed amendment CPS 8087/3 to remove 'Fauna Management' condition 9 and 10 from the native vegetation clearing permit and extend permit duration by five years is not likely to lead to an unacceptable risk to environmental values.

## 2. Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Mining Act 1978* (WA)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2014)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

As demonstration of avoidance and mitigation measures, the applicant has advised only areas required for mining operations will be cleared which will be implemented through use of an internal land use certificate (LUC) process.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

### 3.2. Assessment of impacts on environmental values

A review of current environmental information (Appendix B) reveals that the assessment against the clearing principles has posed a slight change in variance against principles (b), (d) and (i) from the Clearing Permit Decision Report CPS 8087/2.

In assessing the application, the Delegated Officer has had regard for the site characteristics (Appendix A.1) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles identified that the impacts of the proposed clearing present a risk to environmental values (vegetation and fauna habitat). The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

### 3.2.1. Biological values (vegetation) – Clearing Principle (a)

#### Vegetation

A Level 1 vegetation and flora assessment was conducted by Outback Ecology over the application area on 22 November 2011 (Outback Ecology, 2012). The vegetation and flora assessment conducted a total of 19 releve sites across all three project areas; Big Bell, Cuddingwarra and Day Dawn recording the vegetation; associations, condition, habitat and flora species of conservational significance. The flora assessment recorded a total of 151 vascular flora species, none of which were of conservational significance. Furthermore, eight species of introduced flora was recorded in the Big Bell and Day Dawn project areas:

- *Acetosa vesicaria* (Ruby Dock);
- *Lysimachia arvensis* (Pimpernel);
- *Brassica tournefortii* (Mediterranean Turnip);
- *Cenchrus ciliaris* (Buffel Grass);
- *Centaurea melitensis* (Maltese Cockspur);
- *Cucumis myriocarpus* (Paddymelon);
- *Solanum nigrum* (Blackberry Nightshade); and
- *Sonchus oleraceus* (Sowthistle).

None of the recorded weed species are listed as Weeds of National Significance or Declared Pests. Furthermore, no weeds were recorded within the Cuddingwarra project area (Outback Ecology, 2012). Weeds were primarily confined to areas of disturbance caused by historic overgrazing and mining activities. As a result, the recorded vegetation across all three project areas within the application area was described in relatively good conditions (Appendix A.1). However, a large risk identified during the vegetation assessment was the encroachment of weeds along watercourses, drainage pathways and on road verges, where they could out-compete favoured native species or alter the ecological values of the affected community, such as fire fuel loads or food resources for fauna (Outback Ecology, 2012).

#### Ecological Communities

The application area is located within five Priority Ecological Communities (PEC) boundaries; Lake Austin Calcrete (P1), Taincrow Calcrete (P1), and three separate areas of the Austin Land System (P3) (Appendix A.5) (GIS Database).

Given the conservation of the Lake Austin Calcrete and Taincrow Calcrete PEC is a result of unique invertebrate assemblages identified in the groundwater calcretes, the removal of native vegetation will unlikely cause a significant effect on the biological values of these two PECs (DBCA, 2023). Furthermore, the Austin Land System PEC requires conservation of its saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga. Despite the large intersection between the Austin Land System PEC and the application area, the vegetation survey conducted over all three project areas failed to record any vegetation associations analogous to the Austin Land System PEC (Outback Ecology, 2012).

#### Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing within mapped priority ecological communities (PEC) does not constitute a significant residual impact. Furthermore, as stated above, weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area. Potential impacts to the biodiversity as a result of the proposed clearing may be minimised by the continuous implementation of a weed management condition, and the avoid, minimise condition.

#### Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- avoid, minimise to reduce the impacts and extent of clearing; and
- take hygiene steps to minimise the risk of the introduction and spread of weeds.

### 3.2.2. Biological values (fauna) – Clearing Principle (b)

#### Assessment

A desktop assessment identified 21 fauna species of conservation significance within a 20 kilometre radius of the application area (GIS Database). Of these 21 species of fauna, 17 are birds (13 are classified as migratory, one other specially protected, and three priority 4), two are reptiles and one is a mammal (Appendix A.4).

Five broad fauna habitats were identified during the field assessment (Outback Ecology, 2012):

Broad Fauna Habitat	Description	Overall Habitat Condition	Disturbance Type
Acacia woodland over low heath	Open <i>Acacia aneura</i> over scattered low heath over open Tussock grassland	Varying levels of disturbance. Generally highly degraded due to grazing. Some isolated pockets in good condition.	Grazing and pastoral activity, historical mining infrastructure
Open stony plain quartz	Mixed low open shrubland over scattered Tussock Grassland over white quartz	Extensive across all of the Study Areas. Varying degrees of disturbance from minimal to extensive grazing and mining interference.	Grazing and pastoral activity, historical mining infrastructure
Samphire plain	<i>Tectocornia</i> Low Shrubland over scattered Tussock Grasses and Herbs.	Isolated pockets occurring in one Study area. Exposed to heavy grazing and road infrastructure.	Grazing and pastoral activity, historical mining infrastructure
Drainage Line	<i>Acacia</i> spp. Tall Shrubland over <i>Eremophila longifolia</i> open Shrubland to very open Grassland	Varying levels of disturbance. Much of it is highly degraded due to heaving grazing. Some isolated pockets generally undisturbed and in good condition.	Grazing
Quartz outcrop	<i>Acacia aneura</i> Low Woodland over <i>Eremophila</i> spp. Over Open Tussock Grassland on Quartz Outcrops	Good. Extensive grazing by goats and rabbits. Provides good look out for birds of prey.	Some evidence of historic quarrying and surveying. Old water tank stand.

Significant habitats for transient and migratory birds require reliable semi-permanent to permanent water sources which provide short-term foraging and roosting habitats for these nomadic species (Outback Ecology, 2012). However, a large percentage of the drainage line habitat recorded within the application area is highly degraded due to historical over grazing leaving only limited isolated pockets of vegetation in good condition. Non perennial drainage lines will only flow after significant rainfall, therefore it is unlikely birds of significant conservation will depend on the limited suitable fauna habitat found within the application area when more suitable watercourse habitats such as Lake Annean located approximately 70 kilometres northwest of the Cuddingwarra project area can be found in the local area (Outback Ecology, 2012).

Similarly, quartz outcrops identified within the Cuddingwarra and Day Dawn project areas were found to provide suitable habitat for small mammals and reptiles (Outback Ecology, 2012). In comparison to the other four broad fauna habitats identified within the application area, quartz outcrop is relatively uncommon within the broader landscape as it is comprised specifically of those stony hills featuring quartz boulders and rocky crevices, which are thought to be of some importance to fauna (Outback Ecology, 2012).

Since granting the original native vegetation clearing permit CPS 8087/1 on 16 August 2018, the permit holder has demonstrated compliance against 'Fauna Management' conditions 9 and 10 by conducting pre-clearance inspections for fauna species Malleefowl (*Leipoa ocellata*) and Western Spiny-tailed Skink (*Egernia stokesii badia*) along with their respective suitable habitats. The results of these pre-clearance inspections located no potential habitats for the Western Spiny-tailed Skink, no Malleefowl mounds and no evidence of the two fauna species within the proposed areas of clearing (Big Bell Gold Operations Pty Ltd, 2022).

The permit holder commissioned a Targeted Search for Malleefowl Mounds and Western Spiny-tailed Skink Habitat within the Day Dawn project area (MWH, 2015). The targeted search found no Malleefowl mounds within the surveyed area and concluded the vegetation found within the project area including chenopod shrubland and stony rise habitats were too open to provide adequate cover for the species or provide adequate leaf litter for mound building (MWH, 2015). Similarly, the drainage line habitat, although made up of denser vegetation than the surrounds, was too limited in the landscape to support the species (MWH, 2015). Furthermore, no areas of granite outcropping were present within the survey area that could be considered suitable for the Murchison form of the Western Spiny-tailed Skink and the stony rise habitat recorded did not contain rocks large enough to provide suitable cover for the species (MWH, 2015). Therefore, the targeted search found no evidence of either species recorded within the Day Dawn project area and habitat of suitable size and quality was not present (MWH, 2015).

#### Conclusion

The application area contains isolated areas of fauna habitat that may potentially be utilised by a number of conservation significant fauna species, however the field assessment did not identify any of these fauna species (Outback Ecology, 2012). Furthermore, the permit holder has provided adequate evidence in the demonstrating the absence of Malleefowl and Western

Spiny-tailed Skink habitat within the application area. Given that there was no suitable habitat identified for the Western Spiny-tailed Skink or Malleefowl, it is unlikely that removing conditions 9 and 10 from the permit will have an impact on these species.

With exception for the recorded quartz outcrops, the broad fauna habitats found within the application area is common within the region and extends well beyond the application area (Outback Ecology, 2012; GIS Database). For this reason, clearing will be restricted within the mapped areas of quartz outcrops within the application area. Therefore, it is unlikely that the proposed clearing will significantly impact available habitat for species that may occur within the application area.

#### Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Restricted clearing condition, where no clearing of native vegetation can occur within identified quartz outcrop habitats.

### **3.3. Relevant planning instruments and other matters**

There are two native title claims (WCD2017/007 and WCD2021/008) over the area under application (DPLH, 2023). These claims have been determined by the Federal Court on behalf of the claimant groups. However, the mining and miscellaneous 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 five registered Aboriginal Sites of Significance within the application area (DPLH, 2023). It is the proponent's responsibility to comply with the *Aboriginal Cultural Heritage Act 2021* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

Other relevant authorisations required for the proposed land use include:

- A Mining Proposal / Mine Closure Plan approved under the *Mining Act 1978*.

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.

**End**

**Appendix A. Site characteristics**

**A.1. Site characteristics**

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia and is surrounded by native vegetation and landscape of the Murchison bioregion. The project consists of the Day Dawn, Cuddingwarra and Big Bell project areas located approximately four kilometres southwest, seven and 25 kilometres north-west of Cue respectively (GIS Database).
Ecological linkage	The application area does not form part of any formal ecological linkages (GIS Database). However, field assessments conducted over the application area identified several drainage line habitats providing shelter, food and a protective corridor for fauna species to move between other suitable habitats (Outback Ecology, 2012), therefore providing informal ecological linkages.
Conservation areas	The application area is not located within any known or mapped conservation area (GIS Database). The closest mapped conservation area is Lakeside Conservation Park located approximately 11 kilometres south of the application area (GIS Database). However, DBCA have shown interest in unallocated crown land extending from the conservation area to intersect parts of the application area proposing to expand the Lakeside Conservation Park.
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation associations:</p> <p>18: Low woodland; mulga (<i>Acacia aneura</i>);            39: Shrublands; mulga scrub;            125: Bare areas; salt lakes;            240: Succulent steppe with open scrub; scattered <i>Acaica sclerosperma</i> &amp; <i>bowgada</i> over saltbush &amp; bluebush;            268: Succulent steppe with open scrub; scattered <i>Acacia sclerosperma</i> over saltbush &amp; bluebush;            313: Succulent steppe with open scrub; scattered <i>Acaica sclerosperma</i> &amp; <i>A. victoriae</i> over bluebush;            1127: Mosaic: Saltbush &amp; bluebush/samphire; and            2081: Shrublands; bowgada and associated spp. scrub (GIS Database).</p> <p>A Level 1 flora and vegetation survey was conducted over the Big Bell, Cuddingwarra and Day Dawn sections of application area by Outback Ecology during November 2011. The following vegetation associations were recorded within the application area (Outback Ecology, 2012):</p> <p>Big Bell Area</p> <ul style="list-style-type: none"> <li>A. <i>Acacia aneura</i> low woodland over <i>Eremophila phyllopoda</i> open shrubland over <i>Enneapogon caerulescens</i> very open tussock grassland on quartz outcrops;</li> <li>B. <i>Acacia aneura</i> low open woodland over <i>Ptilotus rotundifolius</i> open shrubland over <i>Ptilotus</i> species low open shrubland over <i>Aristida contorta</i> tussock grassland;</li> <li>C. <i>Acacia aneura</i> low open woodland over scattered low shrubs over <i>Aristida contorta</i> tussock grassland;</li> <li>D. <i>Acacia aneura</i> low woodland (variable cover on banks of flow line) over <i>Acacia tetragonophylla</i> and <i>Eremophila</i> species scattered tall shrubs/shrubs over <i>Aristida contorta</i> and <i>Eragrostis falcata</i> (in bed of sandy flow line) tussock grassland; and</li> <li>E. Mixed <i>Acacia</i> low woodland over scattered tall shrubland (on flow line banks) over open tussock grassland on sandy flow line channel.</li> </ul> <p>Day Dawn Area</p> <ul style="list-style-type: none"> <li>F. <i>Acacia cyperophylla</i> var. <i>cyperophylla</i> tall shrubland over <i>Eremophila longifolia</i> open shrubland over <i>Cenchrus ciliaris</i>, <i>Cynodon dactylon</i> tussock grassland in relatively well defined flow lines;</li> <li>G. <i>Acacia aneura</i> low open woodland over <i>Acacia tetragonophylla</i> tall open shrubland over herbland in poorly defined flow lines;</li> <li>H. Mixed <i>Acacia</i> tall open shrubland over <i>Eremophila phyllopoda</i> open shrubland – shrubland over <i>Ptilotus obovatus</i> low open shrubland over <i>Aristida contorta</i> very open tussock grassland on low basalt and dolerite rocky rises;</li> <li>I. <i>Acacia xiphophylla</i>, <i>Acacia synchronicia</i> tall open shrubland over mixed scattered low shrubs over <i>Eriachne</i> and <i>Digitaria</i> very open tussock grassland. Found on broad drainage areas intersected by sometimes shallowly incised flow lines;</li> <li>J. <i>Eremophila phyllopoda</i> open shrubland over <i>Tecticornia disarticulata</i> low open shrubland over <i>Enneapogon caerulescens</i> and <i>Acacia contorta</i> open tussock grassland on a water washed plain;</li> <li>K. <i>Acacia aneura</i> low open woodland over <i>Hibiscus sturtii</i> var. <i>grandiflorus</i> low open to open shrubland over <i>Eragrostis lanipes</i> open grassland. Found on red sand dunes;</li> </ul>

Characteristic	Details
	<p>L. <i>Eremophila eriocarpa</i> shrubland over <i>Chenopodium gaudichaudianum</i> low shrubland over <i>Aristida contorta</i> open tussock grassland;</p> <p>M. <i>Tecticornia halocnemoides</i> open to closed heath over scattered <i>Dissocarpus paradoxus</i>. Found on deep saline clay flats with cracking surface;</p> <p>N. <i>Tecticornia indica</i> subsp. <i>bidens</i> and <i>Tecticornia doleiformis</i> low open heath over <i>Frankenia sp.</i> scattered low shrubs; and</p> <p>O. <i>Frankenia</i> species scattered low shrubs.</p> <p>Cuddingwarra Area</p> <p>P. <i>Acacia aneura</i> and <i>Grevillea berryana</i> Low Open Woodland over <i>Acacia tetragonophylla</i> over <i>Ptilotus obovatus</i> Low Open Shrubland over grasses and herbs;</p> <p>Q. <i>Maireana pyramidata</i> Open Shrubland over Scattered Low Shrubs over <i>Aristida contorta</i> Scattered Tussock Grassland;</p> <p>R. <i>Acacia xiphophylla</i> Scattered Tall Shrubs over <i>Maireana pyramidata</i> and mixed <i>Sclerolanea</i> Scattered Low Shrubs;</p> <p>S. <i>Tecticornia</i> Low Shrubland over Scattered Tussock Grasses and Herbs;</p> <p>T. <i>Acacia aneura</i>, <i>A. tetragonophylla</i>, <i>A. pruinocarpa</i> and <i>Grevillea berryana</i> Tall Open Scrub over mixed Scattered Tall Shrubs/Shrubs over Tussock Grassland;</p> <p>U. <i>Tecticornia disarticulata</i>, <i>Maireana</i>, <i>Sclerolaena spp.</i>, <i>Solanum lasiophyllum</i> Low Shrubland over <i>Aristida contorta</i> Open Tussock Grassland;</p> <p>V. <i>Acacia aneura</i> and <i>A. pruinocarpa</i> Scattered Tall Shrubs over <i>A. tetragonophylla</i> Scattered Shrubs over <i>Aristida contorta</i> Very Open Tussock Grassland; and</p> <p>W. Mixed Low Open Shrubland over Scattered Herbland and Tussock Grassland on white quartz plain.</p>
Vegetation condition	<p>The vegetation survey (Outback Ecology, 2012) indicate that the vegetation within the three project areas; Big Bell, Day Dawn and Cuddingwarra, is in good, very good and excellent (Keighery, 1994) condition, described as:</p> <p>Big Bell Area</p> <ul style="list-style-type: none"> <li>- <b>Good:</b> vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing – 16.67% of the surveyed area was identified to be in good condition; and</li> <li>- <b>Very good:</b> vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing – 83.33% of the surveyed area was identified to be in very good condition.</li> </ul> <p>Day Dawn Area</p> <ul style="list-style-type: none"> <li>- <b>Good:</b> vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing – 16.67% of the surveyed area was identified to be in good condition;</li> <li>- <b>Very good:</b> vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing – 16.67% of the surveyed area was identified to be in very good condition; and</li> <li>- <b>Excellent:</b> vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species – 66.66% of the surveyed area was identified to be in excellent condition.</li> </ul> <p>Cuddingwarra Area</p> <ul style="list-style-type: none"> <li>- <b>Excellent:</b> vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species – 100% of the surveyed area was identified to be in excellent condition.</li> </ul> <p>The full Keighery (1994) condition rating scale is provided in Appendix C.</p>
Climate and landform	<p>The application area is located in the Eastern Murchison subregion of the Murchison bioregion described as semi-arid with an annual average rainfall 231.9 millimeters (Cue station) (BoM, 2023).</p> <p>The survey area is located on the eastern slopes of a low greenstone hill, on outwash colluvium and surrounding plain. The site is underlain by a greenstone belt, felsic schist and Monzogranite with colluvium and sheetwash present on the slopes and surrounding plains (Western Ecological</p>

Characteristic	Details
	2021a).
Soil description	<p>The soils within the application area are mapped as soil units BE2, BE6 and BB9 (GIS Database). These soil units are described as:</p> <ul style="list-style-type: none"> <li>• BE2: Generally undulating terrain on granites with rocky granitic hills, bosses and tors, some breakaways, and a surface stone mantle: chief soils seem to be shallow earthy loams underlain by a red-brown hardpan;</li> <li>• BE6: Extensive flat and gently sloping plains, which sometimes have a surface cover of gravels and on which redbrown hardpan frequently outcrops: chief soils are shallow earthy loams; and</li> <li>• BB9: Narrow plain associated with the major river systems, characterized by frequent outcrops of calcrete: chief soils are probably brown calcareous loams and calcareous earths (Northcote et al., 1960-68).</li> </ul>
Land degradation risk	<p>The application area falls within the; Austin, Carnegie, Challenge, Gabanintha, Jundee, Mileura, Norie and Yanganoo land systems (DPIRD, 2023).</p> <p>The Austin land system is described as saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga. Occurs mainly adjacent to lakes Austin and Annean, below greenstone hill systems. Vegetation consists of Bluebush and Stony Snakewood Shrub lands. Palatable saline perennials of moderate quantity provide the bulk of the forage. Scattered mixed Acacia and Eremophila spp. are prominent. Preferential over-grazing can lead to increased erosion (Curry et al., 1994).</p> <p>The Carnegie land system is described as salt lakes with extensive fringing saline plains, dunes and sandy banks, supporting low halophytic shrublands and scattered tall acacia shrublands. Lake beds are highly saline, gypsiferous and mainly unvegetated. Vegetation consists of Sand Dune Shrubland and Wanderrie Bank Grassy Shrubland populating sand plains. Mixed Halophytic Shrubland with varying levels of salinity and pastoral value is mostly dependent on salinity levels. Erosion susceptibility is generally low. Lower lake beds represent mostly no pastoral value (Curry et al., 1994).</p> <p>The Challenge land system is described as gently sloping gritty and sandy-surfaced plains with granite outcrops and minor breakaways, supporting mulga and some halophytic shrublands. Vegetation consists of Granitic Mulga Shrubland and Mulga Chenopod Shrubland of moderate productivity, with minor Bluebush or Mixed Halophytic Shrublands with good drought reserves where not overgrazed. The land system is not normally susceptible to accelerated erosion except on alluvial footslopes and drainage floors. Kite-leaf poison occurs locally, mainly around domes and tors but occasionally on sandy fans and in creeklines, rendering some areas unsuited to stocking (Curry et al., 1994).</p> <p>The Gabanintha land system is described as ridges, hills and footslopes of various metamorphosed volcanic rocks (greenstones), supporting sparse acacia and other mainly non-halophytic shrub lands. Vegetation consists of Rocky Hill Mixed Shrubland and Stony Mulga Mixed Shrubland. Halophytic understorey shrubs on accessible footslopes and stony plains below weathering outcrops. Productivity of annuals moderate in good seasons; mostly in fair condition, except for areas of halophytes selectively overgrazed. Most hills are poorly accessible, not generally susceptible to grazing-induced erosion but widely scarred by past mining activities (Curry et al., 1994).</p> <p>The Jundee land system is described as hardpan wash plains with variable dark gravelly mantling and weakly groved vegetation. Contains minor sandy banks supporting scattered mulga shrublands. Vegetation consists of mainly Hardpan Mulga Shrubland. Groves and drainage tracts receive more lasting soil moisture for plant growth than wash plains. Palatable perennials widely reduced through overgrazing and concentrated drainage zones are mildly susceptible to accelerated erosion when degraded. Hardpan plains otherwise not normally susceptible to erosion unless severely degraded (Curry et al., 1994).</p> <p>The Mileura land system is described as saline and non-saline calcreted river plains, with clayey flood plains interrupted by raised calcrete platforms supporting diverse and very variable tall shrub lands, mixed halophytic shrub lands and shrubby grasslands. Vegetation consists of moderately to highly productive saline and non-saline shrublands, predominantly; Bluebush, Saltbush, Mixed Halophytic, Samphire and Riverine Mixed Shrublands with good perennial reserves when in good condition. Calcrete Shrubby Grassland and Bluebush Shrub land on calcrete platforms are frequently degraded with invasions of unpalatable shrubs. The system is preferentially grazed by kangaroos, feral animals and domestic stock. Duplex soils moderately to highly susceptible to erosion, those with loam over hardpan less susceptible. Although calcrete</p>



Characteristic	Details
	<p>platforms are not normally susceptible, they are observed to be widely degraded (Curry et al., 1994).</p> <p>The Norie land system is described as granite hills with exfoliating domes and extensive tor fields, supporting acacia shrublands. Vegetation consists of Rocky Hill Mixed Shrubland on hills and tor fields, sandy lower plains support moderately productive Granitic Mulga Shrub land in mostly fair condition; drainage fringes and foci at bases of large granites carry dense Mulga Grove Woodland associations, in which kite leaf poison (<i>Gastrolobium laytonii</i>) is locally common. Saline footslopes locally support patchy but useful Bluebush Shrub land but the unit is preferentially grazed and mostly degraded; drainage tracts and alluvial fans are slightly susceptible to accelerated erosion (Curry et al., 1994).</p> <p>The Yanganoo land system is described as almost flat hardpan wash plains, with or without small wanderie banks and showing variable development of weak groving, supports mulga shrublands. Vegetation consists of extensive Hardpan Mulga Shrubland and minor Wanderie Bank Grassy Shrubland of moderate productivity which supports a well-mixed suite of non-halophytic palatable perennial shrubs and herbs. Plentiful annual grasses and forbs. Palatable perennials (occurring as understorey and low shrub vegetation) are greatly reduced or virtually eliminated as a result of chronic overgrazing, but soil surfaces and seasonal herbage responses are resistant to degradation. Drainage tracts carrying concentrated flow support non-halophytic and some halophytic shrubs and are often preferentially grazed and degraded, with scalding or surface stripping to the hardpan. Land system is locally susceptible to accelerated erosion when severely degraded, but much more susceptible to degradation and water starvation arising from inappropriately maintained roads and tracks (Curry et al., 1994).</p>
Waterbodies	The desktop assessment and aerial imagery indicated one non perennial lake (Lake Austin) slightly intersects the application area, more specifically, the Big Bell and Day Dawn project areas (GIS Database). Furthermore, multiple minor non perennial waterbodies are located within a 20 kilometre radius of the application area.
Hydrogeography	The application area falls within the East Murchison Groundwater area which is legislated by the <i>RIWI Act 1914</i> . The maximum salinity within the majority of the application area varies from 1,000 to 3,000 milligrams per litre total dissolved solids, which is described as brackish water quality (GIS Database). However, small sections of the application area including the Big Bell pipeline and the southern end of the Day Dawn project area has a mapped maximum groundwater salinity of higher than 35,000 milligrams per litre total dissolved solids, which is described as hypersaline water quality (GIS Database).
Flora	One Threatened and five Priority flora species were recorded within a 20 kilometres radius of the application area (GIS Database). The field assessments conducted over all three project areas of the application area identified no Threatened or Priority flora species (Outback Ecology, 2012).
Ecological communities	The application area is located within five Priority Ecological Communities (PEC) boundaries; Lake Austin Calcrete (P1), Taincrow Calcrete (P1), and three separate areas of the Austin Land System (P3) (GIS Database). The field assessment determined that the none of the vegetation associations identified within the application area was analogous to any Threatened or Priority Ecological Communities (Outback Ecology, 2012).
Fauna	There are records of 21 fauna species of conservation significance within a 20 kilometre radius of the application area (GIS Database). Of these 21 records, only one fauna species of conservation significance, the <i>Amytornis textilis textilis</i> (P4) was found within the application area, recorded along the eastern boundary of the Day Dawn project area. The fauna assessment conducted by Outback Ecology (2012) recorded no Threatened or Priority fauna species within the application area and identified seven fauna species of conservation significance that may potentially occur within the application area (Appendix A.4).

## A.2. Vegetation extent

	Pre-European area (ha)	Current extent (ha)	Extent Remaining %	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA Managed Lands
IBRA Bioregion - Murchison	28,120,586.77	28,044,823.42	99.73	7.78	7.77

Beard vegetation associations - State (Western Australia)					
Veg Assoc No. 18	19,892,306.46	19,843,148.07	99.75	1,317,179.00	6.62
Veg Assoc No. 39	6,613,567.48	6,602,578.44	99.83	795,070.69	12.02
Veg Assoc No. 125	3,485,785.49	3,146,487.22	90.27	265,740.10	7.62
Veg Assoc No. 240	119,107.79	119,107.79	100.00	43,393.15	36.43
Veg Assoc No. 268	15,547.76	15,547.76	100.00	757.94	4.87
Veg Assoc No. 313	68,843.52	65,261.44	94.80	1.79	0.00
Veg Assoc No. 1127	69,078.23	69,078.23	100.00	12,443.07	18.01
Veg Assoc No. 2081	1,331,683.57	1,320,818.05	99.18	201,100.82	15.10
Beard vegetation associations - Bioregion (Murchison)					
Veg Assoc No. 18	12,403,172.30	12,363,252.47	99.68	4.96	4.96
Veg Assoc No. 39	1,148,400.30	1,138,064.63	99.10	3.56	3.56
Veg Assoc No. 125	711,483.67	710,255.44	99.83	7.20	7.20
Veg Assoc No. 240	106,950.03	106,950.03	100.00	39.81	39.81
Veg Assoc No. 268	8,454.37	8,454.37	100.00	N/A	N/A
Veg Assoc No. 313	68,843.52	65,261.44	94.80	0.00	0.00
Veg Assoc No. 1127	69,078.23	69,078.23	100.00	18.01	18.01
Veg Assoc No. 2081	390,399.44	389,895.23	99.87	20.96	20.96

Government of Western Australia (2019)

### A.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (Appendix D.1), and biological survey information (Outback Ecology, 2012) the following conservation significant flora have been assessed and found to possibly occur within the application area.

Species name	EPBC Status	WA Status	Suitable habitat features? [Y/N]	Number of known records (total)	Distance from the application area (km)
<i>Angianthus uniflorus</i>	P1	-	Y	2	8
<i>Dodonaea amplicemina</i>	P4	-	Y	39	4
<i>Eremophila rostrata</i> subsp. <i>rostrata</i>	T	CR	Y	9	6.5
<i>Goodenia berringbinensis</i>	P4	-	Y	31	17.5
<i>Grevillea inconspicua</i>	P4	-	Y	61	4
<i>Minuria tridens</i>	P1	-	Y	10	12.5

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

#### A.4. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix D.1), and biological survey information (Outback Ecology, 2012) the following conservation significant fauna have been assessed and found to possibly occur within the application area.

Species name	Common name	EPBC Status	WA Status	Distance from application area (km)
Reptiles				
<i>Egernia stokesii badia</i>	Western Spiny tailed Skink	EN	VU	15
<i>Lerista eupoda</i>	West Coast mulga slider	-	P1	8
Mammals				
<i>Macrotis lagotis</i>	Bilby, dalgyte, ninu	VU	VU	4
Birds				
<i>Actitis hypoleucos</i>	Common sandpiper	MI	MI	17
<i>Amytornis textilis textilis</i>	Western grasswren, thick-billed grasswren (western)	-	P4	0
<i>Apus pacificus</i>	Fork-tailed Swift	MI	MI	17
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	MI	MI	13
<i>Calidris ferruginea</i>	Curlew sandpiper	MI	CR	11
<i>Calidris ruficollis</i>	Red-necked stint	MI	MI	11
<i>Chlidonias leucopterus</i>	White-winged black tern	MI	MI	2
<i>Falco hypoleucos</i>	Grey Falcon	-	VU	>20
<i>Falco peregrinus</i>	Peregrine Falcon	-	OS	10
<i>Gelochelidon nilotica</i>	Gull-billed tern	MI	MI	12
<i>Hydroprogne caspia</i>	Caspian tern	MI	MI	18
<i>Leipoa ocellata</i>	Malleefowl	VU	VU	1
<i>Limosa lapponica</i>	Bar-tailed godwit	MI	MI	5
<i>Oxyura australis</i>	Blue-billed duck	-	P4	17
<i>Plegadis falcinellus</i>	Glossy ibis	MI	MI	18
<i>Thinornis cucullatus</i>	Hooded Plover	-	P4	>20
<i>Thinornis rubricollis</i>	Hooded plover, hooded dotterel	-	P4	14
<i>Tringa glareola</i>	Wood sandpiper	MI	MI	11
<i>Tringa nebularia</i>	Common greenshank	MI	MI	11
<i>Tringa stagnatilis</i>	marsh sandpiper	MI	MI	18

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, OS: Other Specially Protected

## A.5. Ecological community analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix D.1), and biological survey information (Outback Ecology, 2012) the following conservation significant fauna have been assessed and found to possibly occur within the application area.

Community name	Reason for Conservation	Conservation status	Suitable vegetation type? [Y, N, N/A]	Distance of closest record to application area (km)
Lake Austin BIF	Lake Austin vegetation complexes (banded ironstone formation)	P1	N	14
Lake Austin Calcrete	Unique assemblages of invertebrates have been identified in the groundwater calcretes.	P1	N/A	0
Taincrow Calcrete	Unique assemblages of invertebrates have been identified in the groundwater calcretes.	P1	N/A	0
Austin Land System	Saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga	P3	N	0

## Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>Biological surveys conducted by the permit holder recorded zero conservation significant flora or fauna species within the application area (Outback Ecology, 2012; GIS Database). However, a desktop assessment recorded six flora and 21 fauna species of conservation significance within a 20 kilometre radius of the application area (GIS Database).</p> <p>Furthermore, the application area is located within five Priority Ecological Communities (PEC) boundaries; Lake Austin Calcrete (P1), Taincrow Calcrete (P1), and three separate areas of the Austin Land System (P3) (GIS Database).</p>	<p>Not likely to be at variance</p> <p>As per CPS 8087/2</p>	<p>Yes</p> <p>Refer to Section 3.2.1, above.</p>
<p><u>Principle (b):</u> "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."</p> <p><u>Assessment:</u></p> <p>A field assessment conducted by Outback Ecology (2012) identified five broad fauna habitats within the application area:</p> <ul style="list-style-type: none"> <li>- <b>Acacia woodland over low heath:</b> Open <i>Acacia aneura</i> over scattered low heath over open Tussock grassland;</li> <li>- <b>Open stony plain quartz:</b> Mixed low open shrubland over scattered Tussock Grassland over white quartz;</li> <li>- <b>Samphire plain:</b> Tectocornia Low Shrubland over scattered Tussock Grasses and Herbs;</li> <li>- <b>Drainage Line:</b> <i>Acacia</i> spp. Tall Shrubland over <i>Eremophila longifolia</i> open Shrubland to very open Grassland; and</li> <li>- <b>Quartz outcrop:</b> <i>Acacia aneura</i> Low Woodland over <i>Eremophila</i> spp. Over Open Tussock Grassland on Quartz Outcrops.</li> </ul> <p>Further field assessments recorded zero conservation significant fauna species and a lack of suitable fauna habitat for Malleefowl and Western Spiny-tailed Skink occurring within the application area (MWH, 2015; Outback Ecology, 2012).</p>	<p>Not likely to be at variance</p> <p>Changed from CPS 8087/2</p>	<p>Yes</p> <p>Refer to Section 3.2.2, above.</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><b>Principle (c):</b> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>No Threatened flora species have been recorded within the application area (Outback Ecology, 2012; GIS Database). The closest record of a Threatened flora species is the <i>Eremophila rostrata</i> subsp. <i>rostrata</i> located approximately 6.5 kilometres east of the Cuddingwarra project area (GIS Database). Given the Threatened species is known to occur on saline quartzite loams on hills and flats, with the majority of the species records being collected on quartz hills (Western Australian Herbarium, 1998-), the potential impacts to <i>Eremophila rostrata</i> subsp. <i>rostrata</i> by the proposed clearing within the application area may be minimised through the implementation of a condition restricting the clearing of the quartz outcrop habitats.</p> <p>However, one outcrop area is not subject to the restricted clearing condition as it can't be avoided due to a planned pit development. This outcrop was visited during a flora survey and no <i>Eremophila rostrata</i> subsp. <i>rostrata</i> individuals were recorded (Maia, 2020).</p>	<p>Not likely to be at variance</p> <p>As per CPS 8087/2</p>	<p>No</p>
<p><b>Principle (d):</b> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>There are no known Threatened Ecological Communities (TECs) located within a 20 kilometre radius of the application area (GIS Database). Flora and vegetation surveys of the application area and surrounds did not identify any vegetation representative of a TEC (Outback Ecology, 2012).</p>	<p>Not at variance</p> <p>Changed from CPS 8087/2</p>	<p>No</p>
<p><b>Environmental value: significant remnant vegetation and conservation areas</b></p>		
<p><b>Principle (e):</b> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The application area falls within the Murchison Bioregion of the Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). Approximately 99% of the pre-European vegetation still exists in the IBRA Central Ranges Bioregion (Government of Western Australia, 2019).</p> <p>The application area is broadly mapped as Beard vegetation associations; 18, 39, 125, 240, 268, 313, 1127 and 2081 (GIS Database). These vegetation associations have not been extensively cleared as over 90% of the pre-European extent of these vegetation association remain uncleared at a state and bioregional level (Government of Western Australia, 2019).</p>	<p>Not at variance</p> <p>As per CPS 8087/2</p>	<p>No</p>
<p><b>Principle (h):</b> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The application area is not located within any conservation areas (GIS Database). The nearest conservation area is Lakeside Conservation Park, located approximately 11 kilometres south of the Day Dawn project area (GIS Database). Given the distance to Lakeside Conservation Park, the proposed clearing is unlikely to have an impact on the environmental values of any conservation areas.</p> <p>However, DBCA has shown interest in Unallocated Crown Land extending from the current Lakeside Conservation Park northern boundary towards the Big Bell pipeline and the south west corner of the Day Dawn project area. This land has been proposed for conservation, expanding the Lakeside Conservation Park. Due to the majority of the overlap between the proposed conservation land and the application area occurring over the southern end of the Big Bell pipeline which has already been previously disturbed, the proposed clearing is unlikely to have an impact on the environmental values of any proposed future conservation areas.</p>	<p>Not likely to be at variance</p> <p>As per CPS 8087/2</p>	<p>No</p>
<p><b>Environmental value: land and water resources</b></p>		

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (f):</u> "Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."</p> <p><u>Assessment:</u></p> <p>Multiple minor non perennial drainage lines pass through the application area. Furthermore, Lake Austin, a major non perennial lake, is located south of the application area slightly intersecting the Big Bell pipeline and a small section of the Day Dawn project area (GIS Database).</p> <p>The field assessment conducted by Outback Ecology (2012) over the application area recorded extensive grazing disturbances along the majority of drainage lines. However, where drainage lines were recorded in good condition, the following vegetation types were found growing in or in association with the watercourse (Outback Ecology, 2012):</p> <p>Big Bell Area</p> <ul style="list-style-type: none"> <li>D. <i>Acacia aneura</i> low woodland (variable cover on banks of flow line) over <i>Acacia tetragonophylla</i> and <i>Eremophila</i> species scattered tall shrubs/shrubs over <i>Aristida contorta</i> and <i>Eragrostis falcata</i> (in bed of sandy flow line) tussock grassland; and</li> <li>E. Mixed <i>Acacia</i> low woodland over scattered tall shrubland (on flow line banks) over open tussock grassland on sandy flow line channel.</li> </ul> <p>Day Dawn Area</p> <ul style="list-style-type: none"> <li>F. <i>Acacia cyperophylla</i> var. <i>cyperophylla</i> tall shrubland over <i>Eremophila longifolia</i> open shrubland over <i>Cenchrus ciliaris</i>, <i>Cynodon dactylon</i> tussock grassland in relatively well defined flow lines;</li> <li>G. <i>Acacia aneura</i> low open woodland over <i>Acacia tetragonophylla</i> tall open shrubland over herbland in poorly defined flow lines; and</li> <li>I. <i>Acacia xiphophylla</i>, <i>Acacia synchronicia</i> tall open shrubland over mixed scattered low shrubs over <i>Eriachne</i> and <i>Digitaria</i> very open tussock grassland. Found on broad drainage areas intersected by sometimes shallowly incised flow lines.</li> </ul> <p>Given all watercourses intersecting the application area are non perennial in nature, and only approximately 18.9% of the vegetation within the application area was found growing in or in association with a watercourse, the potential impacts of the proposed clearing to riparian vegetation may be adequately minimised through the continued implementation of a vegetation management condition requiring the permit holder to avoid clearing riparian vegetation where practicable and maintain existing surface flow.</p>	<p>At variance</p> <p>As per CPS 8087/2</p>	<p>No</p>
<p><u>Principle (g):</u> "Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."</p> <p><u>Assessment:</u></p> <p>The mapped land systems within the application area; Austin, Carnegie, Challenge, Gabanintha, Jundee, Mileura, Norie and Yanganoo are all moderately susceptible to erosion when vegetation condition is degraded due to previous grazing or mining activities (Curry et al., 1994). Noting the location of the application area, the proposed clearing is likely to have an appreciable impact on land degradation. Land degradation may be managed by implementing a staged clearing condition where potential impacts from erosion may be minimised by the continued implementation of a staged clearing condition requiring areas that are cleared are utilised within three months.</p>	<p>May be at variance</p> <p>As per CPS 8087/2</p>	<p>No</p>
<p><u>Principle (i):</u> "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."</p> <p><u>Assessment:</u></p> <p>The maximum salinity within the majority of the application area varies from 1,000 to 3,000 milligrams per litre total dissolved solids, which is described as brackish water quality (GIS Database). However, small sections of the application area including the Big Bell pipeline and the southern end of the Day Dawn project area has a mapped maximum groundwater salinity of higher than 35,000 milligrams per litre total dissolved solids, which is described as hypersaline water quality (GIS Database).</p>	<p>May be at variance</p> <p>Changed from CPS 8087/2</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>The desktop assessment and aerial imagery indicate the non perennial Lake Austin slightly intersects the application area along the Big Bell pipeline and the south west corner of the Day Dawn project area (GIS Database). This area is relatively small within the context of the larger application area, and the clearing of vegetation along the non perennial watercourse in small isolated patches is unlikely to cause deterioration in the quality of surface water (GIS Database).</p> <p>The closest Public Drinking Water Source is the Cue Water Reserve (P1) located approximately five kilometres east of the Day Dawn project area (GIS Database). The Cue Water Reserve has been classified as a Priority 1 area and therefore land development is not permitted within the area to ensure no degradation of the water source occurs (Water and Rivers Commission, 2001). Additionally, The Cue Water Reserve contains four separate Wellhead Protection Zones to further protect the water source from contamination in the immediate vicinity of production bores (Water and Rivers Commission, 2001). Given the implementation of the Water Source Protection Plan developed for the Cue Water Reserve and the distance of the application area from the Public Drinking Water Source, the quality of groundwater is unlikely to be significantly impacted from the proposed clearing.</p>		
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>Given no permanent watercourses or wetlands are recorded within the application area and the average annual evaporation (2,400 to 2,800 millimetres) (BoM, 2023) is higher than the average annual rainfall (231.9 millimetres) (BoM, 2023), the proposed clearing for exploration purposes is unlikely to cause, or exacerbate, the incidence or intensity of flooding.</p>	<p>Not likely to be at variance</p> <p>As per CPS 8087/2</p>	No

### Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

#### Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

## Appendix D. Sources of information

### D.1. GIS databases

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://www.data.wa.gov.au)):

- Aboriginal Heritage Places (DPLH-001)
- Bush Forever (Regional Scheme) (DPLH-022)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- Interim Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

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- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
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## 4. 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>DCCEEW</b>	Department of Climate Change, Energy, the Environment and Water, 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 DCCEEW)
<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.

**Principles for clearing native vegetation:**

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (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.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened 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.
- (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.
- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (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.
- (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.
- (j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.